

SITE INVESTIGATION HEALTH AND SAFETY PLAN

VAN BUREN LANDFILL SITE
MICHIGAN AVENUE & ECORSE ROAD
VAN BUREN TOWNSHIP, WASHTENAW COUNTY, MI
PROPOSAL #11070-2012-01

PREPARED FOR:



DAVID FAVERO
DEPUTY CLEANUP MANAGER - MICHIGAN
RACER TRUST
2930 ECORSE ROAD
YPSILANTI, MI 48198

Mannik & Smith
Group, Inc.

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Attachment 2 Plan Acceptance Form

1.0 INTRODUCTION

The Mannik & Smith Group (MSG) has prepared this site specific Health and Safety Plan (HASP) for the Site Investigation activities to be completed at the Van Buren Landfill Property (RACER Trust Proposal Number 11070-2012-01) located east of the Ecorse Road / Michigan Avenue (US-12) intersection in Van Buren Township, Washtenaw County, Michigan (Site). The Site is bounded to the north by railroad tracks, to the east by the former General Motors Corporation Service Parts Operations Warehouse, to the south by Ecorse Road and to the west by Michigan Avenue. *Figure 1, Site Location Map*, depicts the location of the Site relative to nearby roads and major topographic features.

A detailed description of the Site and work to be performed is provided in MSG's *Proposal For Professional Services*, dated March 15, 2012. The HASP assigns personnel, training and responsibilities; identifies potential site hazards (both physical and chemical); establishes action levels, site-specific emergency procedures; and provides local emergency numbers, location of and directions to nearest urgent care facility and HASP acknowledgement sheet. The HASP also provides for contingencies that may arise while the remedial investigation and interim response activities are being conducted and will be modified as necessary throughout the course of the project.

This HASP was prepared in general conformance with the US Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120 (HAZWOPER), 29 CFR 1926.65 (Construction and General Industry Standards - Hazardous Waste Operations and Emergency Response), the Michigan Occupational Safety and Health Act (MIOSHA), and the National Institute for Occupational Safety and Health (NIOSH).

1.1 Applicability

The provisions of the HASP are mandatory for all personnel engaged in hazardous waste operations that will be exposed, or have the potential to be exposed, to on-site hazardous substances. MSG's appointed Corporate Health and Safety Officer (CHSO) will have responsibility for enforcing this plan.

MSG staff assigned to the field activities for this project must read the HASP and sign the Plan Acceptance Form (attached) prior to initiation of field activities. Contractors may provide their own HASP to cover their workers as long as it is at least as stringent as this plan. A copy of the contractor's HASP will be provided to the CHSO prior to commencement of the project.

All on-site personnel shall comply with the most current OSHA regulations as defined in 1910.120-Hazardous Waste and Emergency Response. These regulations include the following provisions for employees with the potential to be exposed to constituents of concern:

- Safety or health hazards
- Training
- Medical surveillance
- Personal protective equipment

1.2 Visitors

Visitors to the project site work area must be authorized by a representative of MSG or their designee. Visitors will be required to review the HASP and be made aware of prevailing site conditions. While on site within the project work area, visitors must be accompanied by an authorized person from MSG.

2.0 KEY PERSONNEL

The MSG Project Manager for this project is Frank J. Biehl, P.E.. The MSG Corporate Health and Safety Officer (CHSO) is Thomas E. Peters, CPG, CHMM. The MSG Project Geologist is Michael Friedhoff, CPG. The MSG Field Engineer is Christopher Riharb. The CHSO is responsible for on-site implementation of this HASP and has the authority to institute a stop work order if safety concerns are evident.

Contact information:

Dave Favero, RACER – Deputy Cleanup Manager Michigan
Office Phone, 734-480-1799; Cell Phone 217-741-6235

Thomas E. Peters, CPG, CHMM, MSG CHSO
Office Phone, 734-397-3100; Cell Phone 734-790-5184

Frank J. Biehl, P.E., MSG Project Manager
Office Phone 734-397-3100; Cell Phone 734-790-5176

John S. Browning III, P.E., MSG Principal in Charge
Office Phone 734-397-3100; Cell Phone 734-790-5177

Michael Friedhoff, CPG, MSG Project Geologist
Office Phone 734-397-3100; Cell Phone 734-904-6679

Christopher Riharb, MSG Field Engineer
Office Phone 734-397-3100; Cell Phone 810-623-8189

The responsibilities of the CHSO:

- Review and approve HASP for project.
- Assure all staff have completed required training and appropriate medical monitoring.
- Assure appropriate field monitoring equipment selection and action levels for constituents of concern.
- Assure that appropriate personal protection equipment (PPE) is available.
- Provide health and safety support to the Project Manager and Field Staff.
- Prepare necessary accident/incident reports.

The responsibilities of the Project Manager are:

- Manage and coordinate field staff and subcontractors.
- Ensure HASP is read and signed by all field staff and subcontractors.
- Ensure a copy of this HASP is maintained on site during all field activities.
- Ensure appropriate calibration and recording of field monitoring data.
- Ensure PPE is properly utilized.
- Ensure all aspects of the project are conducted in both a technically sound and safe manner.
- Keeping the CHSO and field staff apprised of any health and safety concerns for the project.

3.0 MEDICAL SURVEILLANCE REQUIREMENTS

The following are the minimum medical surveillance requirements for site personnel.

3.1 Baseline Monitoring

Prior to being assigned to hazardous or potentially hazardous work activities involving exposure to toxic materials, employees must receive a pre-assessment or baseline physical. Each contractor or subcontractor shall be responsible for obtaining medical evaluations for their employees.

3.2 Periodic Monitoring

In addition to baseline monitoring, all employees require a periodic (annual) physical examination unless the advising physician believes a shorter interval is appropriate. The employers' medical consultant should prescribe an adequate medical exam that fulfills the requirements of OSHA 29 CFR 1910.120.

3.3 Exit Physical

At termination of employment or reassignment to an activity or location which does not represent a risk of exposure to hazardous substances, an employee shall undergo an exit physical. If his/her last physical was within the last 6 months, the advising medical consultant has the right to determine adequacy and necessity of exit exam.

4.0 PERSONNEL TRAINING REQUIREMENTS

MSG maintains a core group of staff trained for working on sites contaminated by hazardous substances.

4.1 Pre-assignment Training

Personnel working on this investigation project will have successfully completed a 40-hour training course covering topics outlined in 29 CFR 1910.120 (a-o) Hazardous Waste Operations and Emergency Response (HAZWOPER). Annual refresher training shall be current as well.

4.2 Site Supervisor's Training

Persons working on this investigation in a supervisory capacity will have successfully completed an 8-hour supervisor's course covering topics outlined in 29 CFR 1910.120.

4.3 Site-Specific Training

Prior to beginning work on this site, the Project Geologist will hold a meeting with all on-site personnel to discuss potential hazards at the Site. General safety topics as well as the contents of the HASP will be discussed.

5.0 SITE CHARACTERIZATION AND HAZARD ASSESSMENT

In preparation for this project, MSG conducted a review of file information provided by RACER and obtained copies of pertinent reports and records. The following reports were obtained during the file review:

- *Draft Current Conditions Report*, dated September 2011, prepared by Conestoga-Rovers & Associates (CRA).

The following subsections summarize information obtained from the RACER project file.

5.1 Historical Overview of the Site

The site is zoned for general industrial use and located in an area bounded by mixed commercial, agricultural, industrial, residential and airport properties. The Site is bounded to the north by railroad tracks, to the east by the former General Motors Corporation Service Parts Operations Warehouse, to the south by Ecorse Road and to the west by Michigan Avenue. The Site does not currently have an address associated with the Site. However, historical documentation referred to the Site being located at 5070 and/or 50700 Ecorse Road, Belleville, Michigan 48111. *Figure 1, Site Location Map*, depicts the location of the Site relative to nearby roads and major topographic features.

Through a search of governmental records to support a potential sale of a portion of the former GMC Property, GMC became aware of the closed Van Buren Development Company landfill Site in August 1987. A Limited Phase I Environmental Site Assessment (ESA) was conducted by Encore Environmental Consortium, LLC (EEC) in 2002 and updated in 2007. The Phase I ESA was not available for review, however it was summarized in CRA's *Draft Current Conditions Report*, dated September 2011.

Results of the Phase I ESA indicated historical use of the Site remained undeveloped and cultivated for agricultural purposes as early as 1940. The Site remained vacant and undeveloped until approximately 1966 when it was occupied by Van Buren Development Company from approximately 1966 to 1969, where the Site was used to mine sand and subsequently operated as a landfill. The Site has been vacant since the closure of the Van Buren Development Company landfill in 1969 when the Site was purchased by the General Motors Corporation (GMC).

The Phase I ESA identified one Recognized Environmental Condition (REC) at the Site related to the historical landfill. A geophysical survey was conducted at the Site in July 2003 by Blasland, Bouck & Lee, Inc. (BBL), which identified numerous potential disposal trenches / areas at the Site. The Phase I ESA describes the results the geophysical investigation, which revealed that landfilled waste may exist across approximately 30 to 40 acres in the western, northern and central portions of the Site. These areas potentially include four landfill trench cells in the northeastern portion of the Site, a landfill trench or fill area in the center of the Site, an additional potential landfill cell in the northwest corner of the Site and several other smaller isolated potential landfill pocket areas across the western portion and center of the Site.

Historical records identified in the Phase I ESA indicate that various wastes were landfilled at the Site, including:

- Incinerator ash generated from the City of Detroit;
- Demolition waste and domestic refuse generated from the City of Dearborn;
- Waste Paper generated from the Ford Motor Company;
- Crankcase oil sludge (approximately 1,500 to 1,800 gallons) generated from Dearborn Refinery; and
- Liquid waste stored in 55-gallon drums.

Historical records from the Phase I ESA indicate that the crankcase oil sludge potentially had high levels of sulfuric acid, heavy metals, polychlorinated biphenyls (PCBs) and other organic chemicals. Additional evidence of aboveground waste discarded throughout the Site observed during the Phase I ESA, include general municipal waste, building construction materials, household appliances, furniture, piping, transportation equipment, electrical components, hazardous material containers, scrap metals, batteries and numerous unidentifiable items.

Based on the types and age of waste observed both below ground and above ground, the potential for the following related environmental concerns existed at the Site, including: Underground Storage Tanks, hazardous substances and petroleum products, asbestos containing materials, PCBs, solid and special waste and hazardous waste. Potential sources of fugitive emissions emanating from the historic below-ground landfill include solvents or biodegradation gases.

The most recent Site ownership changes are due to GMC filing for bankruptcy under Chapter 11 of the United States Bankruptcy Code on June 1, 2009. Pursuant to a bankruptcy court order on July 10, 2009, Motors Liquidation Company (MLC) (formerly GMC) retained ownership of the Site and on October 20, 2010, entered into a settlement agreement with federal and state governmental authorities regarding MLC's environmental obligations at its remaining properties. According to the settlement agreement, Revitalizing Auto Communities Environmental Response (RACER) Trust became effective March 31, 2011 and interests in the Site were then transferred to RACER. The Site is currently owned by RACER Properties, LLC, a wholly owned subsidiary of RACER Trust, and remains comprised of vacant land.

5.2 Scope of Work

The proposed scope of work for the remedial investigation field activities will consist of advancing soil borings to collect soil samples, installation of monitoring wells, ground water sample collection from monitoring wells and installation of test pits to confirm the extents and types of disposed material and disposal cell construction details. The contaminants of concern associated with the Site are primarily wastes, detailed in Section 5.1. For further details pertaining to the proposed scope of work outlined above, refer to MSG's *Proposal For Professional Services*, dated March 15, 2012.

5.3 Health Hazards

The evaluation of hazards is based upon the knowledge of the historical use of the Site and anticipated risks posed by the specific operations. Operations planned for this site include soil boring, monitoring well and test pit installation. Table 1 presents the hazards associated with the chemicals that have been reported in soil and/or ground water from the site vicinity. Other chemicals could be discovered during site activities.

Table 1 – Chemical Hazard Evaluation

Compound	OSHA PEL*	NIOSH REL*	Ionization Potential (eV)	Route of Entry	Symptoms of Overexposure
Antimony	0.5 mg/m3	0.5 mg/m3	NA	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, mouth; cough; dizziness; headache; nausea, vomiting, diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly
Arsenic	0.010 mg/m3	Ca C 0.002 mg/m3	NA	Inhalation, skin absorption, skin and/or eye contact, ingestion	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin, [potential occupational carcinogen]
Barium (Barium salt)	15 mg/m3 (total) 5 mg/m3 (resp)	10 mg/m3 (total) 5 mg/m3 (resp)	NA	Inhalation, skin and/or eye contact	Irritation eyes, nose, upper respiratory system; benign pneumoconiosis (baritosis)

Compound	OSHA PEL*	NIOSH REL*	Ionization Potential (eV)	Route of Entry	Symptoms of Overexposure
Benzene	1 ppm	0.1 ppm	9.24	Inhalation, Ingestion, Skin absorption, Contact	Irritated eyes, nose, respiratory system; dizziness, headaches, nausea; fatigue, anorexia, dermatitis, lassitude, bone marrow depression (Carcinogen)
Beryllium & beryllium compounds (as Be)	0.002 mg/m3 C 0.005 mg/m3 (30 minutes), with a maximum peak of 0.025 mg/m3	Ca C 0.0005 mg/m3	NA	Inhalation, skin and/or eye contact	Berylliosis (chronic exposure): anorexia, weight loss, lassitude (weakness, exhaustion), chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irritation eyes; dermatitis; [potential occupational carcinogen]
Cadmium dust (as Cd)	0.005 mg/m3	Ca	NA	Inhalation, ingestion	Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache: chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]
Cobalt metal dust and fume (as Co)	0.05 mg/m3	0.1 mg/m3	NA	Inhalation, ingestion, skin and/or eye contact	Cough, dyspnea (breathing difficulty), wheezing, decreased pulmonary function; weight loss; dermatitis; diffuse nodular fibrosis; resp hypersensitivity, asthma
Copper (dusts and mists, as Cu)	1 mg/m3	1 mg/m3	NA	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, nose, pharynx; nasal septum perforation; metallic taste; dermatitis; in animals: lung, liver, kidney damage; anemia
Carbon monoxide	50 ppm (55 mg/m3)	35 ppm (40 mg/m3) C 200 ppm (229 mg/m3)	14.01 eV	inhalation, skin and/or eye contact (liquid)	Headache, tachypnea, nausea, lassitude (weakness, exhaustion), dizziness, confusion, hallucinations; cyanosis; depressed S-T segment of electrocardiogram, angina, syncope
Dioxin	None	Carcinogen	NA	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes; allergic dermatitis, chloracne; porphyria; gastrointestinal disturbance; possible reproductive, teratogenic effects; in animals: liver, kidney damage; hemorrhage; [potential occupational carcinogen]
Ethylbenzene	100 ppm	100 ppm	8.76	Inhalation, Ingestion, Contact	Irritated eyes, skin, mucous membranes; headaches; dermatitis; narcosis, coma
Hydrogen sulfide	C 20 ppm; 50 ppm [10-minute maximum peak]	C 10 ppm (15 mg/m3) [10-minute]	10.46	inhalation, skin and/or eye contact	Irritated eyes, respiratory system; apnea, coma, convulsions; conjunctivitis, eye pain, lacrimation (discharge of tears), photophobia (abnormal visual intolerance to light), corneal vesiculation; dizziness, headache, lassitude (weakness, exhaustion), irritability, insomnia; gastrointestinal disturbance; liquid: frostbite
Iron oxide dust and fume (as Fe)	5 mg/m3	10 mg/m3	NA	Inhalation	Benign pneumoconiosis with X-ray shadows indistinguishable from fibrotic pneumoconiosis (siderosis)
Lead	0.050 mg/m3	(8-hour) 0.050 mg/m3	NA	Inhalation, ingestion, skin and/or eye contact	Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension
Manganese compounds and fume (as Mn)	1 mg/m3 ST 3 mg/m3	C 5 mg/m3	NA	Inhalation, ingestion	Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like fever; low-back pain; vomiting; malaise (vague feeling of discomfort); lassitude (weakness, exhaustion); kidney damage
Mercury compounds	0.1 mg/m3	0.05 mg/m3 [skin] Other: C 0.1 mg/m3 [skin]	NA	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria
Molybdenum	None	15 mg/m3	NA	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, nose, throat; anorexia, diarrhea, weight loss; listlessness; liver, kidney damage
PCB - Aroclor® 1242 (Chlorodiphenyl - 42% chlorine)	1 mg/m3 [skin]	Ca 0.001 mg/m3	NA	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes; chloracne; liver damage; reproductive effects; [potential occupational carcinogen]
PCB - Aroclor® 1254 (Chlorodiphenyl - 54% chlorine)	0.5 mg/m3 [skin]	Ca 0.001 mg/m3	NA	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, chloracne; liver damage; reproductive effects; [potential occupational carcinogen]
Sulfuric acid	1 mg/m3	1 mg/m3	NA	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; pulmonary edema, bronchitis; emphysema; conjunctivitis; stomatis; dental erosion; eye, skin burns; dermatitis
Toluene	200 ppm	100 ppm	8.82	Inhalation, Ingestion, Skin absorption, Contact	Irritated eyes, nose; fatigue, weakness, confusion, euphoria, dizziness, headaches; dilated pupils, tearing; nervousness, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage
Thallium	0.1 mg/m3 [skin]	0.1 mg/m3 [skin]	NA	Inhalation, skin absorption, ingestion, skin and/or eye contact	nausea, diarrhea, abdominal pain, vomiting; ptosis, strabismus; peri neuritis, tremor; retrosternal (occurring behind the sternum) tightness, chest pain, pulmonary edema; convulsions, chorea, psychosis; liver, kidney damage; alopecia; paresthesia legs
Vanadium dust	C 0.5 mg V2O5/m3 (resp)	C 0.05 mg V/m3 [15-minute]	NA	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, throat; green tongue, metallic taste, eczema; cough; fine rales, wheezing, bronchitis, dyspnea (breathing difficulty)
Xylenes	100 ppm	100 ppm	8.56	Inhalation, Ingestion, Skin absorption, Contact	Irritated eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoherence, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis

* Exposure limits are in time weighted average (TWA)

** Indicates the chemical was not listed in the NIOSH Pocket Guide

The Material Safety Data Sheets (MSDS) for materials/chemicals that will be used onsite (e.g., cement, bentonite, etc.) will be maintained onsite.

Based on this evaluation, the major routes of entry will include inhalation of fine particulate matter, inhalation of volatile organic compounds and direct contact/ingestion. The potential for exposure of fine particulates via the inhalation route is expected to be low since soil moisture and/or ground water will likely keep any materials from becoming mobile, however the potential for exposure exists. The use of a full-face air-purifying respirator with cartridge(s) providing protection against the compounds of concern will limit the potential for exposure via the inhalation pathway. There is a potential for exposure via the direct contact route. The use of a Tyvek coverall, overboots and nitrile gloves providing protection against the compounds of concern will limit the potential for exposure via the direct contact pathway. To protect from exposure via the ingestion route, good hygiene and hand washing practices should be followed after PPE decontamination and removal. Exposure potential due to potential fugitive gas emissions from the landfill and volatilization of organic chemicals will be monitored near the soil boring / test pit location using a four-gas (LEL/O₂/CO/H₂S) meter and a photoionization detector (PID) or flame ionization detector (FID). After Site conditions have been assessed following the first several soil borings / test pits have been conducted, PPE requirements will be reevaluated.

In addition to potential chemical exposures, hazards associated with working around moving equipment and noises are potential concerns. Workers should be familiar with emergency shut-off procedures of the drill rig and other heavy equipment, and clothing and extremities should be kept away from moving parts. Hearing protection should be worn when noisy equipment is in operation. Slip and fall hazards are also a safety concern particularly around moving equipment and the work site will be maintained in a manner to minimize the potential of these types of injuries.

Prior to initiating work, underground utilities and conveyances will be marked by MISS DIG.

6.0 PERSONAL PROTECTIVE EQUIPMENT

The goal of a PPE program is to protect site workers from potential chemical constituent exposure. The CHSO is responsible for selection of the appropriate PPE for the known chemical hazards and planned work activities. The Project Geologist is responsible to ensure the appropriate PPE is available on-site and properly donned by site workers for the task being conducted. Each site worker is also responsible for properly utilizing the provided PPE.

The purpose of PPE is to shield or isolate individuals from the chemical, physical, and biological hazards that may be encountered at a site. No single combination of protective equipment and clothing is capable of protecting against all hazards. PPE must be used in conjunction with safe work practices, decontamination, and good personal hygiene.

The use of PPE can itself create significant worker hazards, such as heat stress, physical and psychological stress, impaired vision, mobility, and communication. In general, the greater level of PPE, the greater the associated risks. For any given work situation, equipment and clothing will be selected to provide an adequate level of protection. Over-protection as well as under-protection can be hazardous and will be avoided.

6.1 Levels of Protection

Equipment to protect the body against contact with chemical hazards is divided into four categories according to the degree of protection accorded:

Level A	Should be worn when the highest level of respiratory, skin, and eye protection is needed.
Level B	Should be worn when the highest level of respiratory protection is required, but a lesser level of skin protection is needed.
Level C	Should be worn when the types of airborne substances are known, the concentrations have been measured, and the criteria for using air-purifying respirators are met.
Level D	Should not be worn where respiratory or skin hazards are present. Level D is primarily a work uniform providing minimal protection.

The level of protection selected is based primarily on the type, toxicity, and measured concentration of the chemical substances suspected to be present. In addition, the potential or measured exposure to substances in the air, splashes, or other direct contact with materials due to the work being performed must be considered.

6.2 Specific Levels of Planned Protection

The specific levels of planned PPE use will be based on the known or suspected chemical impact and the investigative/remedial methods being employed. The Project Geologist is responsible for monitoring Site conditions. If Site conditions indicate a higher level of impact than anticipated, field operations will be halted, and the CHSO notified. The CHSO, Project Geologist and Project Manager will evaluate the need for modifying personal protection requirements and adjust PPE as necessary.

Anticipated exposure hazards for this project are limited to inhalation and direct contact concerns. The use of respiratory protection is not anticipated based on the prior investigative findings and planned work activities. MSG will begin work in these areas in a Level C PPE consisting of the following:

1. Tyvek Suits
2. Half-face Respirators with VOC/Acid Gas & Particulate (HEPA) Filters
3. Tyvek Boot Covers
4. Steel-toed safety boots
5. Chemically resistant gloves
6. Cloth outer gloves
7. Hard Hat
8. Safety glasses
9. Hearing protection

The CHSO, Project Geologist and Project Manager will re-assess the field conditions and adjust PPE as required.

7.0 FREQUENCY AND TYPE OF MONITORING

Site conditions that include physical hazards, weather conditions and chemical exposures will be monitored to limit potential injuries and chemical exposures.

7.1 Area Monitoring

Physical hazards, slip and fall hazards, can occur as a result of workers not being aware of site conditions; unmarked or protected hazards; poor house keeping practices; and slick work surfaces. The Project Geologist is responsible for informing site workers of specific project physical work hazards and marking or protecting these hazards as appropriate. Each site worker is responsible for familiarizing themselves with the site conditions and maintaining a clean work area.

7.2 Weather Conditions

Weather conditions may affect physical hazards as well as chemical exposure hazards of the project. Prior to the start of each work day, the Project Geologist will review the daily local area weather forecast and assess how the weather conditions may influence the planned work activities. Adjustments to the project activities may be required as the weather conditions change throughout the day.

Rain and snow will increase the potential for slip and fall hazards. In the event of severe weather conditions (thunderstorms, tornadoes, ice storms, etc.) the Project Geologist will suspend work.

An adjustment in planned chemical hazard monitoring may be necessary when there are changes in the meteorological condition. It is important to be aware of these changes as they may affect monitoring strategies. Examples of these changes include the following:

Temperature An increase in temperature increases the vapor pressure of most chemicals.

Wind Speed An increase in wind speed can cause a greater dispersion of constituents of concern however dusts and particulate-bound constituents of concern can increase with increased wind speed. A change in wind speed or direction can alter the appropriate size and orientation of the work excursion, decontamination and support zones (see Section 8 below).

Precipitation Moisture from rain, snow, and humidity will tend to suppress dust and vapors, and can also affect sampling results.

7.3 Air Monitoring Procedures

All field-screening devices will be calibrated and maintained in accordance with manufacturer's instructions before use. All instrument calibration and maintenance data will be recorded in a project logbook along with readings obtained.

Ambient air monitoring of the breathing zone will be performed using a calibrated PID or FID and a calibrated 4-gas meter. Monitoring for organic compounds will be conducted prior to and during all intrusive site activities. The PID or FID will be used to conduct air monitoring for organic compounds and the 4-gas meter will be used to measure oxygen, carbon monoxide, lower explosive limit, and hydrogen sulfide. When air monitoring levels exceed the normal background levels, the CHSO will be notified and the frequency of readings increased. If air monitoring exceeds the action level in the breathing zone for a period of greater than 5 minutes, work will stop while the CHSO contacts the PM to evaluate and mitigate any unacceptable exposures. The action level for either instrument in the work area or perimeter will be as follows:

Instrument	Location	Monitoring Frequency	Action Level
Four-Gas Meter: -Oxygen (O ₂); -Carbon Monoxide (CO); -Lower-Explosive-Limit (LEL); -Hydrogen Sulfide (H ₂ S)	Work Area	Continuous	O ₂ , any detectable change that varies from ambient air or below 19.5% or above 23.5%; CO, greater than 35 ppm; LEL, greater than 10% LEL; H ₂ S, greater than 10 ppm
PID/FID	Work Area	Continuous	>5 ppm above background

Monitoring equipment will be calibrated and checked for proper operation daily before the start-up of any field activities requiring monitoring. Before initiating field activities, background measurements will be obtained with each instrument upwind and away from potential site influences. Instrument calibrations and background levels will be documented in the project logbook.

8.0 STANDARD SAFE WORK PRACTICES

Site workers will follow standard safe work practices that minimize potential chemical exposures and safeguard other site workers from chemical and physical hazards.

8.1 General Requirements

Eating, drinking, chewing tobacco, smoking, and carrying matches or lighters will be allowed in designated areas ONLY. No drugs or alcohol will be allowed on site. Workers will be instructed to avoid contact with potentially contaminated substances and not walk through puddles, pools, mud, etc. Monitoring equipment should not be placed on potentially contaminated surfaces. All field personnel should make use of their senses and remain alert to potentially dangerous situations such as the presence of strong, irritating or nauseating odors, dust clouds, etc.

Field crewmembers shall be familiar with the following:

- Wind direction;
- Accessibility to associates, equipment, and vehicles;
- Communications procedures;
- Exclusion zones location;
- Site access locations; and
- Location of first-aid kits and fire extinguishers.

8.2 Buddy System

The buddy system will be utilized as appropriate on this project to ensure the safety of all personnel. A buddy will provide his/her partner with assistance, observe his/her partner for signs of chemical or heat exposure, check the integrity of his/her partner's PPE (as required) and notify the Project Geologist, Project Manager and CHSO if an emergency arises.

8.3 Cold and Heat Related Stress

Cold Stress – Factors that contribute to cold stress include cold air temperatures, high velocity air movement, damp clothing, and contact with cold water or surfaces. While it is obvious that below freezing conditions combined with inadequate clothing could bring about cold stress, it is also important to understand that it can be brought about by temperatures in the range of 50 degrees Fahrenheit coupled with some rain and wind.

Common cold induced problems are:

- Hypothermia – this occurs when body heat is lost faster than it can be replaced. Common symptoms are; shivering, loss of coordination, slurred speech, fumbling of items in hand, and cold skin.
- Frostbite – this occurs when the skin & tissue actually freeze and lose water. Common symptoms of the affected area are; cold to the touch, tingling, stinging or aching followed by numbness, skin discoloration or blisters.
- Trench foot – this occurs by having feet immersed in cold water at temperatures above freezing for long periods of time. It is similar to frostbite, but considered less severe. Common symptoms are tingling or burning sensations. Blisters may be present.

Preventive measures:

- Wear appropriate dry clothing
- Be aware of how your body is reacting to the temperature and clothing
- Avoid alcohol, smoking, and certain medications

Heat Stress – Factors that contribute to heat stress include high temperatures, high humidity, sunlight, and heavy workloads.

Common heat induced problems are:

- Heat Stroke – is a life-threatening, heat-related disorder associated with working under very hot and humid conditions. Heat stroke can result in coma or death. Early signs and symptoms include:
 - A high body temperature, 104°F or over.
 - Hot, dry skin that appears bluish or red.
 - Absence of sweat in 50 to 75 percent of victims.
 - Rapid heart rate.
 - Dizziness, shivering, nausea, irritability, and severe headache progressing to mental confusion, convulsions, and unconsciousness.
- Heat Rash – this occurs during hot, humid conditions when the skin and clothing remain damp due to unevaporated sweat. Common symptoms are a rash involving small areas of the skin or the entire torso.
- Heat Syncope – characterized by dizziness or fainting while standing still in the heat for an extended period.
- Heat Cramp – often caused by temporary fluid and salt imbalance. Common symptoms are painful cramps or spasms in the legs, arms, or abdomen, heavy sweating. Spasms may occur during work or in the evening after work.
- Heat Exhaustion – occurs from the reduction of body water content or blood volume. Symptoms are heavy sweating; clammy, flushed, or pale skin; dizziness; nausea; rapid and shallow breathing; headache; vomiting; or fainting.

Preventive measures:

- Limit exposure time. Schedule as many hot activities as practical for the coolest part of the day.
- Employ additional help or increase mechanical assistance if possible.
- Minimize heat exposure by taking advantage of natural or mechanical ventilation and heat shields when possible.
- Take rest breaks at frequent, regular intervals, preferably in a cool environment.
- Wear clothing that is permeable to air and loose fitting.
- Drink plenty of water.

8.4 Exclusion Zone

The Exclusion Zone will be considered to be an area where contaminant contact would be possible. The Exclusion Zone where space is available will comprise an area with a 50-foot radius from the point of intrusive work or which unacceptable contaminant exposures may occur. This area will be clearly marked, when appropriate. Entry to and exit from the Exclusion Zone will be through a temporary Decontamination Zone.

8.5 Decontamination Zone

As the name implies, an area designated to support operational activities will be maintained on-site. A command center will be established within the Support Zone. The Command Center will be considered the selected contractor's support vehicle, unless otherwise designated. The vehicle will have a cellular telephone

to provide off-site communications. Potable water for both personal consumption and decontamination will be available in the Support Zone.

8.6 Support Zone

Entrance into and exit from the Exclusion Zone will be through the Decontamination Zone. PPE worn in the Exclusion Zone that becomes contaminated will be removed within the Decontamination Zone.

9.0 DECONTAMINATION PLAN

PPE worn by site workers and equipment will be properly discarded or decontaminated prior to re-use or leaving the decontamination zone to minimize the potential spread of contaminants and unintended chemical exposures.

9.1 Personal Decontamination

The decontamination procedures will consist of brushing heavily soiled overboots, rinsing gloves and overboots with soap and water, and placing them on plastic sheeting. Disposable PPE (if used - gloves, boot covers, and coveralls) will be placed in plastic bags and properly disposed.

9.2 Equipment Decontamination

Equipment used for invasive work such as sampling devices, augers and heavy equipment booms and bucket will be power washed before beginning the project and between each boring location.

10.0 EMERGENCY INFORMATION

If any situation or unplanned occurrence requires outside or support services, the Project Manager and CHSO will be notified. The Project Geologist will notify the appropriate service agency and inform them of the nature of the incident and required service. The following site specific personnel and emergency contact numbers are provided:

SITE CONTACTS

COMPANY	TITLE	NAME	OFFICE NUMBER	CELL NUMBER
RACER	Project Manager	Dave Favero	217-741-6235	-----
MSG	Project Manager	Frank J. Biehl, P.E.	734-397-3100	734-790-5176
MSG	Corporate Health and Safety Officer	Thomas Peters, CPG, CHMM	734-397-3100	734-790-5184
MSG	Project Geologist	Michael Friedhoff, CPG	734-397-3100	734-904-6679
MSG	Principal-In-Charge	John S. Browning III, P.E.	734-397-3100	734-790-5181
MSG	Field Engineer	Christopher Riharb	734-397-3100	810-623-8189

EMERGENCY CONTACTS

DEPARTMENT	PHONE NUMBER
Police, Fire, Medical Emergency	911
Van Buren Township Police Non-Emergency	734-699-8930
Van Buren Township Fire Department Non-Emergency	734-699-8928
Poison Control	800-222-1222
Miss Dig	800-482-7171
MichCon: Natural Gas	800-395-4005
Consumers Energy: Electricity	800-477-5050

St. Joseph Mercy Ann Arbor Hospital

5301 McAuley Drive Ypsilanti, Michigan 48197

(734) 712-3456

Written directions to the hospital from Van Buren Landfill Site:

Head northwest on Ecorse Road toward US-12 W/Michigan Avenue

Continue onto US-12 West

Take the ramp onto I-94 West

Take exit 183 for Huron Street toward Ypsilanti

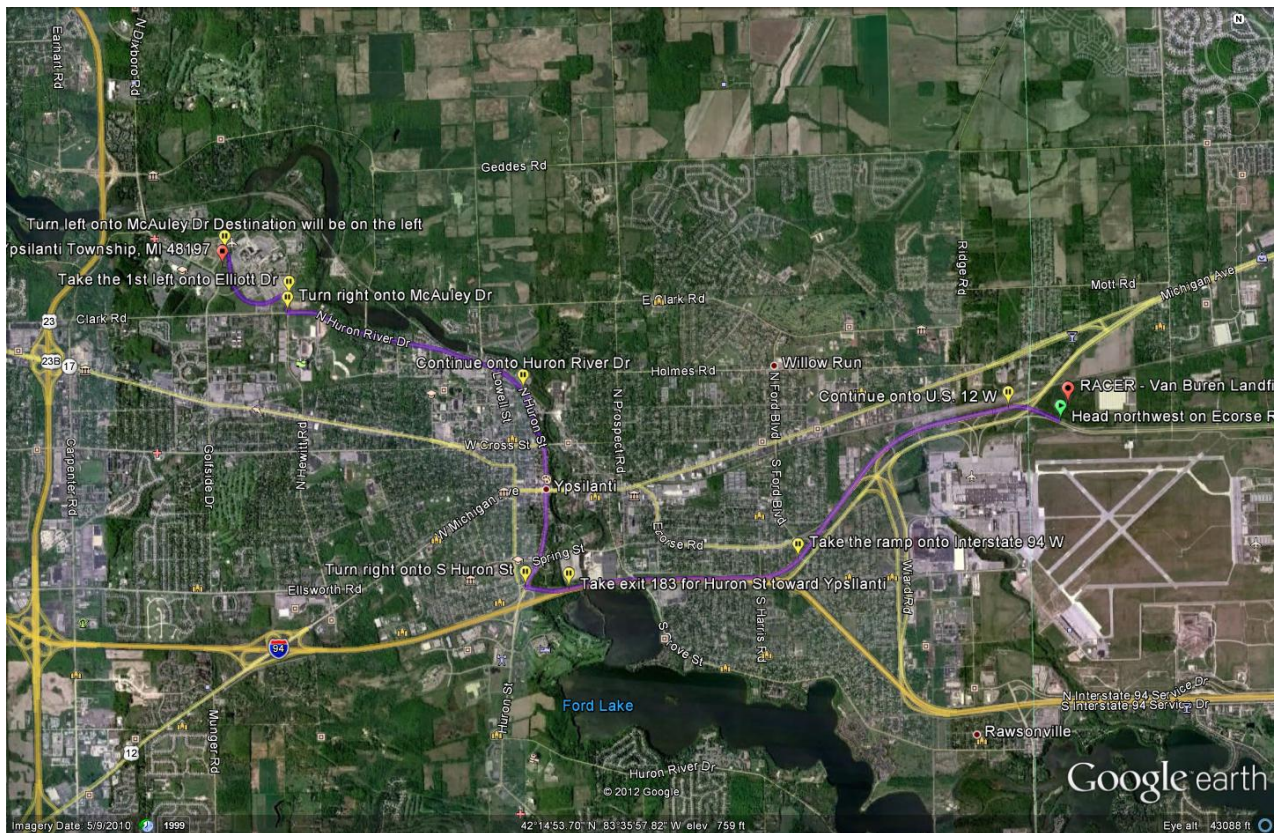
Turn right onto South Huron Street

Continue onto Juron River Drive

Turn right onto McAuley Drive

Take the 1st left onto Elliott Drive

Turn left onto McAuley Drive; Destination will be on the left



10.1 Emergency Procedures

Emergency conditions are considered to exist if any one of the conditions listed in the following table develops on site. The emergency procedures are to be immediately followed.

Emergency Condition	Emergency Procedure
A member of the field crew experiences any adverse effects or symptoms of exposure while on site.	The entire field crew should immediately halt work, leave the Exclusion Zone and contact the Project Manager/CHSO for further instructions. Take affected worker for medical treatment.
The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated	Suspend work and notify the Project Manager/CHSO for further instructions.
Any accident	Provide appropriate assistance to accident victim(s). Notify Project Manager, CHSO.

Additional possible emergency conditions and appropriate responses have been included as a Contingency Plan provided in Attachment 1.

FIGURES

THE MANNIK & SMITH GROUP, INC.

ATTACHMENT 1

CONTINGENCY PLAN
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1.0 INTRODUCTION

This contingency plan is designed to prevent emergencies or, if an emergency occurs, limit the negative impact. All existing hazards at the site may not yet be realized at this time. Therefore, this is designed to be a broad and dynamic plan, which may be updated and revised, as new information becomes available. This plan is designed such that:

1. Any and all substantive preventative measures which could eliminate or limit an emergency condition will be taken;
2. Specific actions taken in response to an emergency condition by site personnel or other designated personnel are addressed; and
3. A prompt and proper notification of the responsible organizations or persons with regard to any emergency condition and/or response will be taken.

2.0 MEDICAL EMERGENCIES

The major aspects of a medical emergency plan are detailed in the following sections.

1. Preventative Measures

- a. Execute the site HASP as written.
- b. Develop and observe careful work habits.
- c. Observe established work procedures.
- d. Establish contact with the nearest hospital emergency room, inquiring whether toxic and/or hazardous material exposures can be handled at their facility.
- e. Ensure that emergency egress routes to and from a work site are not blocked.

2. Response

In a life-threatening situation the safety of the individual takes precedence over all procedures designed for control of chemical contamination at the site. The nearest workers will assist a person who shows signs of medical distress or who is involved in an accident. The Project Geologist will be notified, and depending upon the nature of the emergency, he/she will determine whether emergency medical or rescue personnel (EM/RP) need to be summoned. The Project Geologist will also be responsible to notify the CHSO and PM.

3. Duties of the PM/CHSO

The Project Geologist will immediately alert other on-site personnel of an emergency situation by voice contact, radio, phone, signal or some other predetermined means. The Project Geologist will also relay the following information:

- The nature and severity of the emergency.
- Whether the victim is conscious.
- Any and all known specific conditions contributing to the emergency (such as what the victim was doing at the time of the accident, whether electricity was involved, heavy equipment, etc.).
- The location of the victim at the site.

The Project Geologist will also have the authority to suspend all site activities until the medical emergency is over.

4. Site Health and Safety Procedures

After being notified of a medical emergency, the Project Geologist will determine the best available method to aid the stricken worker and whether the EM/RP are to be summoned.

Life Threatening Incident: If an apparent life-threatening condition is suspected, the Project Geologist will immediately summon the EM/RP on his/her own. A person or persons will be appointed to meet the EM/RP at the site entrance and quickly escort them to the victim. If required to enter the exclusion zone by nature of the emergency, the EM/RP will be properly decontaminated upon exiting the area, if practical.

Non Life-Threatening Incident: If it is determined that no threat to life is present, the Project Geologist will direct the injured person through decontamination procedures appropriate to treatment of the nature of the illness or accident.

5. Notification

The following people will be notified of the medical emergency:

- The EM/RP and the local hospital (if necessary);
- The Project Geologist;
- The CHSO;
- The PM; and
- The appropriate client representative.

3.0 FIRE

The threat of fire is an ever-present risk due to the flammable nature of many materials which could be encountered at the site. Because fires can quickly become uncontrollable, and site personnel are not trained professional fire fighters, if there is any doubt that a fire can be quickly and safely contained and extinguished, personnel will sound the evacuation alarm and orderly vacate the area and/or the site.

1. Preventative Measures

- a. Sources of ignition, such as matches, lighters, cigarettes, etc. will be kept away from areas where flammable materials are handled or stored.
- b. Instruments will be regularly used to monitor the site for accumulations of flammable or explosive gases.
- c. "No Smoking" signs will be placed along the perimeter of areas where flammable materials are stored and smoking bans will be strictly enforced.
- d. Hot work permits must be completed prior to any activity, which could likely produce a source of ignition. This permit details precautions and practices, which must be followed to preclude a fire hazard.
- e. An adequate number of fire extinguishers will be strategically placed at all work locations.
- f. Local fire departments will be pre-alerted as to project and flammable material considerations if special risk is anticipated.
- g. All on-site personnel will be properly informed of egress procedures and assembly points during their initial on-site health and safety meeting.

2. Response

The following response procedures will be adhered to during all possible fire emergencies unless the policy conflicts with that of a life-threatening situation.

- Evacuation Alarm: Anyone who sees a fire will sound the evacuation alarm. The alarm will be recognized by a series of three (3) short blasts on a car horn or air horn.
- Egress Procedures: When the alarm sounds, workers will suspend operations, disconnect or shut off equipment and proceed to the nearest exit and assembly point.
- The Buddy System: All work crews at the site will be comprised of at least two (2) people who after hearing the alarm, exit and remain together throughout the emergency. The Project Geologist will be responsible to account for the whereabouts of all persons on-site in the event of a fire.
- All Clear: After the Project Geologist has determined that the fire has been extinguished and that it is safe to resume site operations, the all clear signal will be given by word of mouth or by a series of three (3) long blasts on a car horn or air horn.

3. Notification

The following people will be notified:

- The local fire department (if necessary);
- The Project Geologist;
- The CHSO;
- The PM; and
- The appropriate client representative.

4.0 EXPLOSIVE AND SHOCK SENSITIVE MATERIALS

Although not expected, but part of this contingency plan, shock sensitive and/or explosive materials may be discovered during the course of this project. If discovered, the following sections would be consulted to minimize emergencies, which could develop from encounters with these materials.

1. Preventative Measures

Certain family chemical compounds such as perchlorates in the presence of carbonaceous materials and aziates can form spontaneously explosive materials. It is not anticipated that these compounds would retain their integrity unless isolated from surrounding soils by jars or bottles, or such. Similarly, black powder deteriorates rapidly if exposed to moisture. Other commercial explosives such as dynamite (nitroglycerin) deteriorate slowly in contact with (soil) moisture. Therefore, still hazardous explosive materials are more likely to be found in wooden or other non-metal containers.

Encounters with any unknown materials or containers should cause the following precautions to be taken:

- a. The Project Geologist/PM/CHSO will be notified.
- b. Operations at the Site will cease until the situation can be assessed.
- c. Containers should be examined for symbols or markings.
- d. A chemically trained person will review the findings and the situation and determine next steps (next steps could include the initiation of tests to determine the nature of the materials and/or consultation with an explosives expert or a HAZMAT team).

e. Suspect materials will be isolated until safe disposal can be arranged.

2. Response

In the event of an accidental explosion, the following procedures will be used:

- Workers in the immediate area will be assisted with evacuation as their condition and the situation permits;
- Injured parties will be treated according to the guidelines set forth in Section 2, and according to the extent of their injuries;
- The area will be evacuated and secured until assessed by an explosives expert; and
- The area will be kept secured until deemed safe to enter by the CHSO and entry is approved by the Project Manager.

3. Notification

The following people will be notified in the event of an unexpected explosion:

- All site personnel;
- Any necessary EM/RP, including ambulances;
- The Project Geologist;
- The CHSO;
- The PM;
- The appropriate client representative.

5.0 TOXIC GAS RELEASE

When working with compressed gas cylinders or containers having unknown contents, the possibility exists for an airborne release of gas or explosion.

1. Preventative Measures

- a. Workers must wear all protective clothing (gloves, respirators, tyveks, etc.) as designated in the site safety plan for the task that they are performing.
- b. Continuous air monitoring with direct reading instruments, or with individual indicator tubes appropriate to the suspected material, will be conducted during operations at the site.
- c. Wind indicators will be placed at the site, this includes the use of temporary flagging at each work location to immediately identify wind direction so that workers may escape upwind in the event of an emergency.

2. Response

- The predetermined evacuation alarm will be sounded, at which time workers will evacuate the site in an upwind direction, or at 90 degrees, to a designated assembly point.
- An attempt will be made to seal the gas leak by a properly trained team. The container will then be isolated and properly disposed by a properly trained team.
- After the situation has been controlled and the site deemed safe to enter by the CHSO and/or other designated health and safety experts, workers will resume their activities at the Site.

3. Notification

The following persons will be notified of a toxic gas release at the site:

- All appropriate EM/RP;
- The Project Geologist;
- The CHSO;
- The PM;
- Local health officials;
- The appropriate client representative.

6.0 RADIOACTIVE MATERIAL

Although not anticipated, but part of this contingency plan, radioactive materials may be encountered during the course of this project. If discovered, it would require temporary shut down of the work site until proper evaluation of the situation and monitoring can take place.

1. Preventative Measures

The measures that will be used to prevent an unexpected radioactive emergency are as follows:

- a. If radioactive materials are suspected, the entire site, all work areas, drums and containers encountered will be checked with a radiation survey meter during field operations.
- b. Repeat surveys will be conducted as required.

2. Response

The following procedures will be used in the event of a radioactive emergency:

- Based upon the strength of readings on real time instruments, evacuate the area. Evacuations are mandatory above two (2) mrem/hr;
- If possible, determine the source, nature and extent of the radioactivity;
- If possible, contain the radioactive substance.

3. Notification

In the event of a radioactive emergency, notify the following people:

- All site personnel;
- The Project Geologist;
- The CHSO;
- The PM;
- The Nuclear Regulatory Commission (NRC) and any other necessary Federal, State and Local Agencies;
- The appropriate client representative.

7.0 BIOLOGICAL HAZARDS

Certain floral and faunal communities (snakes, bees, ticks, biting insects, poison ivy, etc.) pose risks to the health and safety of workers at the site.

1. Preventative Measures

- a. Workers will be made aware of poisonous snakes or other potentially dangerous wildlife native to the area.
- b. Workers will periodically check themselves for the presence of ticks, especially when working in areas of thick brush or tall grass.
- c. Site personnel who are predisposed to allergic reactions to bee stings or poisonous plants will notify the Project Geologist / CHSO of their condition prior to the start of work.
- d. Workers will follow safe work habits and maintain good hygiene practices.

2. Response

The following responses will be taken to deal with biological hazards that present themselves during this project:

- Any site personnel who are bitten, stung or develop a rash will notify the Project Geologist, CHSO and PM.
- Workers who become ill on the job will be required to see a physician about the illness before being allowed to return to work.
- Biological hazards will be controlled by the use of repellents, traps, pesticides, etc. to the safest extent possible.

3. Notification

The following personnel will be notified in the event of a biological hazard:

- The EM/RP and the local hospital (if necessary);
- The Project Geologist;
- The CHSO;
- The PM;
- The appropriate Client representative.

8.0 CHEMICAL REACTION

The possibility exists for unexpected chemical reactions to occur any time that unknown materials are handled. The following measures will be taken to help prevent sudden chemical reactions from occurring or to minimize their effects.

1. Preventative Measures

- a. Whenever possible, known incompatible materials will be isolated from each other and from other unknown chemicals which may be reactive.
- b. Project personnel will be outfitted with appropriate respiratory and visual protection to minimize personal danger should an unexpected chemical reaction occur. If the materials are not identified, all personnel will evacuate the Site.

2. Response

- If possible, the reacting materials will be separated.
- If the reaction is severe and uncontrollable, the predetermined emergency signal will be sounded, the area will be immediately evacuated and continuous downwind air monitoring will commence until the situation is brought under control.

3. Notification

The following people will be notified in the event of a chemical reaction:

- The EM/RP and the local hospital (if necessary);
- All site personnel;
- The Project Geologist;
- The CHSO;
- The PM;
- The appropriate client representative.

9.0 SEVERE WEATHER

Severe weather conditions are defined as tornadoes, hurricanes, thunderstorms, rainstorms, ice storms, high winds, etc. which can create potential hazards for site personnel.

1. Preventative Measures

- a. Local weather reports will be noted each working day.
- b. Operations will not be started, or will be suspended, during severe weather.

2. Response

During severe weather the following response procedures will be used:

- Site operations will cease until, in the opinion of the Project Geologist, the severe weather has passed or subsided sufficiently to continue.
- If necessary, site personnel will be evacuated to a predetermined secure location until the severe weather passes.

3. Notification

The following people will be notified in the event of severe weather at the site:

- All site personnel;
- The Project Geologist;
- The CHSO;
- The PM;
- The appropriate Client representative.

10.0 DRUM/TANK OPENING AND HANDLING PROCEDURES

Although not anticipated during operations at the site, the possibility of encountering previously unknown drums and/or tanks exists. Proper handling and opening procedures are essential to maintaining adequate site safety.

1. Preventative Measures

- a. Upon encountering any drums or tanks, work at the location will cease until the situation can be assessed;
- b. Encountered drums and tanks will be reviewed for symbols, markings, graffiti, and labels which could help identify the contents; and
- c. Encountered drums and tanks will be inspected for signs of corrosion, such as rust or deterioration, and for signs that the contents may be under pressure, such as bulging or swelling.

2. Response

- All encountered drums and tanks will be screened with a 4-gas meter (O₂, CO, LEL, and H₂S), PID/FID and radiation detector as an aid to determine the container's contents and hazard potential.
- All encountered drums and tanks will be removed and disposed by trained HAZMAT personnel.

3. Notification

In the event that drums or tanks are encountered during site activities, the following personnel will be notified:

- All potentially affected site personnel;
- The Hazardous Materials Unit of the local fire department (if necessary);
- The Project Geologist;
- The CHSO;
- The PM;
- The appropriate client representative.

ATTACHMENT 2

PLAN ACCEPTANCE FORM
THE MANNIK & SMITH GROUP, INC.

