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April 27, 2012

Ms. Heidi-Marie Dudek
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233

Subject: **Field Activities Plan: Pre-Design Investigation – Phase III**
**3456 Oneida Street Site (NYSDEC Site 633049)**
**MACTEC Engineering and Consulting, P.C., Project No. 3612122232**

Dear Ms. Dudek:

MACTEC Engineering and Consulting, P.C. (MACTEC), under contract to the New York State Department of Environmental Conservation (NYSDEC), is submitting this Field Activities Plan (FAP) for Phase III of the Pre-design Investigation (PDI) at the 3456 Oneida Street site (Site); formerly the Madden Property Site, in New Hartford, Oneida County, New York (Figure 1). This FAP is being submitted under the NYSDEC Work Assignment #D007619-12, and in accordance with the Superfund Standby Contract between MACTEC and the NYSDEC.

## BACKGROUND

The primary objective of Phase III of the PDI is to evaluate further the extent of polychlorinated biphenyls (PCBs) contamination in surface and subsurface soils at abutting properties to the north and east of the Site. This FAP provides the scope of work and describes the tasks for implementing the investigation. This FAP identifies the following work elements:

- Installation and sampling of five (5) direct push soil borings in the gravel area between the Zimowski Foods building and the Mohawk Limited property parking area, located to the north of the Site.

- Installation and sampling of fourteen (14) direct push soil borings in the gravel/paved area north of the Site extending between the Zimowski Foods building and the train tracks.
- Installation and sampling of eight (8) direct push soil borings on the abutting railroad property located east of the Site. These locations were proposed for sampling during the Phase I effort but were not sampled because the property owners did not grant permission.
- Installation and sampling of five (5) on-Site geotechnical soil borings located along the eastern banks of the Sauquoit Creek.

A summary of these field tasks and methodologies are described in more detail in the following subsections. The sample IDs and analytical program are provided in Table 1. Proposed sample locations are shown on Figure 2.

## PREVIOUS INVESTIGATIONS

Previous investigations conducted at the Site include the 2006 Phase I Remedial Investigation, the 2007 Interim Remedial Measure (IRM) and the 2008 Supplemental Investigation. Analytical results from samples collected during these investigations indicate that concentrations of PCBs in surface soil, subsurface soil, and sediment at the Site are above applicable New York State Standards, Criteria and Guidance.

## RECENT INVESTIGATIONS

The initial phase of the PDI was conducted in October/November 2011, and supports findings from previous investigations, which indicate concentrations of PCBs in surface soil, subsurface soil, and sediment at the Site, are above the applicable New York State criterion. However, analytical results from this investigation indicated further investigations were needed to evaluate the extent of PCBs contamination in surface and subsurface soils and sediments at the Site, and on abutting properties to the north, west and south of the Site. Phase II field activities conducted in December 2011 demonstrated that the extent of PCBs in surface and subsurface soils need to be further defined on abutting properties to the north and east of the Site.

## FIELD OPERATIONS

Companion documents to this FAP that will govern the execution of the field exploration activities include MACTEC's Program Quality Assurance Program Plan (QAPP) (MACTEC, 2011b) and

Health and Safety Plan (HASP) (MACTEC, 2011a). In addition to these program documents, Appendix A provides details related to health and safety for on Site activities as presented in the Site-specific HASP.

Subcontractors chosen to support the field activities include:

- TestAmerica Laboratories, Inc. – will provide laboratory analytical services for PCBs and benzene, toluene, ethylbenzene, and xylene (BTEX) under direct contract to the NYSDEC;
- SJB Services, Inc. – will provide laboratory analytical services for the geotechnical gradation samples under subcontract to MACTEC
- GeoLogic NY, Inc. – will provide direct push and drilling services for collecting soil samples under subcontract to MACTEC.

**Health and Safety**

The Site-specific HASP is provided as Appendix A to this document. Based on available Site information, MACTEC anticipates that the PDI fieldwork will be conducted in Level D personal protection. Specific investigation activities and required level of personal protection are set forth in the Site-specific HASP. Criteria for upgrading or downgrading the specified level of protection are also provided in the Site-specific HASP. Additional health and safety requirements are set forth in the Program HASP (MACTEC, 2011a). Should Site conditions pose a threat to those present on-Site, and/or should Site conditions warrant an upgrade from Level D, as defined by the HASP, work will stop and the situation will be reevaluated by the NYSDEC and MACTEC. The New York State Department of Health Community Air Monitoring Plan will also be followed and is included in Appendix A.

**Mobilization**

Mobilization will include obtaining utility clearances for proposed locations, procurement of subcontractors, and the acquisition and coordination of supplies. The NYSDEC will be responsible for obtaining Site access.

## SITE INVESTIGATION ACTIVITIES

The following subsections describe the specific field investigation activities proposed for the Site and the rationale for the proposed activities. The sample IDs and analytical program is provided in Table 1. Proposed sample locations are shown on Figure 2, with exceptions as noted.

**Scope of Work**

Based on results from the previous phases of the PDI, and recent discussions with the NYSDEC project manager, further investigation to delineate the distribution of PCBs in surface and subsurface soils at abutting properties to the north of the Site is needed. The data will be used to further evaluate the vertical and horizontal distribution of contaminants in soils for use during Site remedial design. The planned sampling is as follows:

- Additional surface and subsurface soil sampling is planned at five (5) locations (DP-216 through DP-220) in the gravel area between the Zimowski Foods building and the Mohawk Limited property parking area, located to the north of the Site. Based on recent conversations with the NYSDEC project manager, as well as concentrations of hydrocarbons reported in the samples collected at location DP-215, planned samples in this area will be submitted for laboratory analysis of PCBs as well as BTEX.
- Fourteen (14) direct push soil borings (DP-221 through DP-234) are planned in the gravel/paved area north of the Site, extending between the Zimowski Foods building and the train tracks. Samples collected in this area will be submitted for laboratory analysis of PCBs. Sample locations are shown on Figure 2.
- Eight (8) direct push soil borings on the abutting railroad property located east of the Site are also planned (see Figure 2). These locations (DP-156, DP-157, DP-173, DP-174, DP-188, DP-189, DP-199, and DP-200) were initially proposed in October 2011 as part of the Pre-design Investigation Phase I effort. However, these locations were not sampled due to access restrictions. If permission is obtained, samples collected in this area will be submitted for laboratory analysis of PCBs. Sample locations are shown on Figure 2.
- Three (3) non-direct push soil samples (FP-014 to FP-016) are planned from a debris pile located north of the Site, just west of the train tracks. The pile, identified during preliminary remedial action activities conducted at the Site in early 2012, reportedly contains varying amounts of construction and demolition debris and is approximately 18 cubic yards in size. Samples from the pile are planned using hand tools (hand auger or shovel) and will be submitted for analysis of PCBs. The debris pile and sample locations are not shown on Figure 2. Selection of samples from the pile will be determined based on the observations made by the Site geologist.
- To evaluate the engineering properties and stability of soils along the eastern banks of the Sauquoit Creek, five (5) geotechnical soil borings (GT-001 to GT-005) will be advanced along the east side of the creek, spaced roughly 85 feet from each other (see Figure 2). The objective of these borings is to determine the fill-to-native soil transition depth, and to identify shallow fine-grained or organic layers, if present. Soil sampling within the borings will be conducted continuously (every two feet) until approximately 12-feet below ground surface (bgs). Sampling beyond 12 feet will be completed at five-foot intervals until the borings are terminated at 25 feet bgs or refusal surface, whichever is encountered first. Up to four (4) gradation samples and two (2) hydrometer samples will be submitted to the laboratory to determine the particle size distribution within the fill and native materials

present in this area of the creek. Selection of gradation samples from the five borings will be determined based on the observations made by the Site geologist.

Surface soil and subsurface soil sampling will be conducted as discussed in Subsection 4.5 of the QAPP. Soil samples for PCB analysis will be collected continuously from the ground surface to a planned maximum depth of approximately 8.3 feet bgs. The sample IDs and analytical program are provided in Table 1, including depth intervals to be sampled at each location. Surface soil will be collected directly from the ground surface to two inches below grade, or across the entire depth profile, as appropriate, using hand tools. Subsurface samples will be obtained using direct push methods. Following sample description, stainless steel spoons will be used to collect the soil, which will be homogenized in aluminum pie pans so that each sample container is representative of the whole. Photoionization detector headspace readings will be used to screen soil samples for the presence of volatile organic compounds (VOCs), and to identify soils for laboratory analysis. Samples will be described consistent the Unified Soil Classification System. The sample description and classification, VOC headspace reading, and boring observations will be recorded on a field data record as discussed in Subsection 4.5 of the QAPP. Approximately 101 soil samples, including quality control samples, will be collected and submitted to the off-site Laboratory for PCB analysis by United States Environmental Protection Agency Method 8082A as described in the NYSDEC Analytical Services Protocols of June 2005 (NYSDEC, 2005). Approximately 18 soil samples will be collected and submitted to the off-Site Laboratory for BTEX analysis by United States Environmental Protection Agency Method 8260C.

**Decontamination**

Sampling methods and equipment for this field program have been chosen to minimize decontamination requirements mitigating potential for cross contamination. Disposable sampling equipment will be used as much as practical to minimize decontamination time and water disposal. Non-disposable sampling equipment will be decontaminated before and after the collection of each sample as necessary.

Non-disposable sampling equipment will be decontaminated by washing the sample collection equipment with potable water and Liquinox, rinsing with potable water, rinsing with deionized water, and then allowing the equipment to air dry. If observable contamination is observed (e.g. oil), hexane will be used to further decontaminate the equipment. Drilling equipment (i.e. drill rods) will be decontaminated in a similar manner on a decontamination pad constructed at the Site.

Fluids generated during decontamination efforts could potentially contain soils contaminated with PCBs. Therefore, decontamination fluids will be discharged in a controlled manner to the ground surface in the area of construction and demolition debris (area of known contamination).

**Drill Cuttings**

Given the nature of contamination at Site, soil will be containerized in United States Department of Transportation (USDOT) 55-gallon drums for off-Site disposal during the future Site remedial action. Bentonite chips should be used for backfill of boring holes.

**Investigation Derived Wastes**

The method of disposing investigation-derived wastes (IDW) generated during this PDI will be based upon whether the wastes are considered hazardous or non-hazardous. The approach to field screening and handling of the IDW are described in the following paragraphs.

USDOT approved 55-gallon containers filled during the field investigation will be staged on Site in an area designated by the NYSDEC. Transport and disposal of these containers will be arranged during the future Site remedial action. Containers will be labeled with the following information: drum contents; Site name and the NYSDEC Site Number; and date drum filling began and date drum was sealed.

**Disposable Sampling Equipment/Personal Protective Equipment**

Used disposable equipment and personal protective clothing will be double bagged in polyethylene trash bags and sealed with twist ties. The disposable equipment will be disposed of as nonhazardous municipal solid waste.

## REPORTING

MACTEC will present the findings of the PDI in a letter report to the NYSDEC, which will include discussion of the work performed, supporting field documents, tabulated data results, and figures.

## SCHEDULE

MACTEC anticipates that fieldwork will commence in May 2012.

If you have any questions or concerns, please feel free to call us at 207-775-5401.

Sincerely,

**MACTEC Engineering and Consulting, P.C.**

Lucas J. Benedict
Project Scientist

Jeffrey S. Pickett
Principal Professional

cc: File

## REFERENCES

MACTEC Engineering and Consulting, P.C. (MACTEC), 2011a. Program Health and Safety Plan. Prepared for New York State Department of Environmental Conservation, Albany, New York. June 2011.

MACTEC Engineering and Consulting, P.C. (MACTEC), 2011b. Field Activities Plan & Quality Assurance Program Plan. Prepared for the New York State Department of Environmental Conservation, Albany, New York. June 2011.

New York State Department of Environmental Conservation (NYSDEC), 2005. "Analytical Services Protocols"; 6/05 Edition; June 2005.

## LIST OF ACRONYMS

| | |
|---|---|
| Bgs | below ground surface |
| BTEX | benzene, toluene, ethylbenzene, xylene |
| FAP | Field Activities Plan |
| HASP | Health and Safety Plan |
| IDW | investigation derived waste |
| IRM | Interim Remedial Measure |
| MACTEC | MACTEC Engineering & Consulting, P.C. |
| NYSDEC | New York State Department of Environmental Conservation |
| PCBs | polychlorinated biphenyls |
| PDI | Pre-Design Investigation |
| QAPP | Quality Assurance Program Plan |
| Site | 3456 Oneida Street site |
| USDOT | United States Department of Transportation |
| VOC | volatile organic compound |

# TABLES

# Table 1: Proposed Sample Identification and Analyses

| | | | | | | Analysis Method | PCBs - 8082A; Percent Moisture | VOCs - 8260C (BTEX) | PCBs - 8082A | Gradation ASTM D 422 | Additional Information |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Lab Id | TestAmerica | TestAmerica | TestAmerica | SJB | |
| | | | | | | Number Needed | 1 | 4 | 2 | 1 | |
| | | | | | | Bottle Size | 4 | 40 | 1 | 8 | |
| | | | | | | Bottle Size Units | ounce | mL | liter | oz | |
| | | | | | | Bottle Material | Glass Jar | Glass Vial | Glass Jar | Glass Jar | |
| | | | | | | Preservative | 4 Deg C | Methanol/4 Deg C | 4 Deg C | 4 Deg C | |
| **Site Type** | **Media** | **Loc Name** | **Field Sample Id** | **Sample Interval** | **Qc Code** | | | | | | |
| **Direct Push Soil Borings** | | | | | | | | | | | |
| Direct Push | Soil | DP-216 | MPDP21600012XX | Upper two (2) inches (0"-2") | FS | | X | X | | | |
| Direct Push | Soil | DP-216 | MPDP21600012XD | Upper two (2) inches (0"-2") | FD | | X | X | | | |
| Direct Push | Soil | DP-216 | MPDP21600012MS | Upper two (2) inches (0"-2") | MS | | X | X | | | |
| Direct Push | Soil | DP-216 | MPDP21600012MD | Upper two (2) inches (0"-2") | MSD | | X | X | | | |
| Direct Push | Soil | DP-216 | MPDP21600212XX | 1.8 ft - 2.3 ft | FS | | X | X | | | |
| Direct Push | Soil | DP-216 | MPDP21600412XX | 3.8 ft - 4.3 ft | FS | | X | X | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-217 | MPDP21700012XX | Upper two (2) inches (0"-2") | FS | | X | X | | | |
| Direct Push | Soil | DP-217 | MPDP21700212XX | 1.8 ft - 2.3 ft | FS | | X | X | | | |
| Direct Push | Soil | DP-217 | MPDP21700412XX | 3.8 ft - 4.3 ft | FS | | X | X | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-218 | MPDP21800012XX | Upper two (2) inches (0"-2") | FS | | X | X | | | |
| Direct Push | Soil | DP-218 | MPDP21800212XX | 1.8 ft - 2.3 ft | FS | | X | X | | | |
| Direct Push | Soil | DP-218 | MPDP21800412XX | 3.8 ft - 4.3 ft | FS | | X | X | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-219 | MPDP21900012XX | Upper two (2) inches (0"-2") | FS | | X | X | | | |
| Direct Push | Soil | DP-219 | MPDP21900212XX | 1.8 ft - 2.3 ft | FS | | X | X | | | |
| Direct Push | Soil | DP-219 | MPDP21900412XX | 3.8 ft - 4.3 ft | FS | | X | X | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-220 | MPDP22000012XX | Upper two (2) inches (0"-2") | FS | | X | X | | | |
| Direct Push | Soil | DP-220 | MPDP22000212XX | 1.8 ft - 2.3 ft | FS | | X | X | | | |
| Direct Push | Soil | DP-220 | MPDP22000412XX | 3.8 ft - 4.3 ft | FS | | X | X | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-221 | MPDP22100012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-221 | MPDP22100212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-221 | MPDP22100412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-222 | MPDP22200012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-222 | MPDP22200212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-222 | MPDP22200412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-223 | MPDP22300012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-223 | MPDP22300012XD | Upper two (2) inches (0"-2") | FD | | X | | | | |
| Direct Push | Soil | DP-223 | MPDP22300012MS | Upper two (2) inches (0"-2") | MS | | X | | | | |
| Direct Push | Soil | DP-223 | MPDP22300012MD | Upper two (2) inches (0"-2") | MSD | | X | | | | |
| Direct Push | Soil | DP-223 | MPDP22300212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-223 | MPDP22300412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-224 | MPDP22400012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-224 | MPDP22400212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-224 | MPDP22400412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-225 | MPDP22500012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-225 | MPDP22500212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-225 | MPDP22500412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-226 | MPDP22600012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-226 | MPDP22600212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-226 | MPDP22600412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-227 | MPDP22700012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |

Prepared By: LJB 4/11/12
Checked By: TDL 4/18/12

## Table 1: Proposed Sample Identification and Analyses

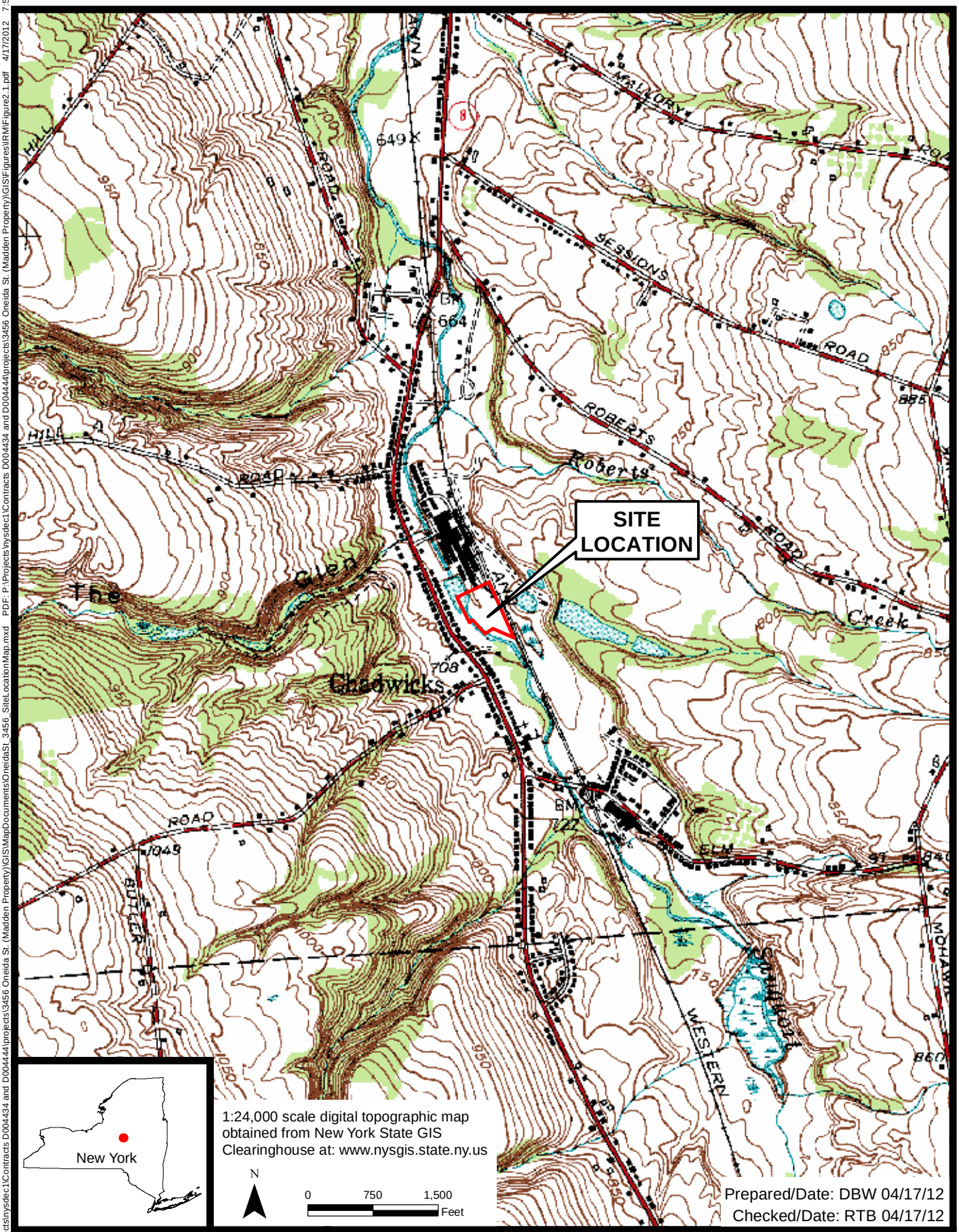
| | | | | | | Analysis Method | PCBs - 8082A; Percent Moisture | VOCs - 8260C (BTEX) | PCBs - 8082A | Gradation ASTM D 422 | Additional Information |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Lab Id | TestAmerica | TestAmerica | TestAmerica | SJB | |
| | | | | | | Number Needed | 1 | 4 | 2 | 1 | |
| | | | | | | Bottle Size | 4 | 40 | 1 | 8 | |
| | | | | | | Bottle Size Units | ounce | mL | liter | oz | |
| | | | | | | Bottle Material | Glass Jar | Glass Vial | Glass Jar | Glass Jar | |
| | | | | | | Preservative | 4 Deg C | Methanol/4 Deg C | 4 Deg C | 4 Deg C | |
| **Site Type** | **Media** | **Loc Name** | **Field Sample Id** | **Sample Interval** | **Qc Code** | | | | | | |
| Direct Push | Soil | DP-227 | MPDP22700212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-227 | MPDP22700412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-228 | MPDP22800012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-228 | MPDP22800212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-228 | MPDP22800412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-229 | MPDP22900012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-229 | MPDP22900212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-229 | MPDP22900412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-230 | MPDP23000012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-230 | MPDP23000012XD | Upper two (2) inches (0"-2") | FD | | X | | | | |
| Direct Push | Soil | DP-230 | MPDP23000012MS | Upper two (2) inches (0"-2") | MS | | X | | | | |
| Direct Push | Soil | DP-230 | MPDP23000012MD | Upper two (2) inches (0"-2") | MSD | | X | | | | |
| Direct Push | Soil | DP-230 | MPDP23000212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-230 | MPDP23000412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-231 | MPDP23100012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-231 | MPDP23100212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-231 | MPDP23100412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-232 | MPDP23200012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-232 | MPDP23200212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-232 | MPDP23200412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-233 | MPDP23300012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-233 | MPDP23300212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-233 | MPDP23300412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-234 | MPDP23400012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-234 | MPDP23400212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-234 | MPDP23400412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-156 | MPDP15600012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-156 | MPDP15600212XX | 1.8 ft - 2.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-157 | MPDP15700012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-157 | MPDP15700212XX | 1.8 ft - 2.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-173 | MPDP17300012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-173 | MPDP17300012XD | Upper two (2) inches (0"-2") | FD | | X | | | | |
| Direct Push | Soil | DP-173 | MPDP17300012MS | Upper two (2) inches (0"-2") | MS | | X | | | | |
| Direct Push | Soil | DP-173 | MPDP17300012MD | Upper two (2) inches (0"-2") | MSD | | X | | | | |
| Direct Push | Soil | DP-173 | MPDP17300212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-173 | MPDP17300412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-174 | MPDP17400012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-174 | MPDP17400212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-174 | MPDP17400412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-188 | MPDP18800012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-188 | MPDP18800212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |

## Table 1: Proposed Sample Identification and Analyses

| | | | | | | Analysis Method | PCBs - 8082A; Percent Moisture | VOCs - 8260C (BTEX) | PCBs - 8082A | Gradation ASTM D 422 | Additional Information |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Lab Id | TestAmerica | TestAmerica | TestAmerica | SJB | |
| | | | | | | Number Needed | 1 | 4 | 2 | 1 | |
| | | | | | | Bottle Size | 4 | 40 | 1 | 8 | |
| | | | | | | Bottle Size Units | ounce | mL | liter | oz | |
| | | | | | | Bottle Material | Glass Jar | Glass Vial | Glass Jar | Glass Jar | |
| | | | | | | Preservative | 4 Deg C | Methanol/4 Deg C | 4 Deg C | 4 Deg C | |
| **Site Type** | **Media** | **Loc Name** | **Field Sample Id** | **Sample Interval** | **Qc Code** | | | | | | |
| Direct Push | Soil | DP-188 | MPDP18800412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-189 | MPDP18900012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-189 | MPDP18900212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-189 | MPDP18900412XX | 3.8 ft - 4.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-189 | MPDP18900612XX | 5.8 ft - 6.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-189 | MPDP18900812XX | 7.8 ft - 8.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| Direct Push | Soil | DP-199 | MPDP19900012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-199 | MPDP19900212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-199 | MPDP19900412XX | 3.8 ft - 4.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-199 | MPDP19900612XX | 5.8 ft - 6.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-199 | MPDP19900812XX | 7.8 ft - 8.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-200 | MPDP20000012XX | Upper two (2) inches (0"-2") | FS | | X | | | | |
| Direct Push | Soil | DP-200 | MPDP20000012XD | Upper two (2) inches (0"-2") | FD | | X | | | | |
| Direct Push | Soil | DP-200 | MPDP20000012MS | Upper two (2) inches (0"-2") | MS | | X | | | | |
| Direct Push | Soil | DP-200 | MPDP20000012MD | Upper two (2) inches (0"-2") | MSD | | X | | | | |
| Direct Push | Soil | DP-200 | MPDP20000212XX | 1.8 ft - 2.3 ft | FS | | X | | | | |
| Direct Push | Soil | DP-200 | MPDP20000412XX | 3.8 ft - 4.3 ft | FS | | X | | | | Lab to hold pending further instructions |
| **Debris/Fill Pile Samples** | | | | | | | | | | | |
| Fill Pile | Soil | FP-014 | MPFP014___12XX | - | FS | | X | | | | Samples based on observations made by the Site geologist during sampling |
| Fill Pile | Soil | FP-015 | MPFP015___12XX | - | FS | | X | | | | |
| Fill Pile | Soil | FP-016 | MPFP016___12XX | - | FS | | X | | | | |
| **Geotechnical Soil Borings** | | | | | | | | | | | |
| Geotechnical Soil Boring | Soil | GT-001 | MPGT001___12XX | - | FS | | | | | X | Samples submitted for analysis based on observations made by the Site geologist during sampling; 4 samples planned for analysis |
| Geotechnical Soil Boring | Soil | GT-002 | MPGT002___12XX | - | FS | | | | | X | |
| Geotechnical Soil Boring | Soil | GT-003 | MPGT003___12XX | - | FS | | | | | | |
| Geotechnical Soil Boring | Soil | GT-004 | MPGT004___12XX | - | FS | | | | | X | |
| Geotechnical Soil Boring | Soil | GT-005 | MPGT005___12XX | - | FS | | | | | X | |
| **Rinsate/Equipment Blanks** | | | | | | | | | | | |
| Equipment Blank | Water | QS-12 | MPQS012XXX12XX | - | EB | | | | X | | |
| Equipment Blank | Water | QS-13 | MPQS013XXX12XX | - | EB | | | | X | | |
| Equipment Blank | Water | QS-14 | MPQS014XXX12XX | - | EB | | | | X | | |
| Equipment Blank | Water | QS-15 | MPQS015XXX12XX | - | EB | | | | X | | |
| Equipment Blank | Water | QS-16 | MPQS016XXX12XX | - | EB | | | | X | | |
| **Total Samples** | | | | | | | **101** | **18** | **5** | **4** | |

**NOTES:**
PCBs 8082A = Analyzed by EPA method 8082A for soil and water.
VOCs 8260C = Analyzed by EPA method 8260C for soil
ft = feet
Quality Control samples (duplicates, matrix spike, matrix spiked duplicates) will be collected at a frequency of 5% (1:20 samples).

# FIGURES




NYSDEC
3456 Oneida Street
New Hartford, NY

MACTEC

Site Location
Project 3612-12-2232
Figure 1


LEGEND:

DP-216 PROPOSED SOIL BORING

REFERENCES:

BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON DRAWING ENTITLED "ALTA/ACSM LAND TITLE SURVEY FOR THE 3456 ONEIDA STREET SITE, NYSDEC SITE NO. 633049, TOWN OF NEW HARTFORD, COUNTY OF ONEIDA, STATE OF NEW YORK" DATED SEPTEMBER 23, 2011, BY POPLI DESIGN GROUP.

0 25 50 100
SCALE IN FEET

Prepared/Date: JVM 02/24/2012
Checked/Date: KLS 02/24/2012

NYSDEC
3456 ONEIDA STREET SITE
NEW HARTFORD, NEW YORK

MACTEC

PROPOSED PRE-DESIGN INVESTIGATION
SAMPLING LOCATIONS
Project 3612-12-2232
Figure 2

# APPENDIX A

# MACTEC SHORT FORM HASP

MACTEC, Inc.

# MACTEC Short Form HASP

THIS HASP MUST BE USED WITH THE NYSDEC PROGRAM HASP

Site: 3456 Oneida Street RD Job/Task Number: 3612112186

Street Address: 3456 Oneida Street, New Hartford, New York

Proposed Date(s) of Investigation: October /November 2011

Prepared by: Lucas J. Benedict Date: 9/25/2011

*Approved by: Kendra Bavor, CSP, HSEC Date: 10-4-2011

Site Description: **(attach map)** The 3456 Oneida Street property is a vacant parcel with areas of construction and demolition debris (C&D) disposal located mostly at the southern end. The abutting properties include residential, commercial, and industrial development. The abutting property to the north is commercially developed with current ongoing operations. The property to the east is an active railway.

Proposed Activities: Direct push soil sampling, surface soil sampling, soil sampling using hand auger/hand tools

*Approval also serves as certification of a Hazard Assessment as required by 29 CFR 1910.132

**Tasks:**

| MACTEC | Subcontractor | Task Description |
|---|---|---|
| ☒ | ☐ | Soil Sampling |
| ☐ | ☒ | (Parratt-Wolff) Direct Push Drilling Services, IDW management |
| ☐ | ☒ | (Parratt-Wolff) Utility clearance activities |
| ☐ | ☐ | |

**Dates of Required Training and Medical Surveillance** (add additional training topics, as required):

| Name | Jerry Rawcliffe | Ryan Mankowski | Lucas Benedict | THOMAS LONGLEY |
|---|---|---|---|---|
| 0.05Job duties | ~~FOL/HSO~~ (B) 10/13/11 | | | FOL / HSO |
| | Dates | Dates | Dates | Dates |
| Medical Surveillance | 9/16/2011 | 6/28/2011 | 3/31/2011 | 9/2011 |
| 40-Hour Initial | 5/1/1985 | 6/7/2007 | 3/20/2004 | 1/1/1986 |
| 8-Hour Supervisor [3] | 8/1/1995 | | 9/9/2005 | 6/10/1992 |
| 8-Hour Refresher | 6/9/2011 | 6/9/2011 | 4/28/2011 | 6/9/2011 |
| First Aid | | 4/26/2010 | 8/25/2010 | 4/9/2012 |
| CPR | | 4/26/2010 | 8/25/2010 | 4/9/2012 |
| Hazard Communication | 6/9/2011 | 6/9/2011 | 3/9/2009 | |
| | | | | |

10/13/2011

[2] At least one worker must be trained in First Aid/CPR and should received Bloodborne Pathogen Training

[3] Required for Field Lead and Site Health and Safety Officer

**Known or Suspected Contaminants (include PELs/TLVs):**

| Contaminants of Concern (COC) (Attach Fact Sheets*) | Maximum Concentrations | | PEL/TLV |
|---|---|---|---|
| | Soil (mg/kg) | Water/Groundwater (µg/l) | |
| PCBs | 8,900 | NA | 0.5 mg/m3 |
| Lead | 2,200 | NA | 0.05 mg/m3 |

*Workers must be made aware of the signs, symptoms, and first aid for each COC. Information is located on the COC fact sheets.

**Air Monitoring Action Levels:**

| PID/FID Reading[1] | Detector Tube[1] | Dust Meter[1] | LEL[2]/$O_2$[1] | Action |
|---|---|---|---|---|
| | | 1.3 mg/m3 | | Cease work, implement engineering controls to minimize dust. (respirable) |
| | | | >10% LEL | Stop work. Evacuate area. Consider return with ventilation system and spark proof/intrinsically safe equipment. |
| | | | <19.5% $O_2$ | Stop work and evacuate area. |

[1] Sustained readings measured in the breathing zone
[2] Readings at measured at the source (borehole, well, etc.)

**JHAs: Check and attach all that apply (add applicable JHAs not already listed):**

**Activity Specific JHAs:**

| | |
|---|---|
| ☒ | Mobilization/Demobilization and Site Preparation [1] |
| ☐ | Field Work - General[1] |
| ☒ | Field Work - Oversight1 |
| ☒ | Decontamination[1] |
| ☒ | Utility Clearance Activities |
| ☐ | Groundwater Sampling[1] |
| ☐ | Soil Sampling[1] |
| ☐ | Drilling Operation (MACTEC Driller) |
| ☐ | Geoprobe (MACTEC Geoprobe Operator) |
| ☐ | Excavations and Backfilling[1] |
| ☒ | Stream/Wetlands Work[1] |

**Hazard Specific JHAs:**

| | |
|---|---|
| ☒ | Insect Stings and Bites[1] |
| ☐ | Gasoline |
| ☐ | Working with Preservatives (Acids) [1] |
| ☐ | Poisonous Plants |
| ☒ | Soil Sample w Hand Auger, Hand Tools |
| ☐ | Soil Sampling |
| ☐ | Working in Mud Areas |
| ☒ | Working Near Railroads |
| ☐ | |
| ☐ | |
| ☐ | |

**[1] JHA included in NYSDEC Program HASP.**

## HAZARD IDENTIFICATION SUMMARY

**Refer to the MACTEC Long Form JHA for each task and enter the information into the HAZARDS and PPE summary tables below.**

Complete the checklist for summarizing the hazards identified in the JHAs

| **Standard Hazards** | | | |
|---|---|---|---|
| ☐ Falling Objects | ☒ Slips and trips | ☒ Pinch points | ☐ Rotating equipment |
| ☒ Falls | ☒ Power equipment/tools | ☐ Elevated work surfaces | ☐ _____ |

| **Eye Hazards** | | | |
|---|---|---|---|
| ☒ Particulates | ☐ Liquid splashes | ☐ Welding Arc | ☐ _____ |

| **Hearing Hazards** | | | |
|---|---|---|---|
| ☐ None | ☒ Impact noise | ☐ High frequency noise | ☐ High ambient noise |

| **Respiratory Hazards** | | | | | | |
|---|---|---|---|---|---|---|
| ☐ None | ☒ Dust/aerosols/particulates | ☒ Organic Vapors | ☐ Acid Gases | ☐ $O_2$ deficient | ☒ Metals | ☐ Asbestos |

| **Chemical Hazards** | | | |
|---|---|---|---|
| ☐ None | ☒ Organic solvents | ☐ Reactive metals | ☒ PCBs |
| ☐ Acids / bases | ☐ Oxidizers | ☒ Volatiles/Semi-volatiles | ☐ _____ |

| **Environmental Hazards** | | | | |
|---|---|---|---|---|
| ☐ None | ☒ Cold Stress | ☐ Heat Stress | ☒ Wet location | ☒ Bio hazards (snakes, insects, spiders, poisonous plants, etc.) |
| ☐ Explosive vapors | ☐ Confined space | ☐ Engulfment Hazard | ☐ _____ | |

| **Electrical Hazards** | | | | |
|---|---|---|---|---|
| ☐ None | ☐ Energized equipment or circuits | ☒ Overhead utilities | ☒ Underground utilities | ☐ Wet location |

| **Fire Hazards** | | | |
|---|---|---|---|
| ☒ None | ☐ Cutting, welding, or grinding generated sparks or heat sources | ☐ Flammable materials present | ☐ Oxygen enriched location |

| **Ergonomic Hazards** | | | | | |
|---|---|---|---|---|---|
| ☒ Lifting | ☒ Bending | ☐ Twisting | ☐ Pulling/tugging | ☐ Repetitive motion | ☒ Carrying |

| | | | | | | |
|---|---|---|---|---|---|---|
| Computer Use in the: ☐ Office ☒ Field | | | ☐ _____ | | ☐ _____ | |
| **Radiological Hazards** | | | | | | |
| ☒ None | ☐ Alpha | ☐ Beta | ☐ Gamma/X-rays | ☐ Neutron | ☐ Radon | ☐ Non-Ionizing |
| **Other Hazards** | | | | | | |
| ☐ | | | | | | |

## PPE and Monitoring Instruments

| | | | | | |
|---|---|---|---|---|---|
| **Initial Level of PPE *** | | | | | |
| ☐ Level D | ☒ Modified Level D | ☐ Level C | * Cannot use Short Form HASP for Level B or A work | | |
| **Standard PPE** | | | | | |
| ☒ Hard Hat | ☒ Safety boots | ☒ Safety glasses | ☐ Chem. Resistant Boots | ☒ High visibility vest | ☐ Other:_____ |
| **Eye and Face Protection** | | | | | |
| ☐ Face shield | ☐ Vented goggles | ☐ Unvented goggles | ☐ Indirect vented goggles | | |
| **Hearing Protection** | | | | | |
| ☒ Ear plugs | ☒ Ear Muffs | ☐ Ear plugs and muffs | ☐ Other _____ | | |
| **Respiratory Protection** | | | | | |
| ☒ None | ☐ Dust mask | ☐ Full Face APR | ☐ Half Face APR | Cartridge Type: _____ | Change Cartridges: _____ |
| **Protective Clothing** | | | | | |
| ☒ Work uniform | ☐ White uncoated Tyvek® | ☐ Poly-coated Tyvek® | ☐ Saranex® | | |
| ☐ Boot covers | ☒ Reflective vest | ☐ Chaps or Snake Legs | ☐ Other _____ | | |
| **Hand Protection** | | | | | |
| ☐ None | ☐ Cotton gloves | ☐ Leather gloves | ☐ Glove liners | ☒ Cut-resistant gloves | ☐ Other _____ |
| ☐ Outer Gloves: List Type_____ | | ☒ Inner Gloves: Nitrile_____ | | | |
| **Monitoring Instruments Required*** | | | | | |
| Periodic monitoring shall be conducted when the possibility of an IDLH condition or flammable atmosphere has developed or when there is indication that exposures may have risen over permissible exposure limits or published exposure levels since prior monitoring. Situations where it shall be considered whether the possibility that exposures have risen are as follows:<br>▪ When work begins on a different portion of the site.<br>▪ When contaminants other than those previously identified are being handled.<br>▪ When a different type of operation is initiated (e.g., drum opening as opposed to exploratory well drilling.)<br>▪ When employees are handling leaking drums or containers or working in areas with obvious liquid contamination (e.g., a spill or lagoon.) | | | | | |
| ☐ LEL/O2 Meter | ☒ PID: ☒ 10.0-10.6 eV Lamp ☐ 11.7 eV Lamp | | ☐ FID | ☐ Hydrogen Sulfide/Carbon Monoxide | |
| ☐ Dräger Pump (or equivalent) List Tubes_Vinyl Chloride 0.5/b | ☒ Dust Meter: ☒ Respirable dust ☐ Total dust | | ☐ Other _____ | | |

*Monitoring instruments will be calibrated daily in accordance with manufacturer's instructions. Results will be recorded in the field logbook.

**Chemicals Brought to the Site:**
List all chemicals brought to the site (e.g., preservatives, decon solutions, calibration gases, gasoline, etc.).

| **Chemicals** (Note: Name listed must match name on label and MSDS) | **MSDS Attached?** |
|---|---|
| **LIQUINOX** | ☒ |
| **HEXANE** | ☒ |
| **ISOBUTYLENE IN AIR** | ☒ |
| | ☐ |
| | ☐ |

Chemicals will be kept in their original containers. If transferred to another container, aside from days use by one individual, the new container will be labeled with the name of the chemical and the hazard warnings.

**Work Zones:**
The work zones will be defined relative to the location of the work activity. The Exclusion Zone is considered the area within a 10-foot diameter of the sampling location. The Contamination Reduction Zone is considered to be the area with in a 20-foot diameter of the sampling location. The decontamination zone is to be located upwind of the work area. Work zones will be maintained through the use of:

☐ Warning Tape
☐ Cones and Barriers
☒ Visual Observations

**Decontamination Procedures and Equipment:**
Note: See Decontamination JHA for further information

**Level D Decontamination Procedures**

| | |
|---|---|
| Decontamination Solution: | Detergent and Water |
| Station 1: Equipment Drop | Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, etc. on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool-down station may be set up within this area. |
| Station 2: Outer Boots, and Gloves Wash and Rinse (if worn) | Scrub outer boots, and outer gloves decon solution or detergent water. Rinse off using copious amounts of water. |
| Station 3: Outer Boot and Glove Removal (if worn) | Remove outer boots and gloves. Deposit in plastic bag. |
| Station 4: Inner glove removal | Remove inner gloves and place in plastic bag. |
| Station 5: Field Wash | Hands and face are thoroughly washed. Shower as soon as possible. |

**Modified Level D and Level C PPE Decontamination Procedures**

| | |
|---|---|
| Decontamination Solution: | Detergent and Water |
| Station 1: Equipment Drop | Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, etc. on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool-down station may be set up within this area. |
| Station 2: Outer Garment, Boots, and Gloves Wash and Rinse | Scrub outer boots, outer gloves, and splash suit with decon solution or detergent water. Rinse off using copious amounts of water. |

| | |
|---|---|
| Station 3: Outer Boot and Glove Removal | Remove outer boots and gloves. Deposit in container with plastic liner. |
| Station 4: Canister or Mask (Level C only) Change | If worker leaves exclusion zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot covers are donned, joints are taped, and worker returns to duty. |
| Station 5: Boot, Gloves and Outer Garment Removal | Boots, chemical resistant splash suit, and inner gloves are removed and deposited in separate containers lined with plastic. |
| Station 6: Face Piece Removal (Level C only) | Facepiece is removed. Avoid touching face with fingers. Facepiece is deposited on plastic sheet. |
| Station 7: Field Wash | Hands and face are thoroughly washed. Shower as soon as possible. |

**Site Communication:**

- ☒ Verbal
- ☐ Two-way radio
- ☒ Cellular telephone
- ☐ Hand signals
  - Hand gripping throat ---------- Out of air, can't breathe
  - Grip partner's wrist or both hands around waist ---------- Leave area immediately
  - Hands on top of head ---------- Need assistance
  - Thumbs up ---------- OK, I am all right, I understand
  - Thumbs down ---------- No, negative
- ☐ Horn
- ☐ Siren
- ☐ Other:

## EMERGENCY CONTACTS

| NAME | TELEPHONE NUMBERS | | DATE OF PRE-EMERGENCY NOTIFICATION (if applicable) |
|---|---|---|---|
| Fire Department: | 911 | | |
| Hospital: | 911 | | |
| Police Department: | 911 | | |
| Site FOL/HSO: Jerry Rawcliffe | Office: 207-828-3614 | Cell: | |
| Client Contact: William Bennett | Office: 518-402-9662 | Cell: | |
| Project Manager: Mark Stelmack | Office: 207-828- 3592 | Home: 207-839-2311 | |
| Division EH&S Manager: Cindy Sundquist | Office: 207-828-3309 | Cell: 207-650-7593<br>Home: 207-892-4402 | |
| EPA/DEC (if applicable): | NA | NA | |
| OTHER: Ambulance | 911 | | |

**Emergency Equipment:**
The following emergency response equipment is required for this project and shall be readily available:

- ☒ Field First Aid Kit (including bloodborne pathogen kit/supplies)
- ☐ Fire Extinguisher (ABC type)
- ☐ Eyewash (Note: 15 minutes of free-flowing fresh water)
- ☐ Other: _____

**AMEC Early Injury Case Management Program**

| NON-EMERGENCY INCIDENT | EMERGENCY INCIDENT |
|---|---|
| Steps 1 & 2 must be completed before seeking medical attention other than local first aid.<br>1. Provide first-aid as necessary. Report the situation to your immediate supervisor AND HSE coordinator (all incidents with the apparent starting event should be reported within 1 hour of occurrence).<br>2. Injured employee: | 1. Provide emergency first aid. Supervisor on duty must immediately call 911 or local emergency number; no employee may respond to outside queries without prior authorization. Any outside media calls concerning this incident must be referred immediately to the predetermined rally point as discussed in the daily safety tailgate briefing/ meeting.<br>2. Once medical attention is sought and provided, the supervisor must: |
| **Call WorkCare 24/7 Hotline*<br>(888) II-XPRTS or (888) 449-7787** | |
| WorkCare will assess the situation and determine whether the incident requires further medical attention. During this process, WorkCare will perform the following:<br>• Explain the process to the caller.<br>• Determine the nature of the concern.<br>• Provide appropriate medical advice to the caller.<br>• Determine appropriate path forward with the caller.<br>• Maintain appropriate medical confidentiality.<br>• Help caller to execute path forward, including referral to the appropriate local medical facility.<br>• Send an email notification to the Corporate HSE Department. | WorkCare will be responsible for performing the following:<br>• Contact the treating physician.<br>• Request copies of all medical records from clinic.<br>• Send an email update to the Corporate HSE Department. |
| 3. IMMEDIATELY after contacting WorkCare send a brief email notification AND inform verbally (direct contact is required) ONE of HSE corporate representatives See Figure 11.3.<br>4. Make all other local notifications and client notifications.<br>5. Local Supervisor, HSE Coordinator, SSHO and any applicable safety committees to complete preliminary investigation, along with the initial Incident Report within 24 hours.<br>6. Corporate Loss Prevention Manager to complete Worker's Compensation Insurance notifications as needed.<br>7. Corporate HSE to conduct further incident notifications, investigation, include in statistics, classify, | |

and develop lessons learned materials.

* - **NOTE: Step 2 is only applicable to the North-American operations and to incidents involving AMEC personnel. High potential near misses, subcontractors' incidents, regulatory inspections, spills and property damages above $1,000 should be reported immediately, following directions from Step 3.**

**Site Specific Procedures are as follows:**

Railway safety training to be conducted onsite by representative designated by rail line on the first day of the field program.
All site workers shall review and document training/ medical monitoring with regard to the OSHA lead standard.

**FIELD TEAM REVIEW:** I acknowledge that I understand the requirements of this HASP, and agree to abide by the procedures and limitations specified herein. I also acknowledge that I have been given an opportunity to have my questions regarding the HASP and its requirements answered prior to performing field activities. Health and safety training and medical surveillance requirements applicable to my field activities at this site are current and will not expire during on-site activities.

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

# Incident Flow Chart

## Call Within 60 Minutes

**Incident Occurs**

- **EMERGENCY** → CALL 911 EMERGENCY → **Supervisor Immediately Calls** After Medical Attention is Sought and Provided → **Contact Supervisor HSE Coordinator and WorkCare (24/7) Hotline (888) II-XPRTS or (888) 449-7787**
- **NON-EMERGENCY** → *Within 60 Minutes* → **Contact Supervisor HSE Coordinator and WorkCare (24/7) Hotline (888) II-XPRTS or (888) 449-7787**

*Verbally Contact One HSE Representative Below Within 2 Hours*

## E&I Corporate HSE Department Contacts List

| Name/E-Mail | Office Location | Contact Information |
|---|---|---|
| Bruce Voss<br>bruce.voss@amec.com | Cathedral City, CA | 760.202.3737 (office)<br>951.897.6381 (cell) |
| Chad Barnes<br>chad.barnes@amec.com | Tempe, AZ | 480.940.2320 (office)<br>480.495.9846 (cell) |
| Cindy Sundquist<br>cynthia.sundquist@amec.com | Portland, ME | 207.828.3309 (office)<br>207.650.7593 (cell)<br>207.892.4402 (home) |
| Don Kubik<br>don.kubik@amec.com | Oakland, CA | 510.663.4100 (office)<br>510.368.6433 (cell) |
| Gabe Sandholm<br>gabe.sandholm@amec.com | Minneapolis, MN | 612.252.3785 (office)<br>425.698.9156 (cell) |
| Howard Gordon<br>howard.gordon@amec.com | Golden, CO | 303.273.5041 (office)<br>303.888.3233 (cell) |
| John Mazur<br>john.mazur@amec.com | Wilmington, NC | 910.452.1185 x 16 (office)<br>910.431.2330 (cell)<br>910.681.0538 (home) |
| Lori Dowling<br>lori.dowling@amec.com | Prince George, BC | 250.564.3243 (office) |
| Philip Neville<br>philip.neville@amec.com | Thorold, ON | 905.687.6616 (office)<br>905.380.4465 (cell) |
| Tim Kihn<br>tim.kihn@amec.com | Edmonton, AB | 780.944.6363 (office)<br>780.717.5058 (cell) |
| Vlad Ivensky (can call 24/7)<br>vladimir.ivensky@amec.com | Plymouth Meeting, PA | 610.877.6144 (office)<br>484.919.5175 (cell}<br>215.947.0393 (home) |

**High potential near misses, subcontractor incidents, regulatory inspections, spills, and property damage greater than $1000, should be reported within 60 minutes to one of the above HSE Representatives.*

Version Date: July 27, 2011

## Routes to Emergency Medical Facilities

**PRIMARY HOSPITAL (for immediate emergency treatment):**

Facility Name: St Elizabeth Medical Group

Address: 2209 Genesee Street, Utica, NY 13501

Telephone Number: (315) 798-8100

**DIRECTIONS TO PRIMARY HOSPITAL (see attached map):**

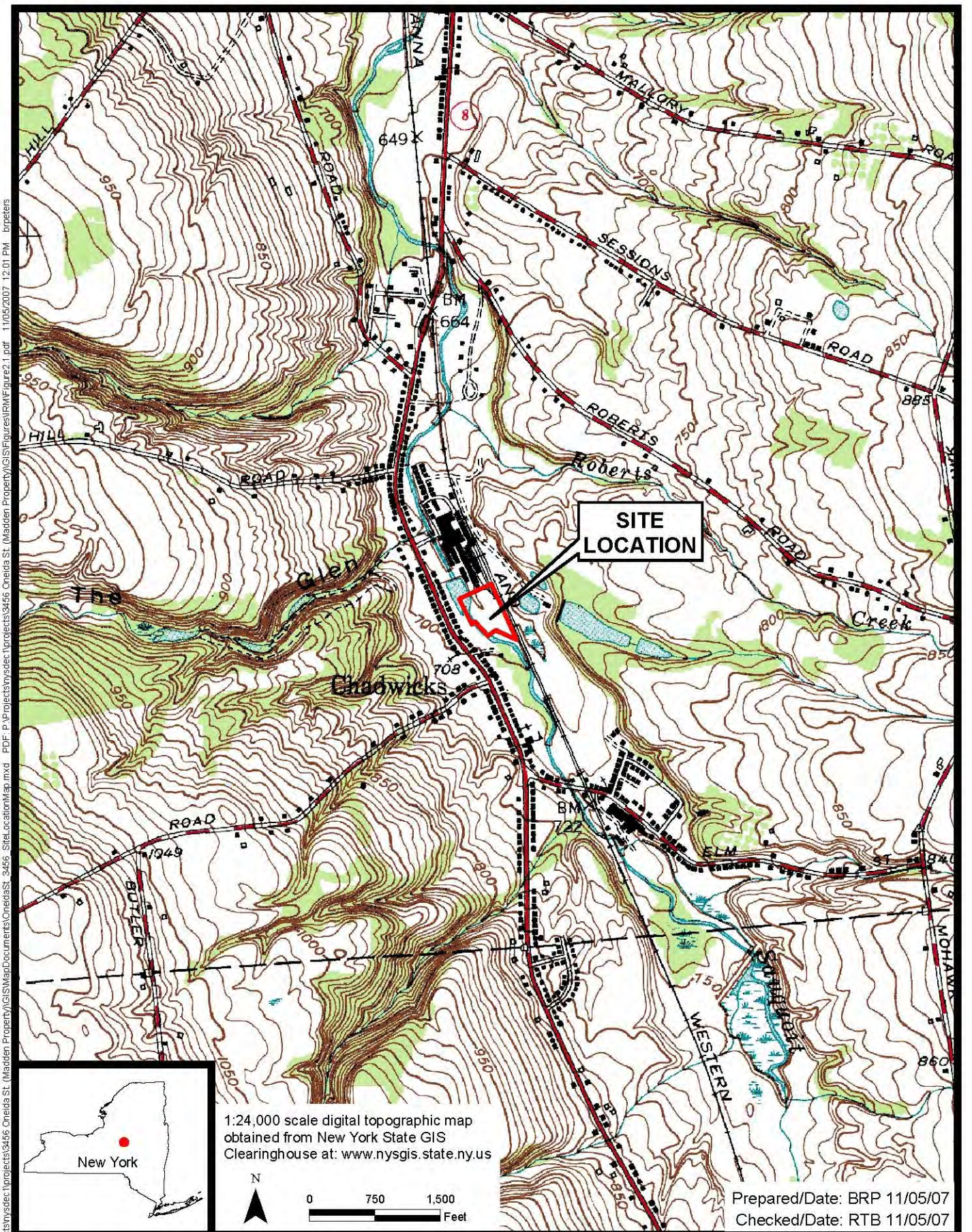
**ALTERNATE HOSPITAL:**

Facility Name: Faxton Hospital

Address: 1676 Sunset Avenue, Utica, NY 13502

Telephone Number: (315) 738-6200

**DIRECTIONS TO ALTERNATE HOSPITAL (see attached map):**




Prepared/Date: BRP 11/05/07
Checked/Date: RTB 11/05/07

NYSDEC
3456 Oneida Street
New Hartford, NY

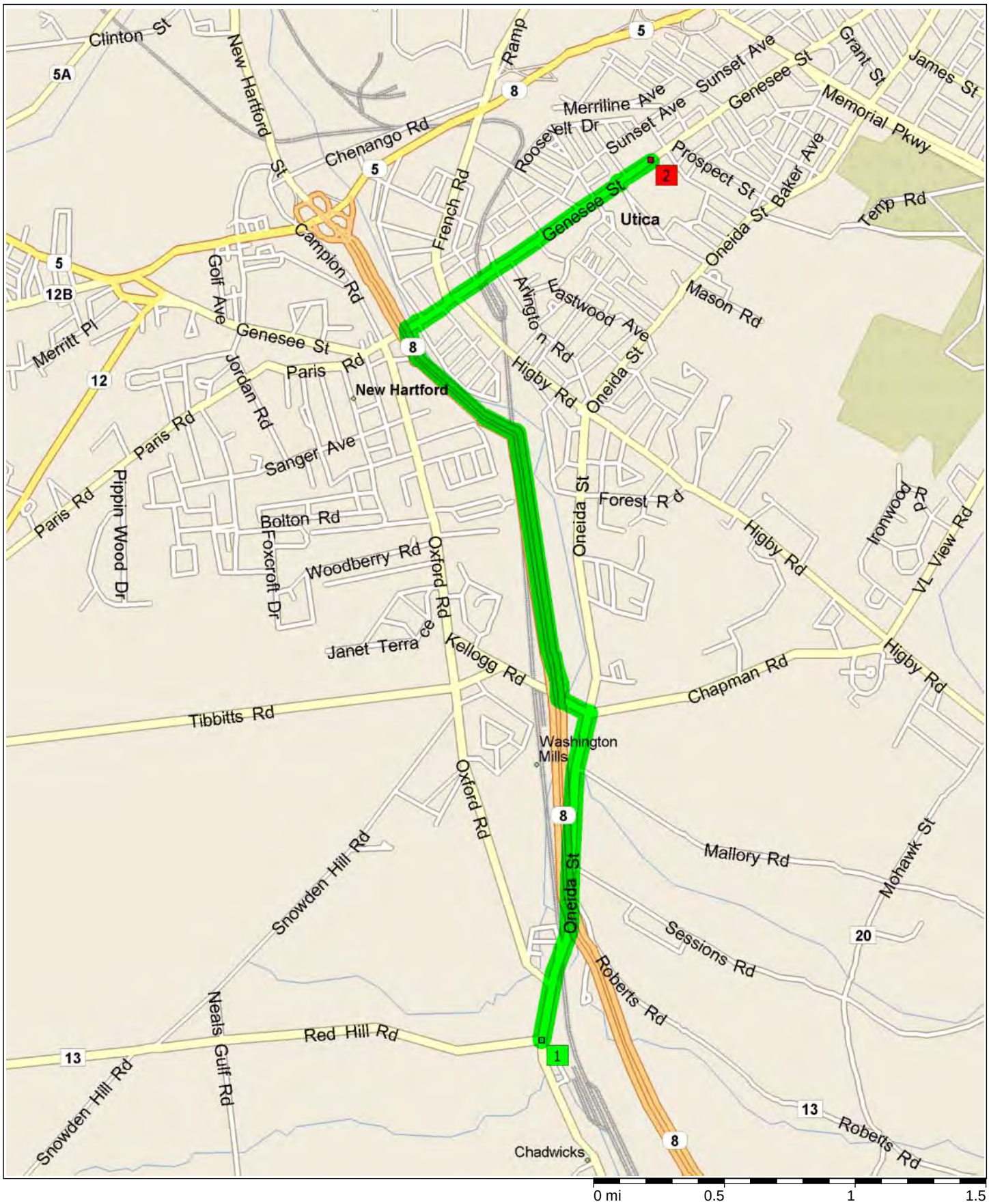
MACTEC

Site Location
**Project 3612-11-2186**
Figure 1

Document: P:\Projects\nysdec\projects\3456 Oneida St (Madden Property)\GIS\MapDocuments\OneidaSt_3456_SiteLocationMap.mxd PDF P:\Projects\nysdec\projects\3456 Oneida St (Madden Property)\GIS\Figures\RMFigure2.1.pdf 11/05/2007 12:01 PM brpeters

# Oneida St, New Hartford, NY 13413 to St Elizabeth Medical Group

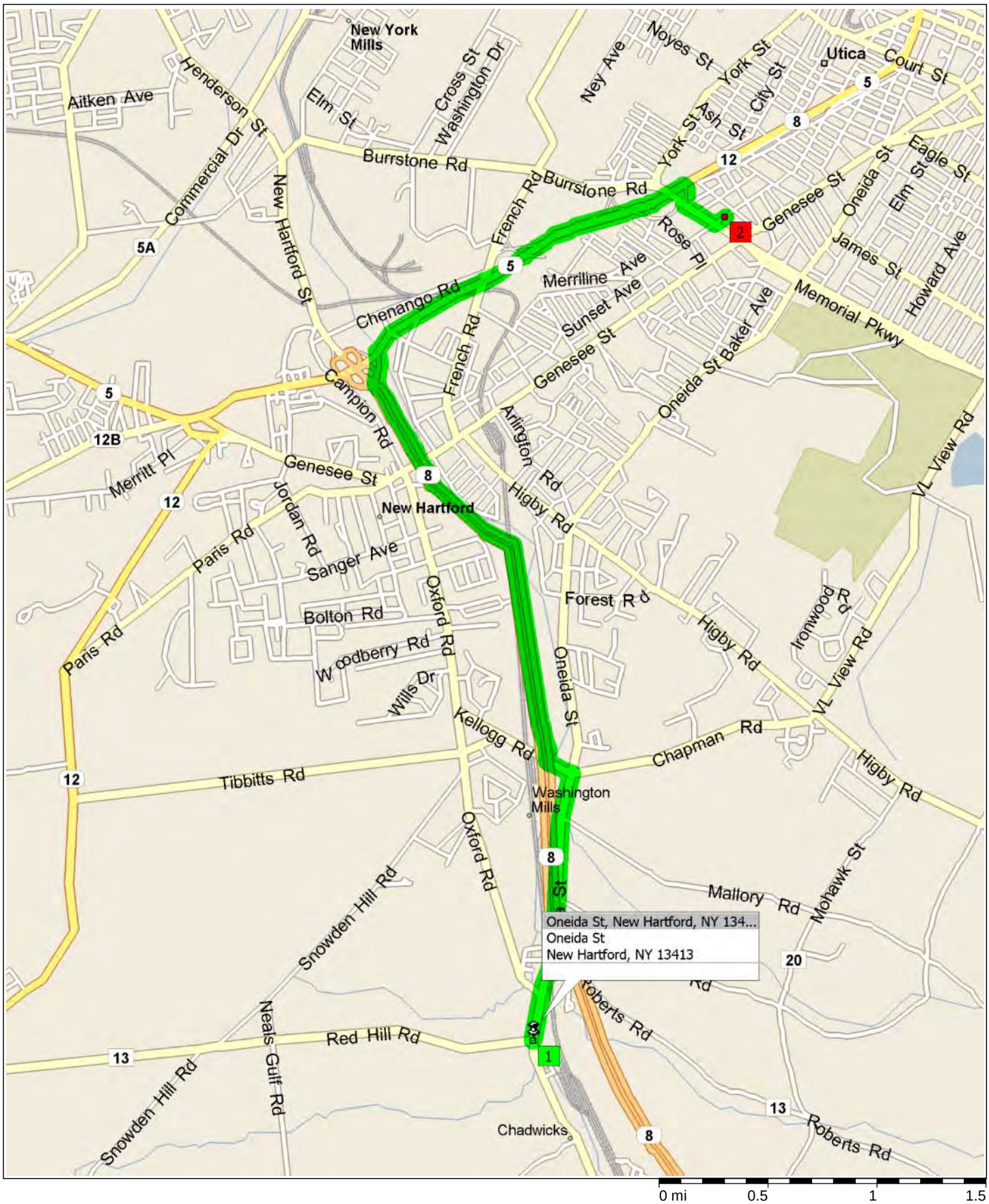
4.2 miles; 7 minutes



| | | |
|---|---|---|
| 9:00 AM | 0.0 mi | 1 Depart Oneida St, New Hartford, NY 13413 on Oneida St (North) for 1.3 mi |
| 9:02 AM | 1.3 mi | Turn LEFT (West) onto Kellog Rd [Kellogg Rd] for 0.1 mi |
| 9:02 AM | 1.4 mi | Turn RIGHT (North) onto Ramp for 0.1 mi |
| 9:03 AM | 1.5 mi | Merge onto SR-8 (North) for 1.5 mi |
| 9:04 AM | 3.0 mi | Turn off onto Ramp for 87 yds |
| 9:04 AM | 3.1 mi | Turn RIGHT (East) onto Genesee St [Old Paris Rd] for 1.1 mi |
| 9:07 AM | 4.2 mi | 2 Arrive St Elizabeth Medical Group [2209 Genesee Street, Utica, NY 13501, Tel: (315) 798-8100] |

# Oneida St, New Hartford, NY 13413 to Faxton Hospital

5.6 miles; 9 minutes




0 mi 0.5 1 1.5

| | | |
|---|---|---|
| 9:00 AM | 0.0 mi | 1 Depart Oneida St, New Hartford, NY 13413 on Oneida St (North) for 1.3 mi |
| 9:02 AM | 1.3 mi | Turn LEFT (West) onto Kellog Rd [Kellogg Rd] for 0.1 mi |
| 9:02 AM | 1.4 mi | Turn RIGHT (North) onto Ramp for 0.1 mi |
| 9:03 AM | 1.5 mi | Merge onto SR-8 (North) for 1.9 mi |
| 9:05 AM | 3.5 mi | At SR-8 A Exit, turn off onto Ramp for 0.2 mi |
| 9:05 AM | 3.6 mi | Merge onto SR-5 [N/S Arterial] (North) for 1.7 mi |
| 9:08 AM | 5.3 mi | Turn off onto Ramp for 174 yds |
| 9:08 AM | 5.4 mi | Bear LEFT (South-East) onto Burrstone Rd for 0.2 mi |
| 9:09 AM | 5.6 mi | Turn LEFT (North-East) onto Sunset Ave for 109 yds |
| 9:09 AM | 5.6 mi | 2 Arrive Faxton Hospital [1676 Sunset Avenue, Utica, NY 13502, Tel: (315) 738-6200] |

## DAILY TAILGATE SAFETY MEETING CHECKLIST

| | |
|---|---|
| Project: | Site: |
| Date: | Location: |

**To be reviewed on the first day of site activities and when new workers arrive on site:**

| | |
|---|---|
| Alternate for Health & Safety: | |
| Location of on-site HASP: | |
| Site training requirements: | See HASP |
| Specific medical surveillance requirements: | See HASP |

| **Agenda:** *During the project, one or more of the agenda items could be selected for the required daily site training.* | **Check-off: Date** | | | | |
|---|---|---|---|---|---|
| | ___ | ___ | ___ | ___ | ___ |
| 1. Planned work for this day (discuss) | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2. Physical hazards and controls (discuss/review) | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3. Chemical hazards and controls (discuss/review) | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4. Biological hazards and controls (discuss/review) | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5. Personal protective equipment Modified D | ☐ | ☐ | ☐ | ☐ | ☐ |
| 6. Personal protective equipment required per the hazard assessment: | ☐ | ☐ | ☐ | ☐ | ☐ |
| **SPECIFY TYPE** | | | | | |
| Protective coveralls | | | | | |
| Safety glasses/goggles — ANSI approved | | | | | |
| Hard hat — ANSI approved | | | | | |
| Foot protection — Safety toe boots & overboots | | | | | |
| Work gloves | | | | | |
| Chemical gloves — Nitrile inner | | | | | |
| Hearing protection | | | | | |
| Other | | | | | |
| 7. Review inspection, decontamination, and maintenance procedures and the limitations of the above stated PPE. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 8. Decontamination procedure (discuss/review) | ☐ | ☐ | ☐ | ☐ | ☐ |
| 9. Exclusion zone maintained | ☐ | ☐ | ☐ | ☐ | ☐ |
| 10. Site emergency response plan (discuss/review) | ☐ | ☐ | ☐ | ☐ | ☐ |
| 11. Signs and symptoms of overexposure to chemicals anticipated on site | ☐ | ☐ | ☐ | ☐ | ☐ |
| 12. General health and safety rules | ☐ | ☐ | ☐ | ☐ | ☐ |
| 13. Specific health and safety requirements relating to site activities including: (discuss/review) | ☐ | ☐ | ☐ | ☐ | ☐ |
| 14. Drilling/boring | ☐ | ☐ | ☐ | ☐ | ☐ |
| 15. UST | ☐ | ☐ | ☐ | ☐ | ☐ |
| 16. Excavations (including UG utility locations) | ☐ | ☐ | ☐ | ☐ | ☐ |
| 17. Heavy equipment | ☐ | ☐ | ☐ | ☐ | ☐ |
| 18. Slips, trips, and falls | ☐ | ☐ | ☐ | ☐ | ☐ |
| 19. Lockout/tagout | ☐ | ☐ | ☐ | ☐ | ☐ |
| 20. Working in temperature extremes | ☐ | ☐ | ☐ | ☐ | ☐ |
| 21. Rain or other weather advisories | ☐ | ☐ | ☐ | ☐ | ☐ |
| 22. Other health & safety issues (discuss/note) | ☐ | ☐ | ☐ | ☐ | ☐ |

**FORM I - DAILY BRIEFING FORM**

**RECORD OF SITE SAFETY MEETING**

Project:_____ Site:_____

Project Number:_____ Date:_____

Safety Meeting Conducted by (print name):_____

Safety Meeting Conducted by (signature): _____

List of topics discussed this meeting

_____

_____

_____

Participating employees must print and sign their name in the spaces provided below:

| | |
|---|---|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

Check one
Initial Report: ☐
Update: ☐ Date:_____
Final Report: ☐

Category C: ☐
Category B:

INCIDENT ANALYSIS REPORT

**Attorney-Client Work Product Prepared in Anticipation of Litigation**

(Review instructions on page 9 prior to completing this form)

Local Office ID Number: _____

**To: Office of the General Counsel**

This information has been prepared at your request and under your direction in anticipation of litigation so that you may prove appropriate legal advice to the undersigned and the management of the Company.

Section 1 – General Information

Report Date: _____ Incident Date: _____ Time of incident: _____
Employee Name: _____ Sex: ☐ M ☐ F
Job Title: _____ Hire Date: _____ Time employee began work: _____
Department: _____ Project Manager: _____ Client: _____
Office where employee works from: _____ Immediate Supervisor: _____ Hours employee worked during last 7 days: _____ hrs
Location where incident occurred: _____ Is this a Company controlled work site: ☐ Yes ☐ No

Section 2 – Incident Type (mark all that apply)

A. Type of incident being reported:

☐ Near Miss ☐ First-aid Case ☐ Medical Treatment ☐ Hospitalization ☐ Day Away Case ☐ Restricted/Transfer Case
☐ Fatality ☐ Vehicle Incident ☐ Notice of Violation ☐ Regulatory Inspection ☐ Environmental Release
☐ Property Damage ☐ Other (please describe):

B. If an **injury or illness** - describe the part of the body that was affected and how it was affected:

C. If an **environmental release** - describe the quantity and name and CAS# of material released into the environment:

D. If an **inspection by a regulatory agency** - what agency, who were the inspectors, and supply inspector contact information:

Section 3 – Incident Description (Attach and number additional pages, as needed, to ensure **all details related to the incident are captured.**)

A. List the names of all persons involved in the incident, and employer information:

B. List the names of any witnesses, their employer, and a local/company telephone number or address:

C. What was the employee(s) doing just prior to the incident?

D. Explain in **detail** what happened?

E. Explain in **detail** what object or substance directly harmed the employee?

F. List any damaged equipment or property (other than motor vehicles) model and serial number **and** estimated costs to repair/replace damaged equipment or property, if applicable:

Section 4 - Incident Analysis

A. Was a Job Hazard Analysis (JHA) completed for the work being performed? YES ☐ NO ☐ Who prepared the JHA?

B. When and who was the last safety officer (i.e. LHSR, supervisor, Division ES&H Manager, etc.) at your work site?

C. When and what safety training **directly related** to the incident has the person(s) involved had?

Section 5 - Incident Investigation Results

| # | **Causal Factors** (Attach and number any additional pages as needed to completely address this section) |
|---|---|
| **1** | |
| **2** | |
| **3** | |
| **4** | |
| **5** | |

**Root Cause(s) Analysis** (The below items represent major root cause categories which have been determined to be Less Than Adequate (LTA). A more detailed determination of the root cause will be facilitated, if needed, by your Division's ES&H Manager.)

| | |
|---|---|
| 1. Equipment Reliability Program Implementation | 5. Training |
| 2. Administrative / Management Systems | 6. Immediate Supervision |
| 3. Procedures | 7. Communications |
| 4. Human Factors Engineering | 8. Personal Performance |

| **Root Cause #** | **Corrective Actions to be taken** (Attach additional pages as needed to completely address this section) | **Responsible Person** | **Proposed Completion Date** | **Closed on Date** | **Verified by and Date Verified** |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Section 6 – Notifications, Certification & Approvals

Check the appropriate boxes indicating the applicable reports have been made to the following organizations:

**Auto Lessor** ☐ **Insurer** ☐ **Workers' Compensation Administrator** ☐

| **Incident investigated by (signatures):** | | | |
|---|---|---|---|
| **Employee(s):** | Date: | Employee's Supervisor: | Date: |
| Project Manager: | Date: | Office Manager: | Date: |
| LHSR: | Date: | Division ES&H Manager: | Date: |

## ATTACHMENT 2

VEHICLE INCIDENT REPORT

**Attorney-Client Work Product Prepared in Anticipation of Litigation**

(Review instructions on page 12 prior to completing this form)

**Section 1 - General Information** Date of incident: _____

Time incident occurred: __ ☐ AM ☐ PM Illumination: ☐ Dark ☐ Light Road Condition: ☐ Dry ☐ Wet ☐ Icy/snow

Were police summoned to scene? ☐ Yes ☐ No Police Department and Location: _____

Report #: _____ Officer's Name and Badge Number: _____

**Section 2 - Company Driver and Vehicle**

Driver's name: _____ D/L # _____ State: _____

Driver's home office address: _____ Driver's Phone # _____

Company Vehicle # _____ Year _____ Model _____ License # _____ State _____

Company car? ☐ Yes ☐ No Owned by employee? ☐ Yes ☐ No

Leased/rented from _____

Passenger/Witness Name(s) _____ Address: _____ Phone: _____

Passenger/Witness Name(s) _____ Address: _____ Phone: _____

Passenger/Witness Name(s) _____ Address: _____ Phone: _____

Damage to vehicle: _____

Injuries to employee(s): _____

Injuries to others: _____

Vehicle was being used for: Company business ☐ Yes ☐ No Personal business ☐ Yes ☐ No

Towed: ☐ Yes ☐ No By Whom: _____ To Where: _____

**Section 3 - Other Driver and Vehicle Information**

Driver's Name: _____ D/L # _____ State _____

Current Address _____ City _____ State _____

Telephone Home: _____ Work: _____ Cell: _____

Reg. Owner's Name: _____ Address: _____ City: _____ State: _____

*(verify registration document)*

The Other Vehicle: Make _____ Model _____ Year _____ License # _____ State _____

Insurance company name: _____ Address: _____ Phone # _____

Policy No. _____ Contact Person _____ Phone # _____

Passenger/Witness Name(s) _____ Address: _____ Phone: _____

Passenger/Witness Name(s) _____ Address: _____ Phone: _____

Damage: (*Make note of pre-existing damage and take pictures if possible.* ***Attach additional pages as needed****)*

Injuries to other driver/passengers:

**Section 4 – Approvals (signatures required)**

Form completed by: _____ Signature: _____ Date: _____

**Things to Do First In The Event Of a Motor Vehicle Incident**

1. Most important: **STOP.**
2. **Call 911 if there are injuries.**
3. Call for an officer if the incident occurred on public property (streets, highways or roads). Disputes often arise between the parties involved as to who was at fault; therefore, a police report is important. If an officer is unable to attend the scene of the accident, a counter police report may be filed at most stations. Insurance companies rely on police reports to determine liability.
4. Complete the Incident Investigation Report and the Vehicle Incident Report forms. It is important that both these forms are completed in detail. Include a diagram of the incident on the back of the report. Incomplete information may lead to delays in processing associated claims and in helping to prevent this type of incident from occurring again.
5. Express no opinion as to who was at fault. This is for the insurance companies to determine.
6. Give only information that is required by the authorities or as directed by MACTEC contractual requirements.
7. Sign only those statements required by the authorities or as directed by MACTEC contractual requirements. Do not sign away your rights or the company's rights.
8. If you are injured or think you were injured, tell your supervisor and see a physician. Your supervisor will notify MACTEC's Worker's Compensation insurance carrier, your Division's ES&H Manager and the Corporate Director of ES&H by phone, email or fax. For additional instructions on what to do, go to MACTEC's ES&H website on the intranet at: http://intranet.mactec.com/EnvSafetyHealth/HealthSafety_Claims_Reporting.htm
9. Your supervisor will forward both completed incident reports immediately to **y**our Division's ES&H Manager.

MACTEC, Inc.

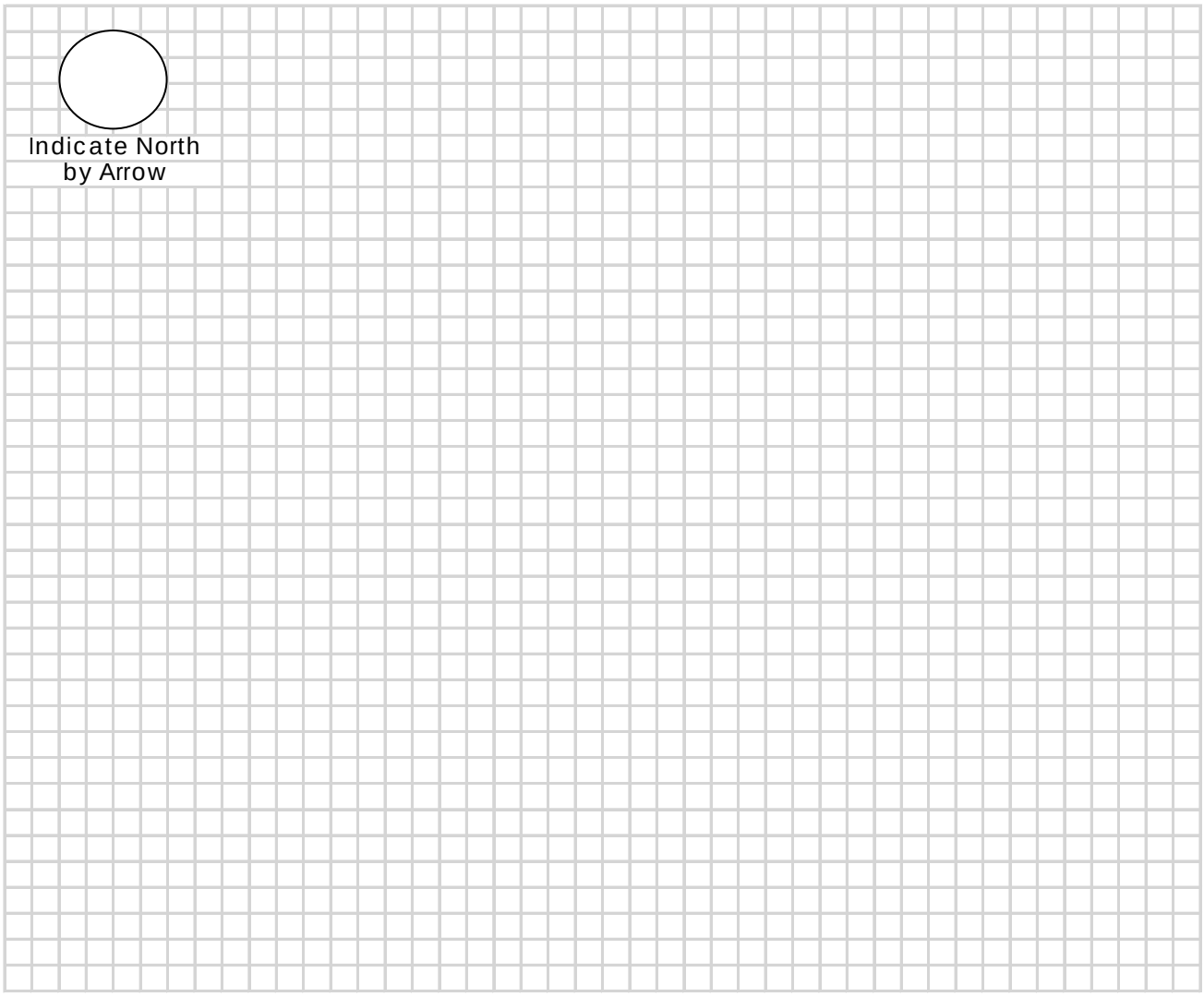
# Vehicle Crash Diagram

## Instructions:

1. Number each vehicle and show directions → 1 ← 2
2. Use a solid line to show path before incident and use a dotted line to show path after incient

→ 1 (before) - - - - → 1 (after)

3. Show pedestrian/non-motorist by: →○
4. Show railroad by: ⊣⊣⊣⊣⊣⊣⊣⊣⊣⊣
5. Indicate north by arrow as: ↗
6. Show street or highway names or numbers
7. Show signs, signals, warning and traffic controls.




Prepared by: _____ Date: _____

# ATTACHMENT A

# CONTAMINANT FACT SHEET

**CONTAMINANT FACT SHEET**

Chemical Name:
Aroclors-General 1336-36-3,
CAS Number: 11097-69-1, 53469-21-9
Synonyms:
Chlorodiphenyls
Polychlorinated biphenyls (PCBs)

## HEALTH HAZARD DATA

Color: Colorless to pale yellow

Physical State: Solid X (below $50^0$ F)
Liquid (Viscous)
Gas

Odor: Hydrocarbon-like

Odor Threshold: NA

Vapor Density: NA

Ionization Potential (IP): Unknown

IDLH: 5 $mg/m^3$

Carcinogen: OSHA
IARC X
NTP X
ACGIH X
NIOSH X

Skin absorbable: yes X no ___

Skin corrosive: yes X no ___

Signs/Symptoms of Acute Exposure:
Irritant to eyes, chloracne, liver damage

| Source | TWA (units) | STEL (units) | C (units) |
|---|---|---|---|
| OSHA PELs | 0.5 $mg/m^3$ (1254) | | |
| ACGIH TLVs | 0.5 $mg/m^3$ (1254) | | |
| NIOSH RELs | 0.001 $mg/m^3$ (1254) | | |

## AIR MONITORING

| Type | Brand/Model No. | Calibrations Method/Media | Relative Response or Conversion Factor | Meter Specific Action Level |
|---|---|---|---|---|
| Not Applicable (NA) | | | | |
| | | | | |
| | | | | |
| | | | | |

## PERSONAL PROTECTIVE EQUIPMENT

Recommended Protective Clothing Materials:

Suits: Saranex, Butyl Rubber, Neoprene, Viton, Teflon, Barricade, Responder

Gloves: Viton, Butyl Rubber; Teflon, Neoprene

Boots: Butyl Rubber, Neoprene

Service Limit Concentration (ppm): NA

MUC 1/2 Mask APR = TWA x 10 = 2.5 $mg/m^3$

MUC Full-Face APR =TWA x 10 = 2.5 $mg/m^3$

## FIRE/REACTIVITY DATA

Flash Point: NA

LEL/UEL: NA/NA

Fire Extinguishing Media:
Dry Chemical X Foam X
Water Spray X $CO_2$ X

Incompatibilities:
Strong oxidizers

Checked by: Emmet F. Curtis Date: 12/5/03



Note: The recommended protective clothing materials assumes that potential for direct contact (by splashing, dust inhalation, or other means) with the contaminants exists. Professional judgment and knowledge of on-site hazards should be used in selecting PPE appropriate to the concentration of the contaminant (trace vs percentage) to which the individual is likely to be exposed.

## APPENDIX A

## CONTAMINANT FACT SHEET

**CONTAMINANT FACT SHEET**

**Chemical Name**:
Lead
**CAS Number: 7439-92-1**
**Synonyms**:
Lead Metal, Plumbum

### HEALTH HAZARD DATA

Color: Gray

Physical State: Solid X
Liquid
Gas

Odor: NA

Odor Threshold NA

Vapor Density: NA

Ionization Potential (IP): NA

IDLH: 100 mg/m3

Carcinogen: OSHA
IARC X
NTP
ACGIH X
NIOSH

Skin absorbable: NO

Skin corrosive: NO

Signs/Symptoms of Acute Exposure:

Weak, insomnia, facial pallor, anorexia, low weight, constipation, abdominal pain, anemia, paralysis, (wrist and ankle), kidney disease, eye irritant, hypotension

| Source | TWA (units) | STEL (units) | C (units) |
|---|---|---|---|
| OSHA PELs | 0.05 mg/m3 | | |
| ACGIH TLVs | 0.05 mg/m3 | | |
| NIOSH RELs | 0.05 mg/m3 | | |

### AIR MONITORING

| Type | Brand/Model No. | Calibrations Method/Media | Relative Resonse or Conversion Factor | Meter Specific Action Level |
|---|---|---|---|---|
| Dust Meter **Action Limit based on soil concentration. Contact C. Sundquist for action limits | Any | | N/A | ** |
| | | | | |
| | | | | |
| | | | | |

Checked by: Date:

### PERSONAL PROTECTIVE EQUIPMENT

Recommended Protective Clothing Materials:

Suits Uncoated Tyveks
Polycoated Tyveks

Gloves Any Chemical resistant Gloves

Boots Any Chemical resistant Boots

Service Limit Concentration (ppm): NA

MUC 1/2 Mask APR = TWA x 10 = **0.25 mg/m3

MUC Full-Face APR = TWA x *50 = **0.25 mg/m3

*If quantitative fit testing is conducted, otherwise, use protection factor of 10

**Action limit will be based on soil concentrations. Contact C. Sundquist for action limits

### FIRE/REACTIVITY DATA

Flash Point: NA

LEL/UEL: NA

Fire Extinguishing Media:

Dry Chemical Foam

Water Spray $CO_2$

Incompatibilities:

Strong Oxidizers, hydrogen peroxide, acid

# LIQUINOX MSDS

## Section 1 : MANUFACTURER INFORMATION

**Supplier:** Same as manufacturer.

**Manufacturer:** Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

**Manufacturer emergency phone number:** 800-255-3924.
813-248-0585 (outside of the United States).

**Manufacturer:** Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

**Supplier MSDS date:** 2005/02/24

**D.O.T. Classification:** Not regulated.

## Section 2 : HAZARDOUS INGREDIENTS

| C.A.S. | CONCENTRATION % | Ingredient Name | T.L.V. | LD/50 | LC/50 |
|---|---|---|---|---|---|
| 25155-30-0 | 10-30 | SODIUM DODECYLBENZENESULFONATE | NOT AVAILABLE | 438 MG/KG RAT ORAL<br><br>1330 MG/KG MOUSE ORAL | NOT AVAILABLE |

## Section 3 : PHYSICAL / CHEMICAL CHARACTERISTICS

**Physical state:** Liquid.

**Appearance & odor:** Odourless.
Pale yellow.

**Odor threshold (ppm):** Not available.

**Vapour pressure (mmHg):** @ 20°C (68°F).
17

**Vapour density (air=1):** >1

**Volatiles (%)**

**By volume:** Not available.

**Evaporation rate (butyl acetate = 1):** < 1.

| | |
|---|---|
| **Boiling point (°C):** | 100 (212F) |
| **Freezing point (°C):** | Not available. |
| **pH:** | 8.5 |
| **Specific gravity @ 20 °C:** | (water = 1).<br>1.083 |
| **Solubility in water (%):** | Complete. |
| **Coefficient of water\oil dist.:** | Not available. |
| **VOC:** | None |

## Section 4 : FIRE AND EXPLOSION HAZARD DATA

| | |
|---|---|
| **Flammability:** | Not flammable. |
| **Conditions of flammability:** | Surrounding fire. |
| **Extinguishing media:** | Carbon dioxide, dry chemical, foam.<br>Water<br>Water fog. |
| **Special procedures:** | Self-contained breathing apparatus required.<br>Firefighters should wear the usual protective gear.<br>Use water spray to cool fire exposed containers. |
| **Auto-ignition temperature:** | Not available. |
| **Flash point (°C), method:** | None |
| **Lower flammability limit (% vol):** | Not applicable. |
| **Upper flammability limit (% vol):** | Not applicable. |

Not available.

| | |
|---|---|
| **Sensitivity to mechanical impact:** | Not available. |
| **Hazardous combustion products:** | Oxides of carbon (COx).<br>Hydrocarbons. |
| **Rate of burning:** | Not available. |
| **Explosive power:** | Containers may rupture if exposed to heat or fire. |

## Section 5 : REACTIVITY DATA

| | |
|---|---|
| **Chemical stability:** | Product is stable under normal handling and storage conditions. |
| **Conditions of instability:** | Extreme temperatures. |
| **Hazardous polymerization:** | Will not occur. |
| **Incompatible substances:** | Strong acids.<br>Strong oxidizing agents. |
| **Hazardous decomposition products:** | See hazardous combustion products. |

## Section 6 : HEALTH HAZARD DATA

| | |
|---|---|
| **Route of entry:** | Skin contact, eye contact, inhalation and ingestion. |
| **Effects of Acute Exposure** | |
| **Eye contact:** | May cause irritation. |
| **Skin contact:** | Prolonged and repeated contact may cause irritation. |
| **Inhalation:** | May cause headache and nausea. |
| **Ingestion:** | May cause vomiting and diarrhea.<br>May cause gastric distress. |
| **Effects of chronic exposure:** | See effects of acute exposure. |
| **LD50 of product, species & route:** | > 5000 mg/kg rat oral. |
| **LC50 of product, species & route:** | Not available. |
| **Exposure limit of material:** | Not available. |
| **Sensitization to product:** | Not available. |
| **Carcinogenic effects:** | Not listed as a carcinogen. |
| **Reproductive effects:** | Not available. |
| **Teratogenicity:** | Not available. |
| **Mutagenicity:** | Not available. |
| **Synergistic materials:** | Not available. |
| **Medical conditions aggravated by exposure:** | Not available. |
| **First Aid** | |
| **Skin contact:** | Remove contaminated clothing.<br>Wash thoroughly with soap and water.<br>Seek medical attention if irritation persists. |
| **Eye contact:** | Check for and remove contact lenses.<br>Flush eyes with clear, running water for 15 minutes while holding eyelids open: if irritation persists, consult a physician. |
| **Inhalation:** | Remove victim to fresh air.<br>If irritation persists, seek medical attention. |
| **Ingestion:** | Do not induce vomiting, seek medical attention.<br>Dilute with two glasses of water.<br>Never give anything by mouth to an unconscious person. |

## Section 7 : PRECAUTIONS FOR SAFE HANDLING AND USE

| | |
|---|---|
| **Leak / Spill:** | Contain the spill.<br>Prevent entry into drains, sewers, and other waterways.<br>Wear appropriate protective equipment.<br>Small amounts may be flushed to sewer with water.<br>Soak up with an absorbent material.<br>Place in appropriate container for disposal.<br>Notify the appropriate authorities as required. |
| **Waste disposal:** | In accordance with local and federal regulations. |
| **Handling procedures and equipment:** | Protect against physical damage.<br>Avoid breathing vapors/mists.<br>Wear personal protective equipment appropriate to task. |

Wash thoroughly after handling.
Keep out of reach of children.
Avoid contact with skin, eyes and clothing.
Avoid extreme temperatures.
Launder contaminated clothing prior to reuse.

**Storage requirements:** Store away from incompatible materials.
Keep containers closed when not in use.

## Section 8 : CONTROL MEASURES

**Precautionary Measures**

**Gloves / Type:**

Wear appropriate gloves.

**Respiratory / Type:** None required under normal use.

**Eye / Type:**

Safety glasses recommended.

**Footwear / Type:** Safety shoes per local regulations.

**Clothing / Type:** As required to prevent skin contact.

**Other / Type:** Eye wash facility should be in close proximity.
Emergency shower should be in close proximity.

**Ventilation requirements:** Local exhaust at points of emission.

PID ANALYZERS

hnu

Instrumentation for Environmental, Process & Industrial Hygiene Monitoring

# Isobutylene in Air MSDS

Home

**MATERIAL SAFETY DATA SHEET** - CALIBRATION CHECK GAS/**ISOBUTYLENE** IN AIR

---

**PRODUCT NAME: 100 PPM ISOBUTYLENE**/AIR (**100 PPM ISOBUTYLENE**/AIR) **MSDS**
Version:4 Date: January, 2004

---

**1.** Chemical Product and Company Identification **PID ANALYZERS, LLC** 25 Walpole Park Drive South Walpole, MA 02081 TELEPHONE NUMBER: (508) 660-5001 **24-HOUR EMERGENCY NUMBER: 1-617-699-4307** FAX NUMBER: (508) 660-5040 E-MAIL: sales@hnu.com

**PRODUCT NAME: ISOBUTYLENE** (**100 PPM** – 0.9%) IN AIR
**CHEMICAL NAME: Isobutylene** in air

**COMMON NAMES/ SYNONYMS:** Calibration Gas

**CLASSIFICATION:** 2.2 WHIMIS CLASSIFICTATION: A, D2A, D2B

---

**2. COMPOSITION/ INFORMATION ON INGREDIENTS**
INGREDIENT %: **Isobutylene** 0.0001-0.9/Air 99-99.9999
VOLUME:17L
PEL-OSHA: N/A
TLV-ACGIH: N/A
LD50or LC50Route/Species:N/A
FORMULA: C4H8/Air 99.0

---

**3. HAZARDS IDENTIFICATIONEMERGENCY OVERVIEW** Release of this product may produce oxygen-deficient atmospheres (especially in confined spaces or other poorly ventilated environments); individuals in such atmospheres may be asphyxiated. **Isobutylene** may cause drowsiness and other central nervous system effects in high concentrations; however, due to the low concentration of this gas mixture, this is unlikely to occur.

**ROUTE OF ENTRY:**
Skin: No
Contact Skin: No
Absorption: No
Eye Contact: No
Inhalation: Yes
Ingestion:No

**HEALTH EFFECTS:**
Exposure Limits: Yes
Irritant: No
Sensitization: No
Reproductive Hazard: No
Mutagen: No
Carcinogenicity: No
NTP: No
IARC: No
OSHA: No

EYE EFFECTS: N/A.
SKIN EFFECTS: N/A.

**MATERIAL SAFETY DATA SHEET** - CALIBRATION CHECK GAS
PRODUCT NAME: **ISOBUTYLENE** (1 **PPM** – 0.9%) IN AIR
INGESTION EFFECTS: Ingestion unlikely. Gas at room temperature.
INHALATION EFFECTS: Due to the small size of this cylinder, no unusual health effects from over-exposure are anticipated under normal routine use.

**NFPA HAZARD CODES HMIS HAZARD CODES RATING SYSTEM**
Health: **1**
Flammability: **0**
Flammability: **0**
Reactivity: **0**

***0= No Hazard, 1= Slight Hazard, 2= Moderate Hazard, 3= Serious Hazard, 4= Severe Hazard**

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**4. FIRST AID MEASURES EYES:** N/A

**SKIN:** N/A

**INGESTION:** Not required

**INHALATION:** PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASED OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED THE SELF-CONTAINED BREATHING APPARATUS. Victims should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. If breathing has stopped administer artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

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**5. FIRE-FIGHTING MEASURES** These containers hold gas under pressure, with no liquid phase. If involved in a major fire, they should be sprayed with water to avoid pressure increases, otherwise pressures will rise and ultimately they may distort or burst to release the contents. The gases will not add significantly to the fire, but containers or fragments may be

projected considerable distances - thereby hampering fire fighting efforts.

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**6. ACCIDENTAL RELEASE MEASURES** In terms of weight, these containers hold very little contents, such that any accidental release by puncturing etc. will be of no practical concern.

---

**7. HANDLING AND STORAGE** Suck back of water into the container must be prevented. Do not allow backfeed into the container. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Use only in well-ventilated areas. Do not heat cylinder by any means to increase rate of product from the cylinder. Do not allow the temperature where cylinders are stored to exceed 130oF (54oC).

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**8. EXPOSURE CONTROLS/PERSONAL PROTECTION** Use adequate ventilation for extended use of gas.

**MATERIAL SAFETY DATA SHEET - CALIBRATION CHECK GAS PRODUCT NAME: ISOBUTYLENE** (1 **PPM** – 0.9%) IN AIR

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**9. PHYSICAL AND CHEMICAL PROPERTIES PARAMETER: VALUE:** Physical state : Gas Evaporation point : N/A pH : N/A Odor and appearance : Colorless, odorless gas

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**10. STABILITY AND REACTIVITY** Stable under normal conditions. Expected shelf life 24 months.

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**11. TOXICOLOGICAL INFORMATION** No toxicological damage caused by this product.

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**12. ECOLOGICAL INFORMATION** No ecological damage caused by this product.

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**13. DISPOSAL INFORMATION** Do not discharge into any place where its accumulation could be dangerous. Used containers are acceptable for disposal in the normal waste stream as long as the cylinder is empty and valve removed or cylinder wall is punctured.

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**14. TRANSPORT INFORMATION**
United States DOT/Canada TDG PROPER SHIPPING NAME:
Compressed Gas N.O.S. Compressed Gas N.O.S. (**Isobutylene** in Air)
HAZARD CLASS: 2.2
IDENTIFICATION NUMBER: UN1956
SHIPPING LABEL: NONFLAMMABLE GAS

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**15. REGULATORY INFORMATION Isobutylene** is listed under the accident prevention provisions of section 112(r) of the Clean Air Act (CAA) with a threshold quantity (TQ) of 10,000 pounds.

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**16. OTHER INFORMATION** This **MSDS** has been prepared in accordance with the Chemicals

(Hazard Information and Packaging for Supply (Amendment) Regulation 1996. The information is based on the best knowledge of PID Analyzers, LLC , and its advisors and is given in good faith, but we cannot guarantee its accuracy, reliability or completeness and therefore disclaim any liability for loss or damage arising out of use of this data. Since conditions of use are outside the control of the Company and its advisors we disclaim any liability for loss or damage when the product is used for other purposes than it is intended.
**MSDS**/S010/248/January, 2004

Top

Anachemia

255 Norman.
Lachine (Montreal), Que
H8R 1A3

# Material Safety Data Sheet

**EMERGENCY NUMBERS:**

**(USA) CHEMTREC : 1(800) 424-9300 (24hrs)**
**(CAN) CANUTEC : 1(613) 996-6666 (24hrs)**
**(USA) Anachemia : 1(518) 297-4444**
**(CAN) Anachemia : 1(514) 489-5711**

| WHMIS | Protective Clothing | TDG Road/Rail |
|---|---|---|
| WHMIS CLASS: B-2 D-2A | | TDG CLASS: 3<br>PIN: UN1208 PG: II |
|  |  |  |

## Section I. Product Identification and Uses

| | |
|---|---|
| **Product name** | **HEXANES** |
| **Chemical formula** | Not applicable. |
| **Synonyms** | AC-4858, AC-4858SC, AC-4858PG, AC-4858P, AC-4858T, GD-4860, 45124, 45126, 45138 |
| **Supplier** | Anachemia Canada.<br>255 Norman.<br>Lachine (Montreal), Que<br>H8R 1A3 |
| **Material uses** | For laboratory use only. |

| | |
|---|---|
| **CI#** | Not available. |
| **CAS#** | Not applicable. |
| **Code** | AC-4858 |
| **Formula weight** | 86.18 |
| **Supersedes** | |

## Section II. Ingredients

| Name | CAS # | % | TLV |
|---|---|---|---|
| 1) HEXANE | 110-54-3 | 100 | Exposure limits: ACGIH TWA 50 ppm (176 mg/m3) (skin) |

**Toxicity values of the hazardous ingredients**

HEXANE:
ORAL (LD50): Acute: 25000 mg/kg (Rat).
VAPOR (LC50): Acute: 48000 ppm (Rat) (4 hour(s)).

## Section III. Physical Data

| | |
|---|---|
| **Physical state and appearance / Odor** | Colorless liquid. Hydrocarbon odor. |
| **pH (1% soln/water)** | Not applicable. |
| **Odor threshold** | Not available. |
| **Percent volatile** | 100% (V/V) |
| **Freezing point** | -95°C |
| **Boiling point** | 65 to 70°C |
| **Specific gravity** | 0.67 at 15.5°C |
| **Vapor density** | 2.9 (Air = 1) |
| **Vapor pressure** | 150 mm of Hg (@ 25°C) |
| **Water/oil dist. coeff.** | Not available. |
| **Evaporation rate** | 9 (n-Butyl acetate = 1). |
| **Solubility** | Insoluble in cold water. |

## Section IV. Fire and Explosion Data

| | |
|---|---|
| **Flash point** | CLOSED CUP: -22°C (Tag Closed Cup) |
| **Flammable limits** | LOWER: 1.1% UPPER: 7.5% |
| **Auto-ignition temperature** | The lowest known value is 224°C (n-hexane). |
| **Fire degradation products** | Oxides of carbon (CO, CO2). Hydrocarbons. |
| **Fire extinguishing procedures** | Use DRY chemical, carbon dioxide, or alcohol-resistant foam. Water may be ineffective to extinguish fires. Wear adequate personal protection to prevent contact with material or its combustion products. Self contained breathing apparatus with a full facepiece operated in a pressure demand or other positive pressure mode. Cool containing vessels with flooding quantities of water until well after fire is out. |
| **Fire and Explosion Hazards** | Extremely flammable liquid. Vapors formed from this product may travel or be moved by air currents and ignited by pilot lights, other flames, sparks, heaters, electrical equipment, static discharges or other ignition sources at locations distant from handling point. Vapor forms explosive mixture with air. Container explosion may occur under fire conditions or when heated. Contact with oxidizers may cause fire and/or explosion. Liquid can accumulate static charge by flow or agitation. This material may produce a floating fire hazard. Sensitive to static discharge. The sensitivity to impact is not available. Emits toxic fumes under fire conditions. |

## Section V. Toxicological Properties

| | |
|---|---|
| **Routes of entry** | Ingestion and inhalation. Eye contact. Skin contact. Skin absorption. |
| **Effects of Acute Exposure** | Harmful by ingestion, inhalation or skin absorption. Irritant. Narcotic. Neurotoxic. Target organs: skin, eyes, respiratory system, lungs, heart, central nervous system, peripheral nervous system. 1100 ppm (HEXANE) is immediately dangerous to life or health. |
| **Eye** | Causes irritation. May cause severe irritation, conjunctivitis and burning sensation. |
| **Skin** | Causes skin irritation. May cause defatting, drying and cracking of the skin. Prolonged and repeated contact may lead to dermatitis. Liquid can be absorbed in toxic amounts through intact skin. See inhalation. |
| **Inhalation** | Material is irritating to mucous membranes and upper respiratory tract. May cause central nervous system depression (headache, nausea, dizziness, drowsiness, loss of coordination, fatigue, etc..), euphoria, tremors, eye troubles, convulsions, mydriasis, arrythmia, coma and possibly death (severe intoxication). Prolonged or repeated exposure may cause irreversible nerve damage (polyneuropathy), anemia and irritability. |
| **Ingestion** | Harmful or fatal if swallowed. Causes gastrointestinal irritation. May cause headache, nausea, vomiting, diarrhea, irritability. See inhalation. Aspiration into lungs may cause chemical pneumonitis or pulmonary edema/hemorrhage which can be fatal. May cause gastrointestinal disturbances. |

## Section V. Toxicological Properties

| | |
|---|---|
| **Effects of Chronic Overexposure** | May cause conjuncitivitis, dermatitis, arrythmia, polyneuropathy, vertigo. Prolonged or repeated exposure to n-hexane may damage peripheral nerve tissue (that of arms and legs) and result in muscular weakness and loss of sensation in the extremities (peripheral neuropathy). Causes testicular damage in animal. Passes through the placental barrier in animal. Carcinogenic effects: Not available. Mutagenic effects: Not available. Teratogenic effects: Not available. Medical conditions which may be aggravated: Individuals with preexisting diseases of the skin, eye, heart, nervous system, or respiratory system may be more susceptible to the toxicity of overexposure to this product. |

## Section VI. First Aid Measures

| | |
|---|---|
| **Eye contact** | Immediately flush eyes with copious quantities of water for at least 15 minutes holding lids apart to ensure flushing of the entire surface. Seek immediate medical attention. DO NOT use an eye ointment. |
| **Skin contact** | Immediately flush skin with plenty of water and soap for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reusing. |
| **Inhalation** | Remove patient to fresh air. Administer approved oxygen supply if breathing is difficult. Administer artificial respiration or CPR if breathing has ceased. Seek immediate medical attention. |
| **Ingestion** | DO NOT induce vomiting. Seek immediate medical attention. Never give anything by mouth to an unconscious or convulsing person. Guard against aspiration into lungs. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus. |

## Section VII. Reactivity Data

| | |
|---|---|
| **Stability** | Stable. Conditions to avoid: High temperatures, sparks, open flames and all other sources of ignition, contamination. |
| **Hazardous decomp. products** | Not available. |
| **Incompatibility** | Oxidizing agents (peroxides, dichromates, permanganates, magnesium perchlorate, chromic trioxide, chlorine, fluorine, dinitrogen tetraoxide, halogens, etc...), bases, amines, acids. |
| **Reaction Products** | Hexane-soaked rags or paper are subject to spontaneous combustion. Hazardous polymerization will not occur. |

## Section VIII. Preventive Measures

| | |
|---|---|
| **Protective Clothing in case of spill and leak** | Wear self-contained breathing apparatus, rubber boots and heavy rubber gloves. |
| **Spill and leak** | Evacuate the area. Eliminate all sources of ignition and ensure that all handling equipment is electrically grounded. Stay upwind: Keep out of low areas. Absorb on sand or vermiculite and place in a closed container for disposal. Use non-sparking tools. Transport outdoors. Ventilate area and wash spill site after material pick up is complete. DO NOT empty into drains. DO NOT touch damaged container or spilled material. Runoff to sewer may create fire or explosion hazard. |
| **Waste disposal** | Burn in a chemical incinerator equipped with an after burner and scrubber. According to all applicable regulations. May be harmful to aquatic life. Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers. |
| **Storage and Handling** | Store in a cool place away from heated areas, sparks, and flame. Store in a well ventilated area. Store away from incompatible materials. Do not add any other material to the container. Do not wash down the drain. Do not breathe gas/fumes/vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. Keep container tightly closed. Manipulate under an adequate fume hood. Do not use pressure to dispense. May develop pressure; vent periodically. Take precautionary measures against electrostatic discharges. Ground the container while dispensing. Ground all equipment containing material. Use only explosion proof equipment. Use non-sparking tools. Watch for accumulation in low confined areas. Empty containers may contain a hazardous residue. Handle and open container with care. Take off immediately all contaminated clothing. This product must be manipulated by qualified personnel. Do not get in eyes, on skin, or on clothing. Wash well after use. In accordance with good storage and handling practices. Do not allow smoking and food consumption while handling. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively. Vapors are heavier than air and may travel along the ground or pool in low areas. Because vapor is heavy, ventilation must be provided at floor level as well as at higher levels. All five gallon pails and larger metal containers including tank cars and tank trucks should be grounded and/or bonded when material is transferred. |

## Section IX. Protective Measures

| | |
|---|---|
| **Protective clothing** | Splash goggles. Impervious neoprene gloves, apron, coveralls, and/or other resistant protective clothing. Sufficient to protect skin. A OSHA/MSHA jointly approved respirator is advised in the absence of proper environmental controls. If more than TLV, do not breathe vapor. Wear self-contained breathing apparatus. Do not wear contact lenses. Make eye bath and emergency shower available. Ensure that eyewash station and safety shower is proximal to the work-station location. |
| **Engineering controls** | Use only in a chemical fume hood to keep airborne levels below recommended exposure limits. Use explosion-proof ventilation equipment. Do not use in unventilated spaces. |

## Section X. Other Information

**Special Precautions or comments**

Highly volatile Liquid! Extremely flammable liquid! Harmful liquid! Neurotoxic! Irritant! Do not breathe vapor. Avoid all contact with the product. Avoid prolonged or repeated exposure. Use only in a chemical fume hood. Keep away from heat, sparks and flame. Use non-sparking tools. Take precautionary measures against static discharges. Bond and ground transfer containers and equipment to avoid static accumulation. Handle and open container with care. Container should be opened only by a technically qualified person.
Synergistic materials: Chloroform increases the hepatotoxicity of hexane. Methyl ethyl ketone, methyl isobutyl ketone and methyl butyl ketone increases the neurotoxicity of hexane.
NOTE TO PHYSICIAN: Sympathomimetric drugs (epinephrine, etc...) may increase cardiac arrythmia.
RTECS NO: MN9275000 (Hexane).


NFPA

**Prepared by MSDS Department/Département de F.S..**

**Validated 11-Dec-2006**

**Telephone# (514) 489-5711**

MACTEC

# Job Hazard Analysis - Short Form HASP

**Job Title:** Decontamination **Date of Analysis:** 5/30/06

**Minimum Recommended PPE*:** High visibility vest, hard hat, steel-toed boots, safety glasses, hearing protection
*See HASP for all required PPE

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| 1. Establish Decontamination Station | 1A) Materials Handling | 1A) Materials Handling<br>▪ Use proper lifting techniques<br>▪ Use mechanical aids, if available, to move heavy items. |
| 2. Decontamination / Steam cleaning. | 2A) Struck by steam/hot water/pressure washing | 2A) Struck by steam/hot water<br>▪ Workers not directly engaged in steam cleaning operations must stay clear.<br>▪ Workers using steam cleaning equipment must be trained on operation and safety devices/procedures using the owners/operators manual.<br>▪ Use face shield **and** safety glasses or goggles, if steam cleaning.<br>▪ Stay out of the splash/steam radius.<br>▪ Pressure washer must have dead man switch.<br>▪ Do not direct steam at anyone.<br>▪ Do not hold objects with your feet or hands.<br>▪ Ensure that direction of spray minimizes spread of contaminants of concern.<br>▪ Use shielding as necessary. |
| | 2B) Exposure to contaminants | 2B) Exposure to contaminants<br>▪ Conduct air monitoring (see HASP).<br>▪ Wear proper PPE (see HASP).<br>▪ See MSDSs for hazards associated with the decon solutions used (if other than water alone us used). |
| | 2C) Slips/Trips/Falls | 2C) Slips/Trips/Falls<br>▪ Be cautious as ground/plastic can become slippery<br>▪ Use boots or boot covers with good traction |
| 3. Vehicle Decontamination | 3A) Vehicle traffic in and out of the CRZ | 3A) Large Vehicle Traffic<br>▪ Always wear a hard hat, steel toe boots, and a high visibility vest (unless Tyveks are used and are high visibility).<br>▪ Vehicle drivers are not to exit the vehicle in the CRZ.<br>▪ Identify an individual to communicate with vehicle drivers and maintain order<br>▪ Trucks will be lined with plastic and kept out of direct contact with any contaminated materials during loading. Wear PPE when removing plastic lining from truck beds.<br>▪ If not in the vehicle, obtain eye contact with the driver, so he is aware of your presence and location in the CRZ.<br>▪ If you are driving the vehicle, be aware of personnel in the CRZ and maintain communication with the identified personnel. |
| | 3B) Exposure to contaminants | 3B) Exposure to contaminants<br>▪ Use safety glasses or goggles, Polycoated Tyvek (if level of contamination poses dermal hazard or to keep work clothes dry), high visibility vest (if high visibility Tyveks are not used) hard hats, steel toe boots, and gloves while cleaning contaminated materials.<br>▪ Do not doff PPE until decontamination of the vehicle is complete and a decontamination certificate has been issued by the HSO.<br>▪ Conduct air monitoring (see HASP).<br>▪ See MSDSs for hazards associated with the decon solutions (if other than water alone is used). |

MACTEC

# Job Hazard Analysis - Short Form HASP

**Job Title:** Decontamination **Date of Analysis:** 5/30/06

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| | 3C) Slips/Trips/Falls | 3C) Slips/Trips/Falls<br>▪ Be cautious as ground/plastic can become slippery<br>▪ Use boots or boot covers with good traction |
| 4. Equipment and Sample Decontamination | 4A) Chemical exposure when handling contaminated sample jars and equipment | 4A) Chemical exposure<br>▪ Wear PPE as outlined in the HASP.<br>▪ Refer to MSDS for specific hazards associated with decon solutions<br>▪ Monitor breathing zone for contaminants<br>▪ Monitor breathing zone for decon solutions (e.g., methanol, hexane, etc.) if appropriate (see HASP) |
| | 4B) Materials Handling related injuries | 4B) Materials Handling related injuries<br>▪ Use proper lifting techniques when lifting heavy equipment<br>▪ Use two person lift for heavy coolers |
| 5. Personal Decontamination | 4C) Exposure to contaminants | 4C) Exposure to contaminants<br>▪ Avoid bringing contaminated materials via shoes and clothing into the CRZ by examining such prior to exiting the EZ.<br>▪ Removal of PPE will be performed by the following tasks in the listed order:<br>▪ Gross boot wash and rinse and removal<br>▪ Outer glove removal<br>▪ Suit removal<br>▪ Respirator removal (if worn).<br>▪ Inner glove removal<br>▪ Contaminated PPE is to be placed in the appropriate, provided receptacles.<br>▪ Respirators will be removed and decontaminated at a specified location within the CRZ by a designated technician, then placed in storage bag.<br>▪ Employees will wash hands, face, and any other exposed areas with soap and water.<br>▪ Portable eyewash stations and showers will be available should employees come into direct contact with contaminated materials.<br>▪ See MSDSs for hazards associated with the decontamination solutions used.<br>▪ Decon solutions will be disposed of according to the work plan. |

# Job Hazard Analysis Form

**Job Title:** Field Work - Oversight **Date of Analysis:** 4/13/10
**Minimum Recommended PPE*:** High visibility vest, hard hat, steel-toed boots, safety glasses, hearing protection
*See HASP for all required PPE

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| 1. Prepare for site visit | 1A) N/A | ▪ Obtain and review HASP prior to site visit, if possible<br>▪ Determine PPE needs – bring required PPE to the site, if not otherwise being provided at the site (e.g., steel toed boots)<br>▪ Determine training and medical monitoring needs and ensure all required Health and Safety training and medical monitoring has been received and is current<br>▪ Complete site specific/ client required training<br>▪ Ensure all workers are fit for duty (alert, well rested, and mentally and physically fit to perform work assignment)<br>▪ First aid kits shall be available at the work site and on each transport vehicle.<br>▪ Familiarize yourself with route to the site<br>▪ Check weather forecast. Pack appropriate clothing and other items (e.g., sunscreen) for anticipated weather conditions<br>▪ Verify that subsurface utilities have been identified. |
| 2. Traveling to the site by vehicle | 2A) See JHA for Mobilization, Demobilization and Site Preparation | ▪ See JHA for Mobilization, Demobilization and Site Preparation |
| 3. Initial Arrival - Assess Site Conditions | 3A) Communication with subcontractor and other site personnel | ▪ Develop communication methods (agree on hand signals, warning alarms)<br>▪ Log all workers and visitor on and off the site.<br>▪ Let other crewmembers know when you see a hazard.<br>▪ Avoid working near known hazards.<br>▪ Always know the whereabouts of fellow crewmembers.<br>▪ Carry a radio and spare batteries or cell phone<br>▪ Hold and document Safety tailgate meetings<br>▪ Establish work zones, evacuation routes and rally locations. |
| | 3B) Insect Bites and Stings | ▪ Discuss the types of insects expected at the Site and be able to identify them.<br>▪ Look for signs of insects.<br>▪ Inform crew members if allergic to insects and what to do if you need assistance.<br>▪ Avoid wearing heavy fragrances.<br>▪ Carry first-aid and sting relief kits.<br>▪ Carry identification of known allergies and necessary emergency medication.<br>▪ Spray clothing with insect repellant as a barrier.<br>▪ Wear light colored clothing that fits tightly at the wrists, ankles, and waist.<br>▪ Cover trouser legs with high socks or boots.<br>▪ Tuck in shirt tails. |

| | | |
|---|---|---|
| | 3C) Poisonous plants | ▪ Wear long sleeves, long pants and boots<br>▪ Ensure all field workers can identify the plants. Mark identified poisonous plants with high visibility spray paint if working at a fixed location.<br>▪ Look for signs of poisonous plants and demark area to aid in avoiding plant.<br>▪ Do not touch any plant part to any part of your body/clothing.<br>▪ Use commercially available products such as Ivy Block or Ivy Wash as appropriate. |
| | 3D) Vermin, leaches, animal borne disease | ▪ Survey the area for dens, nests, etc.<br>▪ Identify areas where biological hazards may be present.<br>▪ Wear long sleeve shirt and full length pants<br>▪ Be aware of your surroundings.<br>▪ Wear appropriate footwear (snake boots, etc.)<br>▪ Avoid high grass areas if possible<br>▪ Do not put hand/arm into/under an area that you cannot see into/under clearly<br>▪ Perform routine inspections for ticks, leaches, etc. of yourself and co-workers. |
| | 3E) Chemical Hazards | ▪ Wear chemical resistant PPE as identified in the HASP<br>▪ Use monitoring equipment, as outlined in HASP, to monitor breathing zone<br>▪ Read MSDSs for all chemicals brought to the site<br>▪ Be familiar with hazards associated with site contaminants.<br>▪ Ensure that all containers are properly labeled |
| | 3F) Overhead Power Lines | ▪ Contact “Dig Safe” and obtain a permit (or one call center) to have underground utilities located and marked prior to any subsurface work on site.<br>▪ Use facility engineers and/or employ a private utility locator for utilities on private property<br>▪ Identify the location of all overhead power lines at the site.<br>▪ Maintain clearances depending on voltage - All equipment will stay a minimum of 10 feet from overhead energized electrical lines (50 kV or less). This distance will increase by 4 inches for each 10 kV above 50 kV. Rule of Thumb: Stay 10 feet away from all overhead power lines known to be 50 kV or less and 35 feet from all others.)<br>▪ Re-locate work so it is not close to power lines<br>▪ Avoid storing materials under overhead power lines |
| | 3G) Underground Utilities | ▪ Contact “Dig Safe” and obtain a permit (or one call center) to have underground utilities located and marked prior to any subsurface work on site.<br>▪ Use facility engineers and/or employ a private utility locator for utilities on private property<br>▪ All utilities will be marked prior to excavation activities<br>▪ For areas where utility locations cannot be verified, workers must hand dig for the first 3 feet<br>▪ Use lineman’s gloves when locating underground power lines<br>▪ Work at adequate offsets from utility locations<br>▪ Immediately cease work if unknown utility markings are discovered.<br>▪ Conform to utility clearances based on voltage of lines. For powerlines of 50 KV or less stay at least 10 feet away. For powerlines of > 50 KV, add an additional 0.4 inches per KV over 50 KV. Rule of thumb: Stay 10 feet away if powerline known to be 50 KV or less. Stay 35 feet away for lines > 50 KV or if voltage is unknown. |

| | | |
|---|---|---|
| | 3H) Cold Stress | ▪ Dress in layers with wicking garments (those that carry moisture away from the body – e.g., cotton) and a weatherproof slicker. A wool outer garment is recommended.<br>▪ Take layers off as you heat up; put them on as you cool down.<br>▪ Wear head protection that provides adequate insulation and protects the ears.<br>▪ Maintain your energy level. Avoid exhaustion and over-exertion which causes sweating, dampens clothing, and accelerates loss of body heat and increases the potential for hypothermia.<br>▪ Acclimate to the cold climate to minimize discomfort.<br>▪ Maintain adequate water/fluid intake to avoid dehydration.<br>▪ Be aware of signs of hypothermia, its prevention, detection and treatment.<br>▪ Have extra protection available, in case of an emergency such as blankets and heating devices.<br>▪ Don't work under extremely adverse weather conditions<br>▪ Stay in tune to current weather and extended forecasts. |
| | 3I) Heat Stress | ▪ Remain constantly aware of the four basic factors that determine the degree of heat stress (air temperature, humidity, air movement, and heat radiation) relative to the surrounding work environmental heat load.<br>▪ Know the signs and symptoms of heat exhaustion, heat cramps, and heat stroke. Heat stroke is a true medical emergency requiring immediate emergency response action.<br>▪ Maintain adequate water intake by drinking water periodically in small amounts throughout the day (flavoring water with citrus flavors or extracts enhances palatability).<br>▪ Lessen work load and/or duration of physical exertion the first days of heat exposure to allow gradual acclimatization.<br>▪ Alternate work and rest periods. More severe conditions may require longer rest periods and electrolyte fluid replacement. |
| | 3J) Lightning and Thunder | ▪ Monitor weather channels to determine if electrical storms are forecasted.<br>▪ Plan ahead and identify safe locations to be in the event of a storm. (e.g., sturdy building, vehicle, etc.)<br>▪ Suspend all field work at the first sound of thunder. You should be in a safe place when the time between the lightning and thunder is less than 30 seconds. |
| | 3K) Severe Weather | ▪ Watch for clouds and incoming weather.<br>▪ Monitor weather forecasts.<br>▪ Train workers about weather and appropriate precautions.<br>▪ Identify a shelter and a safe place in event of tornado etc |
| | 3L) Sun | ▪ Keep body protected<br>▪ Wear sunscreen, wide brimmed hat or hardhat.<br>▪ Schedule work for cool part of day.<br>▪ Take breaks in the shade. |
| | 3M) High Crime Areas | ▪ Do not enter areas where threats are present.<br>▪ Contract security where applicable. Use the buddy system.<br>▪ Maintain contact with support such as radio or cell phone<br>▪ Do not work after dark. |

| | | |
|---|---|---|
| | 3N) Operations conducted at an active facility | ▪ Stay well clear of operations being conducted at the facility<br>▪ Keep alert for moving materials, equipment or vehicles<br>▪ Determine client specific PPE needs prior to arriving at the site<br>▪ Determine client specific emergency response procedures and follow as appropriate<br>▪ Participate in client required safety training<br>▪ Get copies of Clients MSDSs for any client chemicals that workers may be exposed to.<br>▪ Provide MSDSs to client for all chemicals brought to the site. |
| | 3O) Remote Locations | ▪ Carry a two-way radio and know how to use it.<br>▪ Work in teams. Account for all at the end of the work day.<br>▪ Make sure someone on crew is certified in first aid.<br>▪ Carry a first aid kit. |
| | 3P) Set up Decon Station | ▪ Refer to MSDS for specific hazards associated with decon solutions<br>▪ Monitor breathing zone for decon solutions (e.g., methanol, hexane, etc.), if appropriate (see HASP)<br>▪ Removal of PPE will be performed by the following tasks in the listed order:<br>o Gross boot wash and rinse and removal<br>o Outer glove removal<br>o Suit removal<br>o Respirator removal (if worn).<br>o Inner glove removal<br>▪ Contaminated PPE is to be placed in the appropriate, provided receptacles.<br>▪ Employees will wash hands, face, and any other exposed areas with soap and water.<br>▪ Portable eyewash stations and showers will be available should employees come into direct contact with contaminated materials.<br>▪ Decon solutions will be disposed of according to the work plan. |
| 4. Walk around the Site | 4A) Poisonous plants | ▪ See section 3C above |
| | 4B) Vermin, leaches, animal borne disease | ▪ See Section 3 D above<br>▪ |
| | 4C) Chemical Hazards | ▪ See Section 3 E above |
| | 4D) Slips/Trips/Falls | ▪ Wear slip resistant footwear preferably laced boots with a minimum 8" high upper and non-skid soles for ankle support and traction.<br>▪ Pay attention to where you place your feet<br>▪ Slow down and use extra caution around logs, rocks, and animal holes.<br>▪ Extremely steep slopes (>50%) can be hazardous under wet or dry conditions; consider an alternate route.<br>▪ Site SHSO will inspect the entire work area to identify and mark hazards.<br>▪ Clear area of trip hazards; mark or barricade those that cannot be moved;<br>▪ Use caution when walking around excavated areas<br>▪ Stay back at least 5 feet from excavated areas<br>▪ Use caution when walking on or around loose soil.<br>▪ Be aware of surroundings. Avoid muddy areas if possible. |

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| 5. Oversight during subsurface exploration, invasive earthwork, or other construction operations | 5A) Heavy Equipment/ Vehicles | ▪ Spotters will be used when backing up trucks and heavy equipment and when moving equipment.<br>▪ Ground personnel in the vicinity of vehicles or heavy equipment operations will be within the view of the operator at all times.<br>▪ Ground personnel will be aware of the swing radius and maintain an adequate buffer zone.<br>▪ Ground personnel will not stand directly behind heavy equipment when it is in operation.<br>▪ Personnel are prohibited from riding on the buckets, or elsewhere on the equipment except for designated seats with proper seat belts or lifts specifically designed to carry workers. Ground personnel will stay clear of all suspended loads.<br>▪ Ground personnel will wear high visibility vests<br>▪ Eye contact with operators will be made before approaching equipment. |
| | 5B) Eye Injury | ▪ Wear appropriate safety glasses (tinted for sun).<br>▪ Watch where you walk, especially around trees and brush with protruding limbs. |
| | 5C) Foot Injury | ▪ Wear steel toed boots<br>▪ Wear insulated steel toed boots during winter<br>▪ Ensure shoes/boots have good traction<br>▪ Pay attention to where you place your feet, especially when walking on uneven terrain |
| | 5D) Head Injury | ▪ Wear hardhat<br>▪ Do not walk or work under scaffolding or other elevated work unless there are guardrails and toeboards in place<br>▪ Flag or mark protruding objects at head level |
| | 5E) Chemical Hazards | ▪ See Section 3E above<br>▪ Wash hands and face prior to consumption of food, beverage or tobacco. |
| | 5F) Vapor/Dust Exposure | ▪ Conduct breathing zone air monitoring as described in the HASP.<br>▪ Implement dust control measures as applicable.<br>▪ Wear proper PPE (see HASP).<br>▪ Stand upwind of point of dust generation |
| | 5G) Odors | ▪ Implement odor control mitigation in accordance with the Site Management Plan. |
| | 5H) Overhead Power Lines | ▪ See Section 3F above. |
| | 5I) Underground Utilities | ▪ See Section 3G above |
| | 5J) Standing/Static Posture | ▪ Change posture on a frequent basis<br>▪ Stretch prior to any physical activity |
| | 5K) Slips/`Trips/Falls | ▪ See Section 4D above |

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| | 5L) Noise | ▪ Hearing protection will be worn with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs).<br>▪ All equipment will be equipped with manufacturer's required mufflers.<br>▪ Hearing protection shall be worn by all personnel working in or near heavy equipment.<br>▪ Hearing protection will be worn when workers need to shout when standing two feet away from each other.<br>▪ Segregate noisy equipment from the operators<br>▪ Use sound dampening around noisy equipment |
| | 5M) Moving Equipment | ▪ Clear area of obstructions and communicate with all workers involved that drilling is beginning<br>▪ Do not exceed manufacturer's recommended speed, force, torque, or other specifications. and penetrate the ground slowly with hands on the controls for at least the first foot of soil to minimize chance of auger kick-out<br>▪ Stay clear of rotating auger<br>▪ Use long-handled shovel to clear away cuttings when auger has stopped<br>▪ Do not wear loose clothing<br>▪ Wear appropriate PPE including leather gloves and steel-toed boots (See HASP) |
| | 5N) Traffic (including pedestrian) | ▪ Notify attendant or site owner/manager of work activities and location<br>▪ Use cones, signs, flags or other traffic control devices, if applicable<br>▪ Set up exclusion zone surrounding work area using cones, signs, flags or other traffic control devices<br>▪ Wear appropriate PPE including high visibility clothing such as reflective vest (See HASP)<br>▪ Inspect area behind vehicle prior to backing and use spotter |
| 6. Sampling Oversight | 6A) Chemical Hazards | ▪ See Section 3E above<br>▪ Wash hands and face prior to consumption of food, beverage or tobacco.<br>▪ Calibrate meters in a clean, well ventilated area<br>▪ Store calibration gases in well vented area. Ensure chemical labels and warnings are legible. |
| | 6B) Personnel Decontamination | ▪ Refer to MSDS for specific hazards associated with decon solutions<br>▪ Monitor breathing zone for decon solutions (e.g., methanol, hexane, etc.), if appropriate (see HASP)<br>▪ Removal of PPE will be performed by the following tasks in the listed order:<br>o Gross boot wash and rinse and removal<br>o Outer glove removal<br>o Suit removal<br>o Respirator removal (if worn).<br>o Inner glove removal<br>▪ Contaminated PPE is to be placed in the appropriate, provided receptacles.<br>▪ Employees will wash hands, face, and any other exposed areas with soap and water.<br>▪ Portable eyewash stations and showers will be available should employees come into direct contact with contaminated materials.<br>▪ Decon solutions will be disposed of according to the work plan. |

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| | 6C) Lifting | ▪ Good lifting techniques (lift with legs not back)<br>▪ Mechanical devices (e.g., hand truck, cart, forklift, etc.) should be used to reduce manual handling of materials and drums.<br>▪ Team lifting should be utilized if mechanical devices are not available. (mandatory for items over 50 lbs)<br>▪ Split heavy loads in to smaller loads<br>▪ Make sure that path is clear prior to lift.<br>▪ Redesign work area to avoid low lifts<br>▪ Stretch prior to lifting<br>▪ Maintain a healthy life style and level of physical fitness. |
| | 6D) Hand Tools | ▪ Cut resistant work gloves will be worn when dealing with sharp objects.<br>▪ All hand and power tools will be maintained in safe condition.<br>▪ Do not drop or throw tools. Tools shall be placed on the ground or work surface or handed to another employee in a safe manner.<br>▪ Guards will be kept in place while using hand and power tools.<br>▪ Daily inspections will be performed.<br>▪ Remove broken or damaged tools from service and tag out as defective<br>▪ No tampering with electrical equipment is allowed (e.g., splicing cords, cutting the grounding prong off plug, etc.)<br>▪ Do not use excessive force or impact<br>▪ Do not use tool improperly. Ensure all workers are trained |
| | 6E) Slips/Trips/Falls | ▪ See Section 4D above. |
| | 6F) Struck by Vehicle | ▪ Ground personnel in the vicinity of vehicles operations will be within the view of the operator at all times.<br>▪ Ground personnel will not stand directly behind vehicles when it is in operation<br>▪ Drivers will keep workers on foot in their vision at all times, if you lose sight of someone, Stop!<br>▪ High visibility vests will be worn when workers are exposed to vehicular traffic at the site or on public roads.<br>▪ Try to park so that you don't have to back up to leave.<br>▪ If backing in required, walk around vehicle to identify any hazards (especially low level hazards that may be difficult to see when in the vehicle) that might be present. Use a spotter if necessary<br>▪ Place cones in the font and rear of the vehicle<br>▪ Prior to driving off, walk around vehicle to collect cones and identify any hazards - especially low level hazards that may be difficult to see when in the vehicle.<br>▪ Set up "Workers in the Road" or similar warning signs and cones to alert traffic.<br>▪ Use emergency flashers and roof top flashing light (recommended) to alert oncoming vehicular traffic.<br>▪ Remain alert at all times as to the traffic outside the vehicle. Step to the side of the road when distracted by by-standers. Keep unofficial personnel out of the work area.<br>▪ Exit vehicle with caution.<br>▪ Wear High Visibility Vest when outside the vehicle.<br>▪ Utilize vehicle as a shield from oncoming traffic, as practical |
| 7. IDW pickup oversight | 7A) Foot Injury | ▪ See Section 5C above. |
| | 7B) Chemical Hazards | ▪ See Section 3E above. |

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|---|---|---|
| | 7C) Lifting | ▪ See Section 6C above. |
| | 7D) Slips/Trips/Falls | ▪ See Section 4D above |
| 8. Return to office/home | 8A) See Mobilization/ Demobilization and Site Preparation JHA | **See Mobilization/ Demobilization and Site Preparation JHA** |

MACTEC

# Job Hazard Analysis - HASP Format

**Job Title:** Insect Stings and Bites **Date of Analysis:** 4/20/06

**Minimum Recommended PPE*:** Long sleeved shirt and pants, light colored clothing
*See HASP for all required PPE

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| 1. Traveling/working in areas with potential Tick Bites –Example outdoor wooded areas or fields. | 1. Lyme Disease, Rocky Mountain Spotted Fever, etc. | ▪ Spray clothing with insect repellant as a barrier.<br>▪ Wear light colored clothing that fits tightly at the wrists, ankles, and waist.<br>▪ Each outer garment should overlap the one above it.<br>▪ Cover trouser legs with high socks or boots.<br>▪ Tuck in shirt tails.<br>▪ Search the body on a regular basis, especially hair and clothing; ticks generally do not attach for the first couple of hours.<br>▪ If a tick becomes attached, pull it by grasping it as close as possible to the point of attachment and pull straight out with gentle pressure. Wash skin with soap and water then cleanse with rubbing alcohol. Place the tick in an empty container for later identification, if the victim should have a reaction. Record dates of exposure and removal.<br>▪ Do not try to remove the tick by burning with a match or covering it with chemical agents.<br>▪ If you can not remove the tick, or the head detaches, seek propmt medical help.<br>▪ Watch for warning signs of illness: a large red spot on the bite area; fever, chills, headache, joint and muscle ache, significant fatigue, and facial paralysis are reactions that may appear within two weeks of the attack. Symptoms specific to Lyme disease include: confusion, short-term memory loss, and disorientation. |
| 2. Working/traveling in areas with potential bee and wasp stings-Example wooded areas and fields | 2. Allergic reactions, painful stings | ▪ Be alert to hives in brush or in hollow logs. Watch for insects travelling in and out of one location.<br>▪ If you or anyone you are working with is known to have allergic reactions to bee stings, tell the rest of the crew and your supervisor. Make sure you carry emergency medication with you at all times.<br>▪ Wear long sleeve shirts and trousers; tuck in shirt.. Bright colors and metal objects may attract bees.<br>▪ If you are stung, cold compresses may bring relief.<br>▪ If a stinger is left behind, scrape it off the skin. Do not use a tweezers as this squeezes the venom sack, worsening the injury.<br>▪ If the victim develops hives, asthmatic breathing, tissue swelling, or a drop in blood pressure, seek medical help immediately. Give victim antihistime, (Benadryl, chlo-amine tabs). |
| 3. Traveling/working in areas of potential Mosquito Bites-Example- Woods, fields, near bodies of water and etc. | 3. Skin irritation, encephalitis | ▪ Wear long sleeves and trousers.<br>▪ Avoid heavy scents.<br>▪ Use insect repellants. If using DEET, do not apply directly to skin, apply to clothing only.<br>▪ Carry after-bite medication to reduce skin irritation. |

MACTEC

# Job Hazard Analysis – HASP Format

**Job Title:** Mobilization/Demobilization and Site Preparation **Date of Analysis:** 8/15/06

**Minimum Recommended PPE*:** High visibility vest, hard hat, steel-toed boots, safety glasses, hearing protection
*See HASP for all required PPE

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| 1. Prepare for Site Visit | 1A) N/A | 1A) Prior to leaving for site<br>▪ Obtain and review HASP prior to site visit, if possible<br>▪ Determine PPE needs – bring required PPE to the site, if not otherwise being provided at the site (e.g., steel toed boots)<br>▪ Determine training and medical monitoring needs and ensure all required Health and Safety training and medical monitoring has been received and is current<br>▪ Ensure all workers are fit for duty (alert, well rested, and mentally and physically fit to perform work assignment)<br>▪ If respiratory protection is required/potentially required, ensure that training and fit-testing has occurred within the past year.<br>▪ Familiarize yourself with route to the site |
| | 1B) Vehicle defects | 1B) Inspect company owned/leased vehicle for defects such as:<br>▪ Flat tires<br>▪ Windshield wipers worn or torn<br>▪ Oil puddles under vehicle<br>▪ Headlights, brake lights, turn signals not working |
| | 1C) Insufficient emergency equipment, unsecured loads | 1C) Insufficient emergency equipment, unsecured loads<br>▪ Ensure vehicle has first aid kit and that all medications are current (if first aid kits are not provided at the site)<br>▪ Ensure vehicle is equpped with warning flashers and/or flares and that the warning flashers work<br>▪ Cell phones are recommended to call for help in the event of an emergency<br>▪ Vehicles carrying tools must have a safety cage in place. All tools must be properly secured<br>▪ Vehicles must be equipped with chocks if the vehicle is to be left running, unattended.<br>▪ Ensure sufficient gasoline is in the tank |
| 2. Operating vehicles – general | 2A) Collisions, unsafe driving conditions | 2A) Drive Defensively!<br>▪ Seat belts must be used at all times when operating any vehicle on company business.<br>▪ Drive at safe speed for road conditions<br>▪ Maintain adequate following distance<br>▪ Pull over and stop if you have to look at a map<br>▪ Try to park so that you don't have to back up to leave.<br>▪ If backing in required, walk around vehicle to identify any hazards (especially low level hazards that may be difficult to see when in the vehicle) that might be present. Use a spotter if necessary |
| 3. Driving to the jobsite | 3A) Dusty, winding, narrow roads | 3A) Dusty, winding, narrow roads<br>▪ Drive confidently and defensively at all times.<br>▪ Go slow around corners, occasionally clearing the windshield. |
| | 3B) Rocky or one-lane roads | 3B) Rocky or one-lane roads<br>▪ Stay clear of gullies and trenches, drive slowly over rocks.<br>▪ Yield right-of-way to oncoming vehicles---find a safe place to pull over. |
| | 3C) Stormy weather, near confused tourists | 3C) Stormy weather, near confused tourists<br>▪ Inquire about conditions before leaving the office.<br>▪ Be aware of oncoming storms.<br>▪ Drive to avoid accident situations created by the mistakes of others. |

MACTEC

# Job Hazard Analysis – HASP Format

**Job Title:** Mobilization/Demobilization and Site Preparation **Date of Analysis:** 8/15/06

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| | 3D) When angry or irritated | 3D) When angry or irritated<br>▪ Attitude adjustment; change the subject or work out the problem before driving the vehicle. Let someone else drive. |
| | 3E) Turning around on narrow roads | 3E) Turning around on narrow roads<br>▪ Safely turn out with as much room as possible.<br>▪ Know what is ahead and behind the vehicle.<br>▪ Use a backer if available. |
| | 3F) Sick or medicated | 3F) Sick or medicated<br>▪ Let others on the crew know you do not feel well.<br>▪ Let someone else drive. |
| | 3G) On wet or slimy roads | 3G) On wet or slimy roads<br>▪ Drive slow and safe, wear seatbelts. |
| | 3H) Animals on road | 3H) Animals on road<br>▪ Drive slowly, watch for other animals nearby.<br>▪ Be alert for animals darting out of wooded areas |
| 4. Gain permission to enter site | 4A) Hostile landowner, livestock, pets | 4A) Hostile landowner, livestock, pets<br>▪ Talk to land owner, be courteous and diplomatic<br>▪ Ensure all animals have been secured away from work area |
| 5. Mobilization/ Demobilization of Equipment and Supplies | 5A) Struck by Heavy Equipment/Vehicles | 5A) Struck by heavy equipment<br>▪ Be aware of heavy equipment operations.<br>▪ Keep out of the swing radius of heavy equipment.<br>▪ Ground personnel in the vicinity of heavy equipment operations will be within the view of the operator at all times<br>▪ Employees shall wear a high visibility vest or T-shirt (reflective vest required if working at night).<br>▪ Ground personnel will be aware of the counterweight swing and maintain an adequate buffer zone.<br>▪ Ground personnel will not stand directly behind heavy equipment when it is in operation. |
| | 5B) Struck by Equipment/Supplies | 5B) Struck by Equipment/Supplies<br>▪ Workers will maintain proper space around their work area, if someone enters it, stop work.<br>▪ When entering another worker's work space, give a verbal warning so they know you are there. |
| | 5C) Overexertion Unloading/Loading Supplies | 5C) Overexertion Unloading/Loading Supplies<br>▪ Train workers on proper body mechanics, do not bend or twist at the waist while exerting force or lifting.<br>▪ Tightly secure all loads to the truck bed to avoid load shifting while in transit. |
| | 5D) Caught in/on/between | 5D) Caught in/on/between<br>▪ Do not place yourself between two vehicles or between a vehicle and a fixed object. |
| | 5E) Slip/Trip/Fall | 5E) 1E). Slip/Trip/Fall<br>▪ Mark all holes and low spots in area with banner tape. Instruct personnel to avoid these areas.<br>▪ Drivers will maintain 3 point contact when mounting/dismounting vehicles/equipment.<br>▪ Drivers will check surface before stepping, not jumping down. |

MACTEC

# Job Hazard Analysis – HASP Format

**Job Title:** Mobilization/Demobilization and Site Preparation **Date of Analysis:** 8/15/06

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| | 5F) Vehicle accident | 5F) Vehicle accident<br>▪ Employees should follow MACTEC vehicle operation policy and be aware of all stationary and mobile vehicles. |
| 6. Site Preparation | 6A) Slip/Trip/Fall | 6A) Slip/Trip/Fall<br>▪ Mark all holes and low spots in area with banner tape. Instruct personnel to avoid these areas |
| 7. Installation of soil erosion and sediment controls | 7A) Overexertion | 7A) Overexertion<br>▪ Workers will be trained in the proper method of placing erosion controls.<br>▪ Do not bend and twist at the waist while lifting or exerting force. |
| | 7B) Struck by Equipment/Supplies | 7C) Struck by Equipment/Supplies<br>▪ Workers will maintain proper space around their work area, if someone enters it, stop work.<br>▪ When entering another worker's work space, give a verbal warning so they know you are there. |
| 8. Driving back from the jobsite | 8A) See hazards listed under item #3 | 8A) See safe work practices under item #3 |

MACTEC

# Job Hazard Analysis - HASP Format

**Job Title:** Soil Sampling w/ Hand Auger/ Hand tools **Date of Analysis:** 7/7/2010

**Minimum Recommended PPE*:** High visibility vest, steel-toed safety boots, safety glasses with side shields, hearing protection

*See HASP for all required PPE

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| 1. Going to site, work preparation | 1A) Mobilization / Demobilization and Site Preparation | 1A) See JHA for Mobilization Demobilization and Site Preparation |
| 2. Working at the site | 2A) General Field Work – Walking and working in the field, Environmental conditions, communication | 2A) See JHA for General Field Work |
| | 2B) Working Near Utilities | 2B) Working Near Utilities<br>• See JHA for Utility Clearance Activities<br>• See JHA for Field Work - Oversight<br>• On private property/active facility, walk all planned locations with a appropriate representative prior to start of exploration to identify the location of marked/unmarked utilities (underground/overhead) and note any uncertainties. Field Lead should call PM and relay any issues. Document this inspection in the field book and note subcontractor's responses to any MACTEC concerns.<br>• Coordinate with facility representatives to gain access to restricted areas.<br>• For areas where utility locations cannot be verified, workers must hand dig for the first 3 feet<br>• Wear appropriate PPE<br>• If working in close proximity to live utilities (i.e. transformers), do not tamper with the units in any way and maintain safe working distance based on voltage.<br>• If working alone, always notify other crewmembers/project team members/facility personnel of your whereabouts.<br>• Carry a radio and spare batteries or cell phone.<br>• Let other crewmembers know when you see a hazard. |
| 3. Preparing sample location | 3A) Contact with poisonous plants or the oil from poisonous plants | 3A) Contact with Poisonous plants or oil from poisonous plants<br>▪ Look for signs of poisonous plants and avoid.<br>▪ Wear PPE as described in the HASP.<br>▪ Do not touch anything part of your body/clothing.<br>▪ Always wash gloves before removing them<br>▪ Discard PPE in accordance with the HASP |
| | 3B) Contact with biting insects (i.e., spiders, bees, etc.) | 3B) Contact with biting insects<br>▪ Discuss the types of insects expected at the Site and be able to identify them.<br>▪ Look for signs of insects in and around the well.<br>▪ Wear Level of PPE as described in the HASP. At a minimum, follow guidelines in the JHA "Insects Stings and Bites."<br>▪ If necessary, wear protective netting over your head/face.<br>▪ Avoid contact with the insects if possible.<br>▪ Inform your supervisor and the Site Health and Safety Supervisor if you have any allergies to insects and insect bites. Make sure you have identification of your allergies with you at all times and appropriate response kits if applicable.<br>▪ Get medical help immediately if you are bitten by a black widow or brown recluse, or if you have a severe reaction to any spider bite or bee sting. |
| | 3C) Encounter wild/ dangerous animal | 3C) Encounter wild/ dangerous animal<br>• See JHA "Dog and Wildlife Safety" |

MACTEC

# Job Hazard Analysis - HASP Format

**Job Title:** Soil Sampling w/ Hand Auger/ Hand tools **Date of Analysis:** 7/7/2010

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| | 3D) Back strain due to lifting or moving equipment to sampling locations | 3D) Back strain due to lifting or moving equipment to sampling locations<br>▪ Use mechanical aids when possible, if mechanical aids are not available, use two person lifts for heavy items.<br>▪ Use proper lifting techniques<br>▪ Split up heavy loads into smaller loads |
| | 3E) Foot injuries | 3E) Foot injuries<br>▪ Be aware when moving objects, ensure you have a good grip when lifting and carrying objects.<br>▪ Do not carry more than you can handle safely<br>▪ Wear steel toed boots with high tops<br>▪ Be observant of surroundings. Be mindful of holes and uneven terrain. Surfaces may be wet and muddy. Avoid puddles. |
| 4. Hand Auguring/ Shoveling Test Holes | 4A) Back injury from lifting and twisting equipment | 4A) Back injury from lifting and twisting equipment<br>• Use proper lifting and bending techniques.<br>• Us 2 persons for lifting of heavy, bulky items over 50 lbs.<br>• Use Mechanical means if available (e.g. auger jacks etc.)<br>• Wobble auger or shovel to break suction of wet soils. |
| | 4B) Injuries from transporting equipment to site i.e. stumbling or falling | 4B) Injuries from transporting equipment to site i.e. stumbling or falling<br>• Ensure surround are is clear of personnel and obstacles as you approach the test site.<br>• Transport equipment in sections, beginning with equipment nearest tailgate of truck.<br>• Use 2 person lift for heavy items<br>• Assure pathway is clear |
| | 4C) Injuries while adding extensions | 4C) Injuries while adding extensions<br>• Ensure that PPE is used.<br>• Lift and connect extension with care.<br>• Use proper lifting procedures. |
| | 4D) Hit utilities or geo-textile membrane and contamination | 4D) Hit utilities or geo-textile membrane and contamination<br>• Locate utilities and mark. Sample in cleared area.<br>• Use of hand tools. Be observant. Do not use excessive force.<br>• Follow sampling work plan for location and depth. |
| | 4E) Injury to others as equipment is removed | 4E) Injury to others as equipment is removed<br>• Assure that other are standing at a safety distance before removing equipment |
| | 4F) Fingers injuries | 4F) Fingers injuries<br>• Assure fingers are clear as equipment is extracted - Wear PPE (gloves, eye protection, etc).<br>• Be aware of the type of material being removed from test hole and handle appropriately |
| | 4G) Electrocution | 4G) Electrocution<br>• A ground fault circuit interrupter (GFCI) device must protect all AC electrical circuits.<br>• Use only correctly grounded equipment. Never use three-pronged cords which have had the third prong broken off.<br>• Make sure that the electrical cords from generators and power tools are not allowed to be in contact with water<br>• Do not stand in wet areas while operating power equipment<br>• Always make sure all electrically-powered sampling equipment is in good repair. Report any problems so the equipment can be repaired or replaced.<br>• When unplugging a cord, pull on the plug rather than the cord.<br>• Never do repairs on electrical equipment unless you are both authorized and qualified to do so. |

MACTEC

# Job Hazard Analysis - HASP Format

**Job Title:** Soil Sampling w/ Hand Auger/ Hand tools **Date of Analysis:** 7/7/2010

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| 5. Sample Collection | 5A) Exposure to contaminants | 5A) Exposure to Contaminants<br>▪ Stand up wind when sampling and do not breathe dust (if conditions are dusty)<br>▪ Monitor breathing zone with appropriate monitoring equipment (see HASP)<br>▪ Continually monitor soil samples for low level radiation.<br>▪ Wear chemical resistant PPE as identified in HASP / JHA<br>▪ Minimize sample contact<br>▪ Label sample in accordance with procedures |
| | 5B) Exposure to preservatives | 5B) Exposure to preservatives<br>▪ Work in a well ventilated area, upwind of samples<br>▪ Wear chemical resistant PPE as identified in HASP / JHA.<br>▪ Review MSDSs |
| | 5C) Slips/trips/falls | 5C) Slips/trips/falls<br>▪ Ground can become wet/muddy<br>▪ Wear good slip resistant footwear |
| | 5D) Vapors and Airborne Particulates | 5D) Vapors and Airborne Particulates<br>▪ Monitor air concentrations using direct-reading, real-time instruments (See HASP for required monitoring instruments and action limits)<br>▪ If hazardous conditions are identified, stop work until precautions are taken<br>▪ Wear appropriate PPE including safety glasses with side shields, dust masks and respirators (See HASP) |
| | 5E) Lifting Injury | 5E) Lifting injury<br>▪ Use proper lifting techniques when carrying quantities of samples<br>▪ Use proper ergonomics when hand digging for samples |
| | 5F) Eye injury | 5F) Eye Injury<br>▪ Wear eye protection during operation of Geoprobe or if misc. debris may harm your eyes. |
| | 5G) Fire | 5G) Have an A-B-C rated fire extinguisher on hand in case of small equipment fires. Only individuals trained in fire extinguisher use should use a fire extinguisher. |
| | 5H) Sharp Sampling Tools | 5H) Sharp Sampling Tools<br>• Use correct tools for opening sleeves<br>• When opening sleeve, cut away from body<br>• Place soil core on sturdy surface prior to cutting |
| | 5I) Sample Cross Contamination | 5I) Sample Cross Contamination<br>▪ Decontaminate or dispose of sampling equipment between sampling locations<br>▪ Double-check sample labels to ensure accuracy and adhesion to containers |
| 6. Disposal of leftover soil. | 6A) Contamination from impacted soil | 6A) Properly dispose of any leftover soil sample<br>▪ Consult the Project Manager for proper disposal of soil.<br>▪ Don proper PPE when handling sample cores and disposing of soils.<br>▪ If soils are placed in a container (i.e. drum) properly label the drum. |
| 7. Backfill Borehole. | 7A) Contamination from impacted soil and/or groundwater | 7A) Minimize contact with potentially impacted soil and/or groundwater<br>▪ Don proper PPE when backfilling the borehole.<br>▪ If the borehole is located in a paved area (i.e. asphalt/concrete), carefully patch the borehole using proper patching materials. |

MACTEC

# Job Hazard Analysis - HASP Format

**Job Title:** Soil Sampling w/ Hand Auger/ Hand tools **Date of Analysis:** 7/7/2010

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| 8. Solid/Liquid Waste Management/ Disposal | 8A) Contaminated Materials and Container Pinch Points | 8A) Contaminated Materials and Container Pinch Points<br>▪ Wear appropriate PPE including Nitrile and leather gloves (See HASP)<br>▪ Position hands/fingers to avoid pinching/smashing/crushing when closing drum rings |
| | 8B) Heavy Materials and Containers Lifting/ Moving | 8B) Contaminated Materials and Container Pinch Points<br>▪ Do not lift or move heavy containers without assistance<br>▪ Use proper bending/lifting techniques by lifting with arms and legs and not with back<br>▪ If possible, use powered lift truck, drum cart, or other mechanical means Take breaks if feeling faint or overexerted<br>▪ Spot drums in storage area prior to filling<br>▪ Wear appropriate PPE including leather gloves and steel-toed boots |
| 9. Demobilize | 9A) See Mobilization/ Demobilization and Site Preparation JHA | 9A) See Mobilization/ Demobilization and Site Preparation JHA |

MACTEC

# Job Hazard Analysis - HASP Format

**Job Title:** Streams and Wetlands **Date of Analysis:** 10/17/06

**Minimum Recommended PPE*:** Waders, traction devices on shoes, helmets/hardhats, gloves
*See HASP for all required PPE

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| 1. Walking to and from stream | 1A) Insect bites/stings | 1A) Insect bites/stings<br>▪ Avoid wearing heavy fragrances.<br>▪ Carry first-aid and sting relief kits.<br>▪ Make sure all crew members are informed about others who are allergic and what to do if they need assistance.<br>▪ Carry necessary emergency medication.<br>▪ See JHA Insect Bites and Stings |
| | 1B) Contact with poisonous plants or the oil from those plants: | 1B) Contact with poisonous plants or the oil from those plants:<br>▪ Look for signs of poisonous plants and avoid.<br>▪ Ensure all field workers can identify the plants. Mark identified poisonous plants with spray paint if working at a fixed location.<br>▪ Do not allow plant to touch any part of your body/clothing.<br>▪ Wear PPE as described in the HASP and wear Tyveks, gloves and boot covers if contact with plant is likely<br>▪ Always wash gloves before removing them.<br>▪ Discard PPE in accordance with the HASP.<br>▪ Use commercially available products such as Ivy Block or Ivy Wash as appropriate. |
| | |  <br>POISON IVY (Rhus toxicondendron L.) POISON OAK (Rhus diversiloba) POISON SUMAC (Rhus toxicondendron vernix) |
| | 1C) Slips and falls | 1C) Slips and falls<br>▪ Use traction devices on shoes.<br>▪ Move slowly, take your time.<br>▪ Use a walking staff to provide a three point support. |
| | 1D) Eye injuries | 1D) Eye injuries<br>▪ Travel with care through heavy brush.<br>▪ Use eye protection in brushy areas. |
| | 1E) Scrapes and punctures | 1E) Scrapes and punctures<br>▪ Wear proper clothing, long sleeved shirts and pants. No shorts. |
| | 1F) Cuts/Lacerations due to machette use | 1F) Cuts/Lacerations due to machette use<br>▪ Wear chaps or snake legs<br>▪ Cut away from the body<br>▪ Ensure blade of machette is sharp |
| | 1G) Blow-down / heavy debris | 1G) Blow-down / heavy debris<br>▪ Be aware of your surroundings, including hanging or leaning debris that may be dislodged and fall. |

MACTEC

# Job Hazard Analysis - HASP Format

**Job Title:** Streams and Wetlands **Date of Analysis:** 10/17/06

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| | 1H) Animal encounters | 1H) Animal encounters<br>▪ See JHA Dog and Wildlife Safety<br>▪ Moose:<br>a. Make noise to avoid encounter.<br>b. If you do encounter a moose, put a lot of room between you and the animal by walking around him/her if necessary.<br>c. Do not look it in the eye.<br>d. If charged, run away or climb a tree.<br>e. Throwing something or shouting may deter an attack. |
| | 1I) Severe injury in remote locations | 1I) Severe injury in remote locations<br>▪ Carry a two-way radio and know how to use it.<br>▪ Work in teams.<br>▪ Make sure someone on crew is certified in first aid.<br>▪ Carry a first aid kit. |
| 2. Entering Stream | 2A) Slips and falls | 2A) Slips and falls<br>▪ Use traction devices on shoes and waders.<br>▪ Move slowly, take your time.<br>▪ Use a walking staff to provide a three point support. |
| | 2B) Sand or Mud – knee or ankle injury | 2B) Sand or Mud<br>▪ Use shorter steps<br>▪ Use walking sticks to check firmness of soils<br>▪ Use buddy system<br>▪ Snowshoes that dissipate weight may be effective<br>▪ If leg gets caught, use slight back and forth motion to soften mud and remove slowly. Don't try to pull leg out with twisting or jerking motion.<br>▪ If possible, aeriate or bubble the mud to help releave suction. |
| | 2C) Equipment | 2C) Equipment<br>▪ Secure packs and hip waders with quick release straps and be ready to discard, if an emergency arises.<br>▪ Do not work in waders in water greater than 3 feet deep or in swift water.<br>▪ Wear bike or rafting helmets to protect from blows to the head. |
| | 2D) Hypothermia | 2D) Hypothermia<br>▪ Work in teams of two.<br>▪ Have warming devices available.<br>▪ Wear proper equipment that is in good condition.<br>▪ Be aware of signs of hypothermia, it's prevention, detection and treatment.<br>▪ Stay in tune to current weather and extended forecasts.<br>▪ See JHA General Field Work |
| | 2E) High flow velocity | 2E) High flow velocity<br>▪ Evaluate a stream before entering.<br>▪ Follow the "rule of 10"<br>a. If stream is 1 foot deep and flowing @10 ft./sec, it is too hazardous to wade<br>b. If stream is 2 feet deep and flowing at 5 ft./second, it is too hazardous to wade.<br>c. If you do enter a stream and discover it is too dangerous to wade, back out using your wading pole for balance. |

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# Job Hazard Analysis - HASP Format

**Job Title:** Streams and Wetlands **Date of Analysis:** 10/17/06

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| | 2F) Severe weather | 2F) Severe weather<br>▪ Suspend measurements during lightning storms or when a storm is approaching. |

# Job Hazard Analysis Form

**Job Title:** Utility Clearance Activities **Date of Analysis:** 7/7/10

**Minimum Recommended PPE*:** High visibility vest, hard hat, steel-toed boots, safety glasses, hearing protection

*See HASP for all required PPE

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| 1. Pre-planning | 1A) Property Access<br>▪ Animal bites<br>▪ Dangerous social areas/ violent neighborhoods<br>▪ Lost<br>▪ Electrocution | 1A) Ensure communications with the property owner. Request pets and animals to be confined during the survey.<br>▪ Maintain communications via two way radios or cell phones.<br>▪ Learn animal posturing including how to identify rabid animals.<br>▪ Contract security as appropriate for safety and equipment theft.<br>▪ Be prepared with a map and compass as necessary.<br>▪ Be aware of overhead and underground utilities. Ensure Dig-Safe has been contacted.<br>▪ When working with electrical equipment avoid wet surfaces and exposed connections. |
| | 1B) Utilities Not Cleared (damage to utilities, worker injury) | 1B) Utilities Not Cleared.<br>▪ Provide sufficient time and budget to ensure that utilities have been adequately located, prior to the start of up of work.<br>▪ Contact One Call Utility identifier organization at least 6 days prior to the project start date.<br>▪ Cite or have subcontractor cite a start date of at least 3 working days prior to actual planned start date (provides window to inspect locations prior to job start-up.<br>▪ Verify via emails or phone that all utilities have visited the site and marked their respective utilities.<br>▪ If subcontractor calls One Call organization, require them to forward all e-mail responses from member utilities as they receive them.<br>▪ If verification cannot be done remotely, send worker to site to inspect ground for markings (cheaper to identify issues prior to mobilization to the site).<br>▪ Document all phone communications with driller about utility clearance issues and requests (e-mail the conversation highlights or document in a field notebook – it becomes part of the file record)<br>▪ Call any member utilities that have not responded indicating they have cleared or marked-out utilities. Place the call morning of ticket start date (e.g., 3 days prior to actual start date). Document the phone conversations in notes or e-mails to the file.<br>▪ If town services (e.g., sanitary sewer, storm sewer, water) aren't listed as a One Call member, contact the town office to schedule mark-out, obtain copies of utility networks, and identify the appropriate town contacts.<br>▪ If town maps have lateral connections to private lots marked and /or if we are drilling along road right-of way opposite developed properties, identify the locations of the lateral connections. This may mean contacting abutters and asking to look in basements for location of pipes. If possible do this during a site visit prior to field start. If not, it should occur during the first day of work so any issues can be identified and decisions made on the risk of proceeding.<br>▪ Walk all planned locations with the subcontractor, prior to start of excavation/drilling to identify marked utilities and note any uncertainties. Field Lead should call PM and relay any issues. Document this inspection in the field book and note subcontractor's responses to any MACTEC concerns. |
| | 1C) Locating Utilties on Private Property | 1C) Locating Utilities on Private Property<br>▪ Hire private utility locater company<br>▪ Locate underground utilities by ground penetrating radar, electromagnetic, deep metal detector, pipe transmitter, vibracator, etc |

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| | 1D) Lack of Reliable Data on Utility Locations | 1D) Lack of Reliable Data on Utility Locations<br>▪ If the surveys are not providing reliable data, plan to use non-destructive means to drill/excavate e.g., soil vacuum, water jet, air knife and/or hand tools.<br>▪ Use caution and proper PPE when using hand tools (hand augers, posthole diggers, shovels, steel rods, etc.). |
| | 1E) Working Near Live Utilities | 1E) Working Near Live Utilities<br>▪ If live utilities are known to be present near drilling/excavation location, if possible, move drilling/excavation to another location.<br>▪ Lockout/Tagout utilities, if possible.<br>▪ Use non-destructive means to drill/excavate (see # 1D) until safe to proceed. |
| 2. Walking Around Site Identifying Utiltiy Clearances. | 2A) Slips/Trips/Falls | 2A) Slips/Trips/Falls<br>▪ Keep work area free of excess material and debris<br>▪ Remove all trip hazards by keeping materials/objects organized and out of walkways<br>▪ Keep work surfaces dry when possible<br>▪ Wear appropriate PPE (see HASP) including non-slip rubber boots if working on wet or slick surfaces<br>▪ Install rough work surface covers where possible<br>▪ Stay aware of footing and do not run |
| | 2B) Heat/Cold Stress | 2B) Heat/Cold Stress<br>▪ Take breaks if feeling faint or overexerted<br>▪ Consume adequate food/beverages (water, sports drinks)<br>▪ If possible, adjust work schedule to avoid temperature extremes |
| | 2C) Biological Hazards: Insects, Snakes, Wildlife, Vegetation | 2C) Biological Hazards: Insects, Snakes, Wildlife, Vegetation<br>▪ Inspect work areas when arrive at site to identify hazard(s)<br>▪ Use insect repellant if observe mosquitoes/gnats<br>▪ Survey site for presence of biological hazards and maintain safe distance<br>▪ Wear appropriate PPE including leather gloves, long sleeves and pants, and snake chaps as warranted by site conditions |
| | 2D) Traffic (including pedestrian) | 2D) Traffic (including pedestrian)<br>▪ Notify attendant or site owner/manager of work activities and location<br>▪ Use cones, signs, flags or other traffic control devices<br>▪ Wear appropriate PPE including high visibility clothing such as reflective vest<br>▪ Inspect area behind vehicle prior to backing and use spotter |
| | 2E) Back strain due to lifting, pulling or tugging equipment | 2E) Back strain<br>▪ Use mechanical aids when possible, if mechanical aids are not available, use two person lifts for heavy items.<br>▪ Use proper lifting techniques |

MACTEC

# Job Hazard Analysis - HASP Format

**Job Title:** Working Near Railroads including rapid Transit and Light Rail **Date of Analysis:** 8/3/2010

**Minimum Recommended PPE*:** High Visibility Vest, Safety shoes, Hard hat, Safety glasses with side shields, Hearing Protection (optional)

*See HASP for all required PPE

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| 1. Prepare for work event | 1A) Lack of training | 1A) Lack of training<br>▪ Read HASP and determine air monitoring and PPE needs.<br>▪ Anyone working within 50 feet of the centerline of a track (may vary State to State) must comply with the FRA Roadway Worker Safety Rules as found in 49 CFR – Part 214 subpart C<br>▪ Identify qualified safety representative to interface with State Authorities in regards to rail safety and State requirements<br>▪ Gain permission of Railroad prior to working on their property. (Obtain Permits and license agreements on behalf of the client from the Property Owner and Railroad Company. Obtain necessary insurance, consult with MACTEC Corporate Legal Department.<br>▪ Ensure all affected employees receive Railroad Safety Orientation Training prior to working within the right of way (within 50 feet of the centerline of the track (may vary State to State))<br>▪ Work with the State Resident Engineer to arrange for foul line and/or fouling time, Flagmen, and Electric Traction Linemen |
| **2.** Mobilization | 2A) See JHA Mobilization/ Demobilization/Site Preparation | 2A) See Mobilization/Demobilization and Site Preparation JHA |
| 3. General Site Hazards | 3A) See JHA Field Work – General and/or Oversight<br>3B) Prohibited Activities | 3A) See JHA Field Work – General and/or Oversight<br>3B) Prohibited activities<br>▪ Possession or use of drinking intoxicants and narctotics<br>▪ Hourseplay or fighting |

MACTEC

# Job Hazard Analysis - HASP Format

**Job Title:** Working Near Railroads including rapid Transit and Light Rail **Date of Analysis:** 8/3/2010

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| 4. Carrying equipment to site location | 4A) Back or muscle strain<br>4B) Slips/ Trips/ Falls<br>4C) Passing train equipment | 4A) Back or muscle strain<br>▪ Use proper lifting techniques when lifting pumps or generators<br>▪ Use mechanical aids if available<br>▪ Use 2 person lift for heavy items<br>4B) Slips/ Trips/ Falls<br>▪ Be aware of surroundings. Watch for uneven surfaces.<br>▪ Avoid stepping on rails which may be wet and slippery or electrified.<br>▪ Wear sturdy safety shoes.<br>▪ **Contractors must use established walkways and/or pathways when accessing work locations**<br>▪ Do not walk, step, rest foot on or sit on rail, frog, switch, guard rail, pipe, interlocking apparatus or connection or any part of the track structure except when necessary due to work requirements and if accompanied by qualified rail employee<br>▪ Do not walk through steam, smoke or other such vapor or substance as it will obscure the view of the walking area<br>▪ When crossing tracks, the shortest route shall be followed after obtaining permission of rail employee<br>▪ Do not cross tracks closer than 15 feet from a standing train or standing self-propelled equipment.<br>▪ Never pass under, over or between cars, locomotives, or other rolling equipment<br>▪ **Frequently look in both directions. DO NOT RELY ON THE WATCHFULLNESS OF OTHERS. Trains operate on any track at any time in any direction and at any speed.**<br>4C) Passing train equipment<br>▪ Be aware of surroundings. Watch for vehicles on the tracks.<br>▪ Have a spotter designated for notifying work crew of approaching vehicle. (if on blind corner, high speed traffic, rules dictate)<br>▪ Debris and rocks may be kicked up by moving train. These items may be traveling at speed greater than 55 mph. Impact from debris with equipment or personnel can be deadly.<br>▪ Never place items on rails.<br>▪ Hold job briefing with Flagman prior to working on railroad property<br>▪ Determine if tracks must be taken out of service<br>a. Construction machinery or equipment iw within 18 feet of centerline of tracks<br>b. Unsecured construction material stored within 20 feet of centerline of tracks<br>c. Excavations under or adjacent to (where stability of tracks may be affected) operating tracks<br>d. Boom-equipped construction machinery on site<br>e. **Other conditions** |
| 5. Calibrate monitoring equipment | 5A) Exposure to calibration gases | 5A) Exposure to calibration gases<br>▪ Review equipment manuals<br>▪ Calibrate in a clean, well ventilated area |

MACTEC

# Job Hazard Analysis - HASP Format

**Job Title:** Working Near Railroads including rapid Transit and Light Rail **Date of Analysis:** 8/3/2010

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| 6. Required PPE | 6A) Entrapment/ flying debris/ electricution/ chemical exposure | 6A) Entrapment/ flying debris/ electricution/ chemical exposure<br>▪ All personnel shall wear clothing appropriate for their work. (Refer to chemical PPE in HASP.) This includes:<br>▪ Clothing that is not badly torn or loose enough to be hazardous,<br>▪ The bottoms of pants or cuffs secured to prevent flapping, catching or dragging<br>▪ Safety boots mandatory when working on bridges and within 18 feet of track. Sturdy leather shoes with not less than 6 inch high ankle support **(sandles, open toed, canvas or other shoes that cannot be fastened and sneakers are prohibited.)** Shoes must have a definate heel. Laces cannot dangle far enough to be a tripping hazard<br>▪ Hardhats (mandatory)<br>▪ Safety Glasses/Goggles (mandatory)<br>▪ High visibility vests (mandatory)<br>▪ As required:<br>a. Face shields<br>b. Reflective vests<br>c. Respirators<br>d. Non conductive boots, clothing and equipment |
| 7. Required equipment | 7A) Overhead Wires/ Electrified rails: Electrical Contact – burns/ electrocution. | 8A) Electrical Contact – burns/ electrocution.<br>▪ Measuring tape must be non-metalic<br>i. To avoid shunting the signal system electric circuits<br>ii. Will occur if laid across tops of two rails of any track<br>▪ Electrically rated fiberglass elevation rods are to be used to avoid injury in the event that contact is made with energized catenary or signal/communication lines.<br>▪ Elevations of catenary wires must be obtained by or under direct supervision of qualified Class A employee<br>▪ All overhead wires will be considered live at all times except when it is KNOWN that they have been de-energized and properly grounded<br>▪ Workers and equipment must stay at least 15 feet from any live wires<br>▪ Daily safety brielfings will be conducted by the Electric Traction Department employee<br>▪ Working at an area of the site is prohibited until the Electric Traction Department employee has provided clearance<br>▪ The Electric Traction Department employee will show the contractors the wires and equpment or apparatus from which power has been removed and the location of the grounding devices applied.<br>▪ Each forman will sign a form indicating that they have been instructed and are aware of the cleared work area<br>▪ If the Electric Traction Department employee needs to leave the area, all work will stop and workers move to a safe zone until the Electric Traction Department employee returns.and advises them it is safe to do so. |

MACTEC

# Job Hazard Analysis - HASP Format

**Job Title:** Working Near Railroads including rapid Transit and Light Rail **Date of Analysis:** 8/3/2010

| Key Work Steps | Hazards/Potential Hazards | Safe Practices |
|---|---|---|
| **8.** Working within 18 feet of track | 8A) Exposure to traffic | 8A) Exposure to traffic<br>▪ Flagman is required<br>▪ Flagman shall identify safety zone where workers shall immediately proced upon notice of oncoming train and shall remain until train passes and flagman gives the "all clear."<br>▪ Flagman shall warn crew at least 15 second prior of a train coming<br>▪ All work shall immediately be discontinued and workers immediately clear all tracks and go to safe zone until train passes<br>▪ At no time shall workers foul tracks or perform any work on rail property unless necessary and in the performance of duties and only when accompanied by qualified rail personnel. |
| 9. Working over 18 feet away from centerline of tracks | 9A) Communication | 9A) Communication<br>▪ Provide markers and flagging to demark zone where workers must stay away from |
| 10. Reporting of injuries | 10A) Record keeping/ breach of contract | 10A) Record keeping/ breach of contract<br>▪ All injuries that occur on railroad property must be reported promptly to the Chief Dispacher |
| | | |

# New York State Department of Health
# Generic Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical-specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

## Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

**Continuous monitoring will be required for all <u>ground intrusive</u> activities and during the demolition of contaminated or potentially contaminated structures.** Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

**Periodic monitoring** for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a **continuous** basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored **continuously** at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ($mcg/m^3$) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 $mcg/m^3$ above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 $mcg/m^3$ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 $mcg/m^3$ of the upwind level and in preventing visible dust migration.

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

June 20, 2000

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