

**SITE-SPECIFIC HEALTH AND  
SAFETY PLAN**

**NEAL'S LANDFILL SINKHOLE/CAVE ENTRY  
MONROE COUNTY, INDIANA**

*Prepared for:*

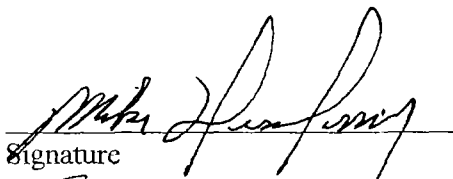
**Viacom, Inc.**  
11 Stanwix Street  
Pittsburgh, Pennsylvania 15222

*Prepared by:*

**PSARA Technologies, Inc.**  
10925 Reed Hartman Highway  
Suite 220  
Cincinnati, Ohio 45242

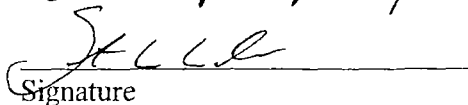
*Approved by:*

Mike Hessling  
PSARA Project Manager

  
Signature

11/5/04  
Date

Scott W. Walton  
PSARA Corporate Health &  
Safety Director

  
Signature

11/5/04  
Date

November 5, 2004  
PSARA PN: 30400.57

email  
2004

(2)

**Steigerwald, Beth**

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**From:** Alke, Dottie M.  
**Sent:** Friday, November 05, 2004 4:12 PM  
**To:** Steigerwald, Beth  
**Subject:** FW: final version of NLF sinkhole/cave entry HASP

**Attachments:** HASP NLF sinkhole and cave entry - FINAL.pdf



HASP NLF sinkhole  
and cave ent...

-----Original Message-----

**From:** Andy Smith [mailto:ajsmith@psara.com]  
**Sent:** Friday, November 05, 2004 3:53 PM  
**To:** Jeffrey J. Lifka; John Bassett; Mike McCann; Russ Cepko; Dottie Alke  
**Cc:** Mike Hessling; Richard McCandless  
**Subject:** final version of NLF sinkhole/cave entry HASP

All,

Attached is the final version of the Neal's Landfill sinkhole and cave entry HASP in .pdf format. Feel free to distribute at will.

John, could you please forward this to Chad Ross; I do not have his email address.

Andy Smith

NOV 16 2004

# Memorandum

**Neal's HASP**



To: Dottie Alke, Tom Alcamo  
From: **Scott W. Walton**  
CC: Andy Smith, Mike Hessling  
Date: November 15, 2004

## HASP Distribution

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Enclosed is your copy of the Health and Safety Plan approved for use at the Neal's Landfill Cave and Sinkhole explorations. The master copy of this plan will be retained in Bloomington by Andy Smith.

Thank you for your help on this.

A handwritten signature in black ink, appearing to read "Scott W. Walton".

## TABLE OF CONTENTS

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Site Safety Plan Acknowledgment Form.....	iv
Section 1: Introduction.....	5
Section 2: Key Personnel.....	6
2.1 PSARA Project Manager.....	6
2.2 Site Health and Safety Officer / Site Supervisor.....	6
2.3 PSARA Corporate Health and Safety Director.....	6
Section 3: Task/Operation Safety and Health Risk Analysis.....	8
3.1 Site Description.....	8
3.2 Site History.....	8
3.3 Scope of Work.....	10
3.4 Health and Safety Risk Analysis.....	10
Section 4: Personnel Training Requirements.....	26
Section 5: Personal Protective Equipment.....	27
5.1 Levels of Protection for Project Operations.....	27
5.2 Description of Selected Levels of Protection.....	28
Section 6: Medical Surveillance Requirements.....	29
Section 7: Work Zones and Site Control Measures.....	30
7.1 Work Zone Designations.....	30
7.2 Safe Work Practices.....	31
Section 8: Decontamination Procedures.....	32
8.1 Personnel Decontamination Procedures.....	32
8.2 Equipment Decontamination Procedures.....	32
Section 9: Emergency Response/Contingency Plan.....	33
9.1 Emergency Phone Numbers.....	33
9.2 Emergency Equipment Available on site.....	34
9.3 Medical Emergencies.....	34
9.4 Fire or Explosion.....	35
9.5 Evacuation Routes and Resources.....	35

continued

**TABLE OF CONTENTS (CONTINUED)**

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**List of Tables**

Table 1 ..Communications Plan for Cave Entries .....19  
Table 2 ..Personal Protection Requirements for Specific Activities.....27  
Table 3 ..Emergency Contact List.....29

**List of Figures**

Figure 1. Site Location Map.....9

**Appendices**

A Standard Operating Procedures

**SITE SAFETY PLAN ACKNOWLEDGMENT FORM**

I have been informed and understand and will abide by the procedures set forth in the Health and Safety Plan and Amendments for the Neal's Landfill Sinkhole/Cave Entry Site Investigation.

<u>Printed Name</u>	<u>Signature</u>	<u>Affiliation</u>	<u>Date</u>
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## **SECTION 1: INTRODUCTION**

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This document describes the health and safety guidelines developed for the *Neal's Landfill Sinkhole/Cave Entry Site Investigation* to protect PSARA and Viacom personnel, additional contractors, visitors, and the public from physical harm and exposure to unsafe site conditions, hazardous materials, or wastes. This site-specific Health and Safety Plan (HASP) addresses the entry and exploration of both excavated sinkholes and cave passages discovered under and around Neal's Landfill. The procedures and guidelines contained herein are based upon the best available information at the time of the plan's preparation.

Revisions to this plan may be made based on conditions encountered during site activities. All revisions to this plan shall be documented in a Memorandum of Safety Plan Modification, approved by the parties signing previously or their authorized site representatives, affixed to the HASP, and communicated to site personnel.

## **SECTION 2: KEY PERSONNEL**

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The following individuals have been identified as key personnel for this project. Their roles and responsibilities are described in this section.

PSARA Project Manager: ***Mr. Mike Hessling***

Site Health & Safety Officer: ***Mr. Andrew Smith***

PSARA Corp. Health & Safety Director: ***Mr. Scott W. Walton***

### **2.1 PSARA PROJECT MANAGER**

PSARA's Project Manager has overall responsibility for assuring the health and safety of all PSARA personnel at the site. In addition, the Project Manager will ensure that site activities do not present an increased hazard to human health or the environment beyond the perimeter of the site. The implementation of the HASP and all applicable PSARA health and safety procedures are the responsibility of the Project Manager for the site.

### **2.2 SITE HEALTH AND SAFETY OFFICER / SITE SUPERVISOR**

The Site Health and Safety Officer (HSO) designated by PSARA has primary responsibility for the daily implementation of the HASP at the site for all personnel. This person is responsible for all health and safety activities, including subcontractor activities, air monitoring, site inspections, and overseeing the proper decontamination of personnel, equipment, and materials leaving the site. The HSO is also charged with the responsibility of enforcing the use of personal protective equipment (PPE) and training site personnel as outlined in the Training Section of this plan. The HSO will have experience in field operations with air monitoring instruments, personal protective equipment, decontamination procedures, and emergency equipment and procedures.

### **2.3 PSARA CORPORATE HEALTH AND SAFETY DIRECTOR**

PSARA's Corporate Health and Safety Director is ultimately responsible for assuring the health and safety of all PSARA personnel. The Health and Safety Director oversees company compliance with all Occupational Safety and Health Administration (OSHA) standards, including the Hazard Communications Rule, the Respirator and Hearing Protection programs, and 29 CFR 1910.120. He is also responsible for the technical review of this and all PSARA Health and Safety Plans and for assuring their consistency



with the Corporate Health and Safety Program. The Corporate Health and Safety Director must approve all modifications to this HASP.

## **SECTION 3: TASK/OPERATION SAFETY AND HEALTH RISK ANALYSIS**

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### **3.1 SITE DESCRIPTION**

Many sinkholes exist in and around the Neal's Landfill site. This Health and Safety Plan applies to any and all explorations of these sinkholes and the possible conduit passageways that are intercepted during future excavations.

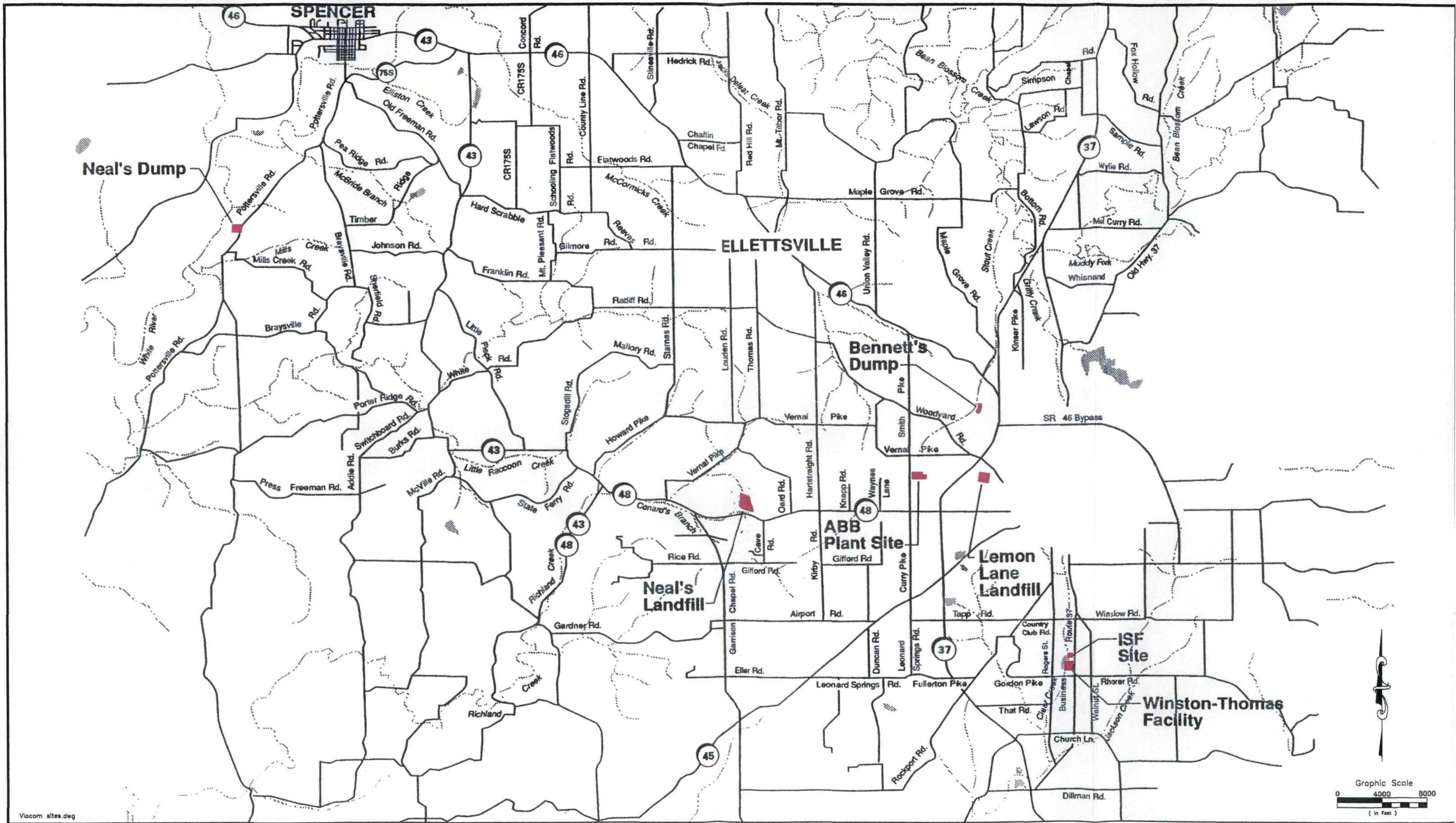
A sinkhole located 300 feet south of South Spring and 200 feet east of well EPA-4A has been excavated to a depth of approximately 30 feet. A phreatic tube cave passage has been intersected that is an ellipsoid 30-in. by 60-in. This passage has a stream of water in it that has been traced to South Spring and Conard's Branch. The excavation pit has been benched and overhanging projections and unstable soil and rock were removed so that no trench box is needed to create a safe working environment in the excavation area. The "upstream" cave is accessible currently through an opening in the south wall of the excavation pit. The "downstream" cave is accessible currently through an opening in the north wall of the excavation pit.

### **3.2 SITE HISTORY**

Neal's Landfill was used as an industrial and municipal waste open dump from 1950 to 1972. The 18-acre dump is located approximately 4.5 miles west of the City of Bloomington in Monroe County, Indiana (see Figure 1). Disposal practices at the site included open burning of discarded materials. Between 1966 and 1967, numerous electrical capacitors manufactured by Westinghouse Electric Corporation were disposed of at the site. These capacitors were filled with oil containing polychlorinated biphenyls (PCBs).

Neal's Landfill was remediated in 1999, with much of the waste removed from the site. The debris that remained after remediation was consolidated and covered with an impervious membrane to control leachate production. Since 1999, the site has been monitored to determine the effectiveness of those remedial actions.

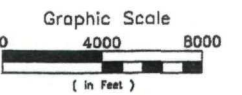
In September 2004, the sinkhole described in Section 3.1 was excavated, resulting in the intersection of a cave system. The upstream passage has been entered to approximately 20 feet, and a video camera has been inserted up this passage for another 40 feet on the end of a 1-in. PVC pipe. The downstream passage has also been video-viewed and a sketch map prepared for the initial 60 feet, at which point there is a tributary passage continuing to the west, and an overflow passage continuing to the north.



Viacom sites.dwg



LEGEND



VIACOM INC.

Figure 1.  
Viacom Sites  
Bloomington, Indiana

Drawn By: RLR	Date: 2/10/03	Scale: 1"=8000'
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### **3.3 SCOPE OF WORK**

The cave system under and around Neal's Landfill will be explored via human entry to assess its nature and to aid in the development of long-term contaminant-reduction strategies for the Conard's Branch and Richland Creek watersheds. The goals of these expeditions will be to:

- Assess whether the overflow spring outlets afford an alternate entry.
- Assess whether a cut-around exists that would permit further human exploration by bypassing the upstream construction.
- Identify the contaminant loading present in the tributaries that contribute to flows through the overflow outlets and South Spring.
- Map the portions of the cave network that are accessible by humans.
- Determine further remedial actions that would reduce PCB concentrations in the Conard's Branch headwaters.

### **3.4 HEALTH AND SAFETY RISK ANALYSIS**

This section identifies the general hazards associated with specific site operations and presents an analysis of chemical, physical, and environmental hazards that exist or potentially exist at the site.

#### **3.4.1 Chemical Hazards**

Polychlorinated biphenyls (PCBs), methane, and trichloroethylene (TCE) are the three known chemical hazards that exist at Neal's Landfill. Essential health and safety information about these three substances is provided in the following three tables.

The cave entry teams, throughout the scope of this project, may encounter numerous potential chemical hazards. These include, but are not limited to, carbon dioxide (asphyxiation hazard), carbon monoxide, hydrogen sulfide, volatile organic carbons (VOCs), other flammable or combustible gases, and numerous other hazardous substances common to uncontrolled open dumps of the era. If the entry team identifies the presence of any of these potential chemical hazards during their explorations, they will notify the HSO of their findings and he will make available to them the safety information for that substance.

<b>CONTAMINANT:</b>	<b><i>Polychlorinated Biphenyls (PCBs)</i></b>
Physical Description:	<i>Residual contamination in the sediments on site, in the old landfill waste, and in the ground water</i>
OSHA PEL/TLV/IDLH:	<i>Aroclor-dependent, but most conservative is 0.5 mg/m<sup>3</sup></i>
Location of Hazard:	<i>Groundwater, springs, landfills, sediments, decontamination wastes</i>
Route of Entry:	<i>Inhalation, absorption, ingestion, skin and eye contact</i>
Symptoms:	<i>Eye, nose, and throat irritation, drowsiness, narcotic effects</i>
First Aid:	<i>Irrigate skin and eyes with water; remove to fresh air if inhaled; if swallowed, get immediate medical attention</i>
Other:	<i>Target organs include liver, kidneys, skin, eyes, and central nervous system (CNS)</i>

<b>CONTAMINANT:</b>	<b><i>Methane (Landfill Gas)</i></b>
Physical Description:	<i>Colorless, odorless, tasteless gas (highly flammable)</i>
OSHA PEL/TLV/IDLH:	<i>Simple asphyxiant (no quantitative restrictions, assuming O<sub>2</sub> concentrations stay above 19.5%)</i>
Location of Hazard:	<i>Potentially found in caves under and around Neal's Landfill</i>
Route of Entry:	<i>Inhalation</i>
Symptoms:	<i>Dizziness, nausea, vomiting, difficulty breathing, tingling sensation, suffocation, convulsions, coma</i>
First Aid:	<i>Remove to fresh air, do not administer oxygen, seek medical attention</i>
Other:	

<b>CONTAMINANT:</b>	<i>Trichloroethylene (TCE)</i>
Physical Description:	<i>Colorless liquid (unless dyed blue) with a chloroform-like odor</i>
OSHA PEL/TLV/IDLH:	<i>PEL = 100 ppm / STEL = 200 ppm / IDLH = Ca[1000]</i>
Location of Hazard:	<i>Groundwater, springs, landfills, sediments, decontamination wastes</i>
Route of Entry:	<i>Inhalation, skin absorption, ingestion, skin and/or eye contact</i>
Symptoms:	<i>Dizziness, nausea, vomiting, eye and/or skin irritation, headache, visual disturbance, lassitude (weakness, exhaustion), tremor, drowsiness, dermatitis, cardiac arrhythmias, paresthesia, liver injury</i>
First Aid:	<i>Remove victim to fresh air, flush affected areas with water, seek immediate medical attention</i>
Other:	<i>Potential occupational carcinogen</i>

### **3.4.2 Physical and Environmental Hazards**

Physical and environmental hazards may be encountered during work activities. The site HSO will be responsible for maintaining written procedures or Safety Standard Operating Procedures (SSOPs) for many of these activities. Contractors or subcontractors or others preferring to use their own procedures may do so, where applicable, provided they are at least as protective of site personnel as this site-specific HASP. Prior to using an alternate procedure, however, the party will be required to submit the company's written program to the site HSO for approval. Work activities will be performed in accordance with applicable OSHA regulations. Specific emphasis will be placed on the anticipated physical and environmental hazards described in the paragraphs that follow.

- Slips, Trips, and Falls – Slip-trip hazards will be the most common source of potential injury encountered by field workers. Above ground slipping, tripping, and falling may occur as a result of distractions, poor visibility, ground irregularities, and loose stone on rock outcrops. Brush and loose rocks will be cleared from the sinkhole lip area. Footwear will provide sufficient traction and ankle support. Loose-fitting boots or tennis shoes must not be worn in the field. Do not attempt to walk through areas of poor visibility and footing while carrying too many items. Make extra trips to bring equipment, if necessary. Personnel should assist one another in areas where the footing is particularly bad. Slip-trip hazards and falls are a particular hazard underground where there may be poor visibility, an uneven floor, shifting rocks underfoot, steep slopes, and mud-covered surfaces. Personnel shall wear laced boots with sufficient ankle support and heavy cleat soles.

Footwear with tennis shoe-type soles will not be worn, as the tread quickly becomes filled with mud and forms a slick surface. Traversing the cave is greatly simplified if both hands are free. Each team member must wear a helmet that fits the head securely and that has a mounting bracket for attaching a light source (electric or carbide) that leaves hands free. Items carried into the cave must be carried in backpacks or standard caving side packs with straps that leave the hands free.

- Cold Stress - When the temperature falls below 40°F, cold stress protocol shall be followed. Cold stress protocol will consist of: 1) all workers under constant protective observation (i.e., buddy system), 2) a work rate that is not so high as to cause heavy sweating that will result in wet clothing and if heavy work must be done, rest periods shall be taken in heated shelters and opportunity for changing into dry clothing will be provided, 3) the work will be arranged in such a way that sitting still or standing still for long periods is minimized, and 4) the workers will be instructed in safety and health procedures relating to cold stress (i.e., re-warming procedures, proper clothing practices, proper eating and drinking habits, recognition of impending frostbite and hypothermia, and safe work practices). Further information on cold stress safety can be found in the PSARA Cold Stress SOP in Appendix A.
- Heat Stress - When the temperature exceeds 70°F and personnel are wearing protective clothing, a heat stress-monitoring program shall be implemented, as appropriate. The HSO will be responsible for implementing this program and for monitoring site personnel for the signs and symptoms of heat stress. Further information on heat stress safety can be found in the PSARA Heat Stress SOP in Appendix A.
- Hazardous Atmospheres - Hazardous atmospheres may be encountered in excavations and caves. Procedures for determining whether or not a space contains a hazardous atmosphere and how to mitigate or work safely in such spaces are addressed in Section 3.4.3 of this HASP.
- Heavy Equipment - The number of ground personnel working around heavy equipment shall be kept to a minimum. Whenever personnel are required in the area of heavy equipment, a spotter must be assigned to each machine. This spotter will assist the operator in locating ground personnel and will direct personnel away from the machine. Workers should maintain eye contact with operators. Only experienced equipment operators shall be permitted to operate heavy equipment. All machines shall be supplied with a fire extinguisher and a back-up horn. Equipment is to be inspected each morning, prior to use, to ensure that all safety equipment and devices (e.g., back-up alarms, brakes, etc.) are fully operational.

- Noise - Those employees working around heavy equipment or in other noisy areas are subject to possible exposure to noise above the OSHA Permissible Exposure Limit of 90 dBA for an 8-hr time-weighted average (TWA<sub>8</sub>). All heavy equipment operators shall be required to use hearing protection unless sound level measurements clearly demonstrate that protection is not required. Other employees will utilize hearing protection when working around heavy equipment or in areas where sound level measurements in excess of 85 dBA TWA<sub>8</sub> are encountered. Further information on noise protection can be found in the PSARA Noise SOP in Appendix A.

### 3.4.3 Confined Space Hazards

Permit-required Confined Spaces will be entered during sinkhole and cave explorations. All persons on this site shall be required to comply with these HASP confined space entry procedures and 29 CFR 1910.146. This program is intended to control and protect employees from confined space hazards and to regulate employee entry into confined spaces. Only personnel trained and knowledgeable of the requirements of this Confined Space Program will be authorized to participate in confined space entries or provide on-site support to authorized entry personnel. **All excavated sinkholes and caves around or under Neal's Landfill are presumed to be Permit-required Confined Spaces unless otherwise designated by the PSARA Project Manager and/or the HSO.** This program contains specific procedures to:

- (1) Identify confined spaces at a project location;
- (2) Evaluate the hazardous characteristics of the confined space;
- (3) Prepare for entry; and
- (4) Allow employees to enter and work in the space.

#### 3.4.3.1 Confined Space Determinations

Confined space is a space or work area large enough for personnel to enter but having limited means of entry or egress. It is not designed or intended for continuous human occupancy. The entrant is considered to have entered the confined space as soon as any part of the entrant's body breaks the plane of an opening into the space.

The project manager or HSO will be designated as the Entry Supervisor and will determine if the workplace is a Permit-required Confined Space (permit space). Permit space is a confined space having one or more of the following actual or potential hazardous characteristics:

- Contains a hazardous atmosphere;
- Contains a material that has the potential for engulfing an entrant;



- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
- Contains any other recognized serious safety or health hazard.

When entry into the space is intended, the Entry Supervisor will evaluate the hazards of the confined space and determine if an Entry Permit needs to be issued before Authorized Entrants will be allowed to enter and work within. If subcontractors will enter the space, the Entry Supervisor will make them aware of the nature of the permit space, the existence of this Permit Space Program, and coordinate operations.

As a general rule, all excavated sinkholes and caves under or around Neal's Landfill have the potential for hazardous atmospheres, engulfment hazards, slip/trip/fall hazards, and other serious safety and health hazards. Further, it is unlikely that mechanical ventilation will sufficiently mitigate a hazardous atmosphere in a cave passage beyond the first few feet. Therefore, all excavated sinkholes and caves under or around Neal's Landfill will be considered Permit-required Confined Spaces unless the project manager and HSO agree that an area can be reclassified as a Non-permit Space. All personnel who enter excavated sinkholes and caves must have successfully completed a 40-hr HAZWOPER course or 8-hr HAZWOPER refresher course within the last year prior to entry.

Confined Space Cave Entry Teams will consist of the following roles:

- **Entrants** – Cavers, geologists or other specialists experienced in or trained for cave explorations. The entrants must be trained under 29 CFR 1910.146. Entrants must enter with a minimum of a 2-person team.
- **Attendants** – Support role to attend all entries at the cave mouth. Attendants must be trained under 29 CFR 1910.146.
- **Entrant Support Personnel** – Two trained entrants will be available outside of the entry at all times. Support persons must be trained under 29 CFR 1910.146. Support persons may enter the space to assist with the investigation, as needed.
- **Rescuers** – Professionals trained in cave or confined space rescue. Rescuers are fully trained for cave entry, excursion, and recovery during a confined space emergency. At least one person of this team shall be trained and certified in First Aid and cardio-pulmonary resuscitation (CPR). A team of rescuers may be available at the site during entry and may also serve as Support Personnel. Rescuers may also be an offsite team, such as the fire department, capable of response to the site within 20 minutes.

### 3.4.3.2 Hazard Evaluation

#### **Engulfment**

The entry supervisor will ensure that no rain is forecast for the time during which an entry team will be in a sinkhole or cave. Entries should not follow significant rainfall events (i.e., greater than 0.25 inches as measured by the Neal's Landfill rain gauge and confirmed by the Bloomington Airport rain gauge) by less than 4 hours. Falling rock and/or soil engulfment while the entry team is in a cave are difficult to predict. The entry supervisor will find out the Rogers Quarry blasting schedule for each day of planned entry. All entries will be planned to end at least 1 hour prior to Rogers' first scheduled blasts or shortly after the final actual blast of the day has occurred. Additionally, no heavy machinery will be allowed to operate while the entry team is in a sinkhole or cavern.

#### **Hazardous Atmospheres**

Prior to and continuously during entry operations, the entry team will monitor for the following hazardous atmospheres to assess the space for acceptable entry conditions. Instrumentation will be approved as inherently safe for use in Class I, Division 1, atmospheres and include audio alarms preset to sound when readings vary beyond the ranges of predetermined acceptable entry conditions for the parameters being monitored. The devices will be operated, calibrated, and maintained by personnel trained in accordance with the manufacturer's instructions. A current log of calibration and maintenance will be kept at the PSARA offices.

Measurements within the space will be compared to predetermined background (ambient) conditions, and will be made remotely when practicable. Readings will be taken at the entrance to the space, then at varying locations and depths within the space as applicable to the nature of the anticipated atmospheric hazards and the configuration of the space. The following atmospheric conditions will be assessed, as described, in the order presented:

- *Oxygen concentration* will be determined using an oxygen meter or a combination-monitoring device that includes this function. Readings between **20.0** and **23.5** percent are considered acceptable for entry.
- *Explosive atmospheres* will be measured using a device capable of assessing the concentrations relative to the lower explosive limit (LEL). Readings at or above **10% LEL** are regarded as prohibited conditions. Detectable concentrations of <10% are considered acceptable for permitted entry.
- *Toxic atmospheres* will be assessed using a multi-meter that reads concentrations of hydrogen sulfide, VOCs, and carbon monoxide.

Based upon the results of the assessment of the hazards of the confined space, the entry supervisor will determine if the hazards cannot be eliminated prior to entry. A permit must be issued and all its conditions must be met before entry will be authorized.

All cave entry teams will carry a five-gas air monitor into the cave with them. The team leader will use the monitor to evaluate the atmospheric quality of the cavern as they proceed through it. Verbal communication between the cave entry team and the entry supervisor may not be possible. Therefore, the cave entry team leader will be responsible for determining the level of hazard present in the cave atmosphere. The team will exit the cave if the monitor begins sounding an alarm or if they have any reason to believe that the instrument is not, or may not, be working properly.

#### *3.4.3.3 Preparation for Entry*

The entry supervisor will determine specific acceptable entry conditions prior to allowing entry operations to begin. As necessary, measures will be taken, then conditions verified, before issuance of an entry permit. At a minimum, the following conditions will be satisfied:

##### **Space Ventilation**

Natural ventilation shall be provided for the permit space prior to initial entry and for the duration of the permit. Positive pressure or forced mechanical ventilation may be required to achieve 100 percent outside air. Atmospheres in the space will be retested to verify ventilation effectiveness.

Where air-moving equipment is used to provide ventilation, chemicals shall be removed from the vicinity to prevent introduction into the permit space. The source of intake air will be monitored. Vehicles and other gasoline-powered equipment shall not be left running near permit space work or near air-moving equipment being used for permit space ventilation.

During entry operations, output air from mechanical ventilation should be directed on the authorized entrants whenever practicable. Cave entries beyond the first few feet of an opening will not have the benefit of outside ventilation.

##### **Lighting**

Lighting requirements will be determined based upon the configuration of the confined space and the nature of entry operations. Flashlights and temporary light fixtures will provide entrants sufficient illumination for a safe workplace and visible exit pathways. Hand-held lights and other illumination utilized in confined spaces shall be equipped with guards to prevent contact with the bulb and must be explosion-proof. Flashlights used in cave entries must also be watertight.

##### **Communications**

Communication requirements for excavated sinkhole entries are different from those used during cave entries.

Excavated pits: Authorized entrants must be able to communicate directly with the attendant outside the space. Visual and verbal communication is preferred. As needed, radios may be used to enable the attendant to monitor entrant activities and notify them to

exit in the event of an emergency. When possible, the attendant will maintain visual contact with at least one other person outside the permit space who may be called for assistance in the event of an emergency.

Caves: Verbal communication with cave entry teams will be difficult once a team has moved more than a few feet into the cave. A combination of verbal communication relays and air horns and whistles will be used to ensure adequate communication between the entry team, the attendant, and the entry supervisor at the surface. In the case of the currently opened downstream cave, a communications relay person may be stationed in the cave approximately 25 feet from the entrance during an entry. This person will pass messages from the team to the attendant and vice versa. This relay method is available for entries that will not go more than approximately 100 feet into the cave.

For entries that will exceed 100 feet from the entrance, a system of blasts from air horns or whistles will be used to communicate the team's status and emergency information. Table 1 details the four scenarios that may occur during an entry, and the responses that should be taken by both the entrants and the attendant/communications relay person.

#### **Barricades**

The entrance to the space will be marked and access limited to prevent unauthorized entries into the space. Barricade tape, traffic cones, or construction fencing will be used to keep client and subcontractor personnel or other individuals from injury or posing external risk to authorized entrants.

#### **Posting**

Permit spaces shall be identified with a posted sign which reads; "DANGER - PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER."

The authorized permit shall be issued and posted at the work site. The permit shall be removed either at the completion of the job or the end of the shift, whichever comes first. The date and time of cancellation shall be recorded on the original permit. The form will be filed by the entry supervisor at the job site, and at the conclusion of the project, kept in the corporate office files.

#### **Fire Extinguisher/First Aid Kit**

An emergency station will be set up outside the entrance to provide a fire extinguisher, first aid kit, and other job-specific supplies that the attendant can make available to the entrants on an as-needed basis.

Table 1: Communications Plan for Cave Entries  
Neal's Landfill Sinkhole/Cave Investigations, Monroe County, Indiana

<u>Scenario</u>	<u>Attendant's/Relay Person's Actions</u>	<u>Entrants' Actions</u>
A) Attendant wants to ask the entry team if they are still okay. (This will be done every 15 minutes while entrants are in the cave).	1) Issue one 2-second blast of the horn.	1) Respond with one 2-second whistle if answer is "Yes, we're okay." 2) Respond with three short whistles if assistance is needed. 3) If the team does not respond with a whistle, the attendant will assume the team needs assistance and will send in the rescue team.
B) Entry team is in trouble, needs assistance, and can use the horn/whistle.	2) Send the rescue team into the cave. Maintain 15-minute communication with rescue team.	1) Team will whistle three short sounds continuously until help arrives. If possible, the team will also send one of three members back to help the rescuers find the injured person.
C) Surface staff identifies an emergency situation and the entry team must evacuate immediately.	1) Issue a distress pattern of three short blasts from the horn for 1 minute, listen 1 minute for a response. If a response is heard, await the entrants' arrival at cave entrance. If no response is heard, again issue three short blasts in succession for 1 minute, then listen 1 minute for a response. If still no response, send in rescue team. Maintain 15-minute communication with rescue team.	2) As soon as possible respond with a 2-second blast from whistle to signal that entry team is exiting the cave.
D) No response from the entry team after initial 2-second blast.	1.) Listen 1 minute, issue a 4-second blast, listen 1 minute, issue a 6-second blast, listen 1 minute, and send in rescue team. Maintain 15-minute communication with rescue team.	2.) As soon as possible, respond with a 2-second blast from whistle to signal, "Yes, we're okay" and call off the rescue.

Note: If the entry team is not responding with whistle or horn blasts, the rescue team will assume they are entering an immediately dangerous to life and health (IDLH) environment and will use the appropriate PPE, including supplied breathing air.

**Entry Plan /Pre-Entry Briefing**

Prior to any cave entry, the entry team will be responsible for developing an Entry Plan. This plan will detail the objectives of the entry, the location, date, and personnel.

The Entry Supervisor will hold a briefing prior to authorizing entry for all personnel involved in entry or support. The meeting will cover the contents and conditions of the permit, including planned operations, safety considerations, and emergency preparedness.

## **Safety Equipment**

### Personal Protective Equipment

Selection and use of PPE will be based upon the understanding of risk associated with the confined space and its measured and estimated hazards. Assigned PPE will be inventoried to assure adequate quantities are available and inspected for integrity and proper function.

Only Mine Safety and Health Administration (MSHA)/National Institute of Occupational Safety and Health (NIOSH)-approved positive-pressure self-contained breathing apparatus (SCBA) or airline respirators equipped with a 5-minute emergency air supply (egress bottle) shall be used in hazardous atmospheres or in any permit space with conditions determined to be, or which could potentially be, IDLH. Air-purifying respirators (APR) may be used when actual and potential conditions in the permit space can be anticipated to satisfy APR selection criteria as specified in OSHA's *Respiratory Protection* Standard, 29 CFR 1910.134.

### Confined Space Equipment

Provisions must be made so the attendant can initiate a rescue from outside the space if problems occur. A safety harness and rope must be available for the attendant to use for himself or for authorized entrants in the event of an emergency. No lifelines will be used during cave entries since they would more likely increase the slip/trip/fall risks to the entrants. In the event of a medical emergency for one of the entrants, other cave entrants will attend to the injured and help him exit the cave. If the other entrants are unable to remove the injured person, they will signal the entry supervisor to call for outside help. The most likely source of trained outside help is the confined space rescue team from the Bloomington Fire Department. No PSARA employees or sub-contractors will enter the caverns for the purposes of rescuing an injured employee unless the would-be rescuer has been trained as a cave rescuer.

If a trench is 4 feet or deeper, it is considered a confined space and these procedures must be followed. Sloping or benching may be substituted for a ladder. Additionally, the provisions of the OSHA Standard 29 CFR 1926.650 on excavation must be followed regarding soil types, trench shields, sloping, water removal, shoring, benching, etc.

### **Rescue and Emergency Services**

Rescue planning for excavated sinkhole emergencies is somewhat different from the planning needed for cave entry emergencies.

Excavated sinkholes: Entry attendants will remain outside of the excavation during sinkhole-only entries. The attendant will not enter the space to attempt a rescue without first being relieved by another trained attendant. If an offsite rescue service is to be used, the attendant must be prepared to summon the service as directed in the emergency plan. A nearby or mobile telephone must be identified that offers access for this need.

Rescue and emergency service personnel must be properly equipped for cave rescue operations. They must have received specific training on proper confined space rescue procedures and performed a simulated rescue during their training. One member of the rescue team must hold a current certificate in basic first aid and CPR.

Cave entries: Attendants will remain at the cave opening at all times during the entry.

If an outside rescue team is used, the outside rescue teams will be notified of all cave entries the morning prior to an entry. If an authorized rescue team is not available, the entry must be postponed until one does become available.

A support team of at least two people will remain on site during all cave entries. The support team will consist of authorized entrants. Authorized entrants may be used for non-emergency entry support into the cave.

#### *3.4.3.4 Entry Procedures*

##### **Permitted Entry**

The entry supervisor must evaluate workplace hazards and verify the fulfillment of pre-entry preparations before authorizing entry into the permit space. The permit is valid for up to one 2-hour entry and authorizes only those personnel identified on the permit and who have met the confined space entry training and pre-entry briefing requirements.

##### **Conditions for Entry Arrest**

Should planned entry operations be interrupted, or if a confined space hazard develops or recurs, entrants must exit the permit space. The entry supervisor must reassess and, if appropriate, issue a new entry permit before authorizing the resumption of entry operations. Conditions, which may arrest an entry, include:

- Rain
- Entrant or Rescue Team is incapacitated
- Multi-gas meter ceases to work properly
- Oxygen readings below 20.0%
- LEL readings above 10%
- CO readings above 25 ppm
- Blasting at Rogers Quarry will occur within 1 hour
- A dewatering pump fails
- Any member of the entry team is injured requiring rescue

At the completion of entry operations, the Entry Supervisor will terminate the permit and file it in the project records at the jobsite or at the corporate office.

#### **3.4.4 Excavation Hazards**

Field personnel, whether they are field crewmembers or contractors, may be called upon to perform their work near excavations. The following procedures are intended to control

and protect employees from the hazards associated with excavation and trenching operations and to regulate employee entry into these areas.

A subcontractor, under the supervision of Viacom and/or PSARA personnel, will perform the excavation of sinkhole areas around Neal's Landfill. These excavations will involve the use of heavy equipment removing potentially contaminated materials from the sinkhole area. A minimum number of people will be present during these operations to lower the overall human risk associated with these activities. In addition to the equipment operator, a Viacom or PSARA geologist or environmental technician will be present during all excavations. The Viacom/PSARA personnel will help direct the excavation work, serve as the on-site safety officer, and keep all other people away from the active excavation area. Other excavation hazards include slips/trips/falls, cold and heat stress, heavy equipment, overhead and buried electrical lines, and noise as outlined in Section 3.4.2 above.

These procedures are intended to provide safe work practices for personnel working in and around excavations and trenches and to comply with 29 CFR 1926, Subpart P. It is the responsibility of all personnel working in and around excavation and trenching operations to comply with the safety procedures provided. If additional measures are necessary to properly protect personnel, the Project Manager shall be notified and additional safety procedures defined and implemented.

#### **General Safety Procedures**

- All excavated soils, equipment, vehicles, etc., will be located at least 2 feet from the edge of the excavation to prevent materials from falling in and to prevent cave-ins, changes in the sloping, or damage to the shoring system.
- Any excavation greater than 4 feet deep that employees may enter must be properly shored, sloped, or otherwise made safe for entry (e.g., trench box).
- If trench boxes or comparable shields are used, they will extend at least 18 in. above the top of grade and excavation shall not be permitted 2 feet below the base of the shield.
- No personnel shall remain in the trench box or shield while it is being moved or shifted.
- Excavations greater than 4 feet deep that require personnel entry shall have sufficient means of entry and egress (stairs, ladders, ramps, etc.). Means of entry/egress shall not require personnel to travel laterally more than 25 feet.
- Ladders will be provided and placed at an angle not more than 30 degrees from vertical and secured as necessary. Ladder side rails shall extend at least 3 feet above the ground surface.



- All loose soils will be removed from the sides of the excavation before workers are permitted to enter.
- Personnel shall not be allowed to work in excavations where water is accumulating unless adequate precautions have been taken to protect employees against the hazards posed by the water.
- Personnel in the immediate material dumping area or those exposed to vehicular traffic shall be required to wear orange safety vests to clearly identify themselves. Cone, caution tape, barricades or other means must be used to determine this area.
- Personnel working adjacent to excavations greater than 6 feet in depth shall be protected from falling by guardrail systems, fences, or barricades when the excavations are not readily visible due to plant growth or other obstructions. These barriers must be at least 3 to 4 feet high to adequately warn and protect personnel.
- No employee shall work directly below the bucket, any part of the heavy equipment, or any load handled by equipment such as cranes, trackhoes, backhoes, etc.
- Proper walkways shall be provided for personnel to cross over trenches, if necessary. Personnel will only use the designated walkways when crossing from one side to the other.
- No person shall enter an excavation where a hazardous atmosphere (as defined in the following section) has been identified unless the appropriate control measures have been implemented to remove or control the hazard, and/or the personnel have donned the appropriate personal protective equipment.

### **Inspections**

At a minimum, all excavations shall be inspected daily by a “competent” person to determine the likelihood of a cave-in. "Competent person" means one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Some indicators are cracks in the surface parallel with the excavation, bulging sides, and evidence of water seepage into the excavation. This person will verify that safe working conditions exist or not for personnel in and around the excavation. If at any time cave-ins or signs of pending cave-ins are detected, all personnel shall immediately be removed from the excavation. More frequent inspections should be conducted due to changes in work operations, weather conditions, soil types, etc., that may affect the stability of the excavation.

When applicable, the competent person shall also conduct atmospheric testing to ensure no hazardous atmospheres are present within the excavation. Hazardous atmospheres include oxygen deficiency (<20.0% oxygen), potentially flammable or explosive conditions (>10 % or the lower explosive limit), or toxic atmospheres. If a hazardous atmosphere has been detected, the competent person or designated representative shall conduct periodic monitoring to ensure control measures are effective or the hazard has been removed. The results of this monitoring will be recorded and the records shall be made available to personnel for review.

These inspections will be recorded by the “competent person” and made available to all personnel. Personnel should request the findings (if not informed) of the daily inspections prior to commencing work operations.

### **3.4.5 General Caving Hazards**

The most frequent general caving hazards are losing light or becoming lost. Losing light and/or becoming lost should not be a problem for a well-prepared team. The most experienced member of each team will be the team leader. He will note, as well as the other team members, prominent passage junctions and landmarks. In a cavern where limited entry has been made, the time-tested caving procedure of “follow the elephant tracks” will usually lead a lost team to safety. However, if possible, each junction will be marked indicating the correct passageway out with a pointing arrow on the wall. Each team member will be required to carry three reliable sources of light. The primary light will be a carbide miner’s lamp or an electric headlamp. Spare batteries and/or carbide shall be taken into the cavern to provide at least a 12-hour continuous primary light source. The following hazards also apply to cave entries:

- **Falling Rock** – Falling rocks are a potential source of injury in caves. All entry team members must wear a hard hat with a chinstrap at all times.
- **Hypothermia** - Hypothermia may be a problem in caves. Cavern temperatures in southern Indiana are usually around 54°F. While expeditions are expected to be brief (up to 2 hours), team members will become wet, muddy, and tired while working in these caves. Entry team members will prevent hypothermia by wearing a wet suit covered with a layer of durable clothing while in the cave.
- **Limited Air Space** – Some cavern spaces may have short sections with limited or no air space due to high water conditions. For example, the entry passageway for the first 40-ft of the downstream cave has limited air space caused by water pooling to within several inches of the ceiling. In order to facilitate entry in the downstream cave, the water pool will be pumped down by about six inches. This pumping will be maintained during the expedition. Backup pumps will be provided as a safety measure. In the event that a primary pump fails during a downstream cave entry, the team will remain in

the junction room (approximately 60 ft downstream of the entry point) where sufficient air space exists until secondary pumps are operated and sufficient air space is restored for safe exit from the cave. A similar procedure may be needed during cave entries associated with other excavation sites.

- Communication - Communication plans for all cave entries will follow the permit-required confined space communications plans detailed in Section 3.4.3 of this HASP.
- Rainfall – The entry supervisor will monitor the weather during the entry to ensure rainfall does not create an engulfment hazard inside of the cave.
- Blasting – Rogers Quarry is located approximately 1 mile east of the Neal's Landfill site. On the day of each entry, the entry supervisor will find out what the day's blasting schedule is at Rogers Quarry. All entries will be planned to end at least 1 hour prior to Rogers' first scheduled blasts or shortly after the final actual blast of the day has occurred.

#### **3.4.6 Biological Hazards**

Biological hazards include plants, animals, bacteria, or viruses that may cause disease in humans. A wide variety of biological hazards are present in and around the site work area. These include, but are not limited to, ticks (Lyme disease and Rocky Mountain spotted fever), poison ivy and oak, chiggers, rodents, bees, wasps, snakes, and bloodborne pathogens. Workers should avoid contact and adopt appropriate controls. Allergic reactions caused by contact with plants, insect bites, and other biological hazards should be reported to the HSO.

All first aid activities involving potential exposure of personnel to blood or blood-tainted (contaminated) body fluids shall be conducted in accordance with the requirements of the Bloodborne Pathogen Standard, 29 CFR 1910.1030. Personnel involved in first aid procedures shall don the proper PPE and dispose of blood-contaminated materials as required. Responding personnel will don surgical gloves and other PPE deemed necessary by the HSO at the time of the incident. An adequate inventory of such PPE will be maintained with the first aid kit located in the HSO's field vehicle. Contact with blood or blood-tainted body fluids during first aid procedures should be reported immediately to the HSO.

## **SECTION 4: PERSONNEL TRAINING REQUIREMENTS**

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All personnel (including visitors) entering the exclusion zone or decontamination zone must have completed all applicable training requirements for hazardous waste site and emergency response work in accordance with OSHA 29 CFR 1910.120.

The HSO shall be responsible for informing all individuals entering the exclusion zone or decontamination zone of the contents of this plan and ensuring that each person signs the Safety Plan Acknowledgment Form at the front of this HASP. By signing the Safety Plan Acknowledgment Form, individuals are recognizing the hazards present on site and the policies and procedures required to minimize exposure or adverse effects of these hazards.

Additional site-specific training requirements are mandatory for applicable site personnel. Examples include training required by the following safety programs:

- Hazard Communication Standard (29 CFR 1910.1200)
- OSHA Noise Standard (29 CFR 1910.95)
- American Red Cross CPR and First Aid
- Permit-required Confined Spaces (where needed)

Daily safety meetings will be held at the start of each entry to ensure that all personnel understand site conditions and operating procedures, to ensure that PPE is being used correctly, and to address worker health and safety concerns. An attendance form will be signed by each person attending the meeting and will be kept in the project files. The Entry Plan will be discussed in detail at this time.

The HSO will obtain copies of all site personnel training documentation. This documentation will be filed on site as verification of training requirement completion.

## **SECTION 5: PERSONAL PROTECTIVE EQUIPMENT**

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The following is a brief description of the PPE that may be required during various phases of the project. The U.S. EPA terminology for protective equipment will be used (i.e., Levels A, B, C, and D). The PPE program will be reassessed based on site developments. Groundwater sampling results, operational alterations from the original scope of work, air monitoring results in the breathing zone, and results of medical monitoring will be instrumental in any changes to the program. Modifications to required PPE must be communicated via a formal Memorandum of Safety Plan Modification.

Respiratory protective equipment shall be NIOSH-certified and use shall conform to OSHA 29 CFR 1910.134. All activities will be conducted in accordance with PSARA's written respirator program detailing selection, use, cleaning, maintenance, and storage of respiratory protective equipment.

### **5.1 LEVELS OF PROTECTION FOR PROJECT OPERATIONS**

Table 1 provides a list of job functions and work zones and identifies the minimum personal protection required for each scenario. As additional work tasks are identified during the course of the project, the HSO will be responsible for identifying the appropriate regimen of personal protection and for adding the new scenario to this table.

Table 2. Personal Protection Requirements for Specific Activities  
Neal's Landfill Sinkhole/Cave Investigations, Monroe County, Indiana

Activity	Location	Level of Protection
Cave entry	Exclusion zone	Mod Level D or Level B depending on air results, plus wet suits for hypothermia protection
Other work performed inside excavated sinkholes	Exclusion zone	Mod Level D or Level B depending on air results
Decontamination of equipment	Decontamination zone	Mod. Level D
Groundwater sampling	Exclusion zone	Mod Level D
Support operations	Support zone	Level D

## **5.2 DESCRIPTION OF SELECTED LEVELS OF PROTECTION**

### **5.2.1 Level "B" Protection**

Level "B" personal protection consists of the following:

- Outer chemical-protective coveralls  
(Type: *Tyvek*)
- Self-contained breathing apparatus or airline with egress
- Outer gloves (taped to suit at the wrists)  
(Type: Nitrile)
- Inner nitrile sample gloves
- Steel-toe and steel-shank work boots
- Hard hat (with chin strap for cave entry)

### **5.2.2 Modified Level "D" Protection**

Modified Level "D" may be used when skin protection against chemical exposure must be provided, but respiratory protection is not necessary. The HSO may use discretion in selecting components of this improved Level "D" consistent with the hazards and nature of the specific field application. Modified Level "D" personal protection will typically consist of the following:

- Outer coveralls or work clothes
- Outer gloves (taped to suit at the wrists)  
(Type: Nitrile)
- Inner nitrile sample gloves
- Steel-toe and steel-shank work boots
- Safety glasses with side shields
- Hard hat (if overhead hazards are present)

### **5.2.3 Level "D" Protection**

Level "D" personal protection will consist of the following:

- Outer coveralls or work clothes
- Steel-toe and steel-shank work boots
- Safety glasses with side shields
- Hard hat (if overhead hazards are present)

## **SECTION 6: MEDICAL SURVEILLANCE REQUIREMENTS**

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All personnel (including visitors) entering the exclusion zone or decontamination zone must have completed appropriate medical monitoring required under OSHA 29 CFR 1910.120(f). Documentation of medical monitoring will be provided to the HSO.

All suspected exposures and worker injuries regardless of severity must be promptly reported to the HSO.

## **SECTION 7: WORK ZONES AND SITE CONTROL MEASURES**

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### **7.1 WORK ZONE DESIGNATIONS**

To protect any person not directly involved with the operational activities, work areas shall be clearly defined according to U.S. EPA terminology. A work zone map shall be constructed at the site and included in the project file at the PSARA office. The work zones to be established include:

**Exclusion Zone** - This zone is the area of known or suspected contamination. This zone will be clearly marked and shall be large enough to protect all personnel not involved in the investigation activities from any anticipated hazard. All personnel working within this zone will be required to meet all applicable requirements of 29 CFR 1910.120 and to don the appropriate personnel protection equipment.

**Contamination Reduction Zone** - This zone, also referred to as the decontamination zone, provides an area for personnel and equipment decontamination as well as storage for personal protective clothing, equipment, etc. This zone also serves as a buffer zone to prevent possible migration of contaminated materials from a potentially contaminated area to a clean area.

**Support Zone** - The support zone includes all of the areas used for support operations, including office facilities, equipment storage, and non-hazardous construction areas. Nothing contaminated should be brought into this zone.

**Isolation Zone** - An isolation zone is an area within the exclusion zone that is off limits to all personnel.

**Access Routes** - Access routes for all contractor personnel and/or emergency vehicles will be established at the site for site security and to maintain the flow of traffic into the site.

**Emergency Station** - Field emergency stations, consisting of a first aid kit, a fire extinguisher, and an emergency eye wash, will be set up adjacent to each of the contamination reduction zones.

Because of the mobile nature of the sampling activities, the work zones will change as these activities progress. In general, the exclusion zone shall consist of the immediate area surrounding the sampling location and extend out to a radius of approximately 20 feet. The support zone will extend approximately 20 feet beyond the exclusion zone.



## **7.2 SAFE WORK PRACTICES**

All field personnel in the exclusion zone will use the “buddy system.” Visual, voice, or radio communication must be maintained at all times.

Eating, drinking, and smoking are permitted only in designated areas in the support zone.

Hands and face must be washed thoroughly upon leaving the contamination reduction zone.

Beards or other facial hair that interferes with respirator fit will preclude admission to the exclusion zone when respiratory protection is necessary.

Site communication will be conducted by the use of audio contact.

Safety meetings will be conducted on a daily basis prior to beginning work activities.

## **SECTION 8: DECONTAMINATION PROCEDURES**

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In general, everything that enters the exclusion zone at this site must be either decontaminated or properly discarded upon exit from the exclusion zone. Field personnel will set up an effective decontamination line in the contamination reduction zone prior to site entry.

### **8.1 PERSONNEL DECONTAMINATION PROCEDURES**

Based on the anticipated levels of protection required to complete the planned field tasks, disposable protective clothing will be used. Thus, the decontamination operations will involve the use of visqueen sheeting and a lined receptacle for spent garments, such as disposable gloves, boot covers, and coveralls. A hand and face wash will also be available for required usage prior to exiting the contamination reduction zone. In the event that reusable garments are incorporated into the dress out regimen, the HSO will develop a decontamination sequence, diagram its layout, and attach the sketch to this plan.

### **8.2 EQUIPMENT DECONTAMINATION PROCEDURES**

All sampling equipment will be decontaminated in accordance with the following procedure:

1. Laboratory-grade detergent scrub and wash
2. Tap water rinse
3. Deionized water rinse
4. Methanol rinse
5. Deionized water rinse

Following decontamination, the HSO or a designated alternate will be responsible for inspecting the item to ensure that it has been sufficiently decontaminated. This inspection will be included in the site log.

## **SECTION 9: EMERGENCY RESPONSE/CONTINGENCY PLAN**

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The following sections outline the general procedures that will be implemented in case of emergencies. Emergency information will be posted as appropriate. Emergencies will be communicated via radio when workers are beyond audible range and via telephones when offsite support is required.

The appropriate officials from the hospital, ambulance service, and police and fire departments will be informed of the activities to occur on site prior to initiating worksite activities.

### **9.1 EMERGENCY PHONE NUMBERS**

Table 2 presents a list of response agencies, organizations, and personnel who may, depending on the nature of the situation, need to be contacted in the event of a site emergency.

Table 3. Emergency Contact List  
Neal's Landfill Sinkhole/Cave Investigations, Monroe County, Indiana

Response Agency	Phone No.
Fire: Fire Department	911
Police: Police Department	911
Ambulance:	911
Hospital:	336-6821
Poison Control Center:	(800) 382-9097
National Response Center:	(800) 424-8802
Centers for Disease Control (24 hr):	(404) 488-4100
USEPA Region V (24 hr):	(312) 353-2318
AT&F (Explosives Information):	(800) 424-9555
Chemtrec:	(800) 424-9300

Note: Maps and directions to the hospital will be posted in the onsite vehicle.

**9.2 EMERGENCY EQUIPMENT AVAILABLE ON SITE**

During the site preparation phase of the project, PSARA will mobilize the appropriate emergency response equipment and facilities. At a minimum, prior to the start of site operations, the equipment described in the following sections will be provided and tested to verify that it is in working order.

**9.2.1 Communication Equipment**

	<u>Location</u>
Cell phone	HSO / Project Manager
Landline phone	Inside NLSTF plant

Note: Cell phone coverage is spotty at Neal’s Landfill. It may be necessary to use the landline at the NLSTF plant to notify emergency services.

**9.2.2 Medical Equipment**

	<u>Location</u>
First aid kits	Onsite Vehicle

**9.2.3 Fire-Fighting Equipment**

	<u>Location</u>
Fire extinguishers (Type ABC)	Onsite Vehicle

**9.3 MEDICAL EMERGENCIES**

Any person who becomes ill or injured in the exclusion zone must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination should be completed and first aid administered prior to transport. If the patient's condition is serious, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket). First aid should be administered while awaiting an ambulance or paramedics. All injuries and illnesses must be reported immediately to the HSO.

#### **9.4 FIRE OR EXPLOSION**

In the event of a fire or explosion, the local fire department should be summoned immediately. Upon their arrival, the HSO or designated alternate will advise the fire commander of the location, nature, and identification of the hazardous materials on site. If it is safe to do so, site personnel may: 1) Use fire-fighting equipment available on site; or, 2) Remove or isolate flammable or other hazardous materials that may contribute to the fire.

#### **9.5 EVACUATION ROUTES AND RESOURCES**

Evacuation routes and rendezvous points will be established by work area locations for this site and included on the work zones map. In the event that conditions requiring evacuation occur, the following procedures should be followed: 1) Keep upwind of smoke, vapors, or spill location, and 2) Exit through the decontamination corridor, if possible.

If evacuation is not via the decontamination corridor, site personnel should remove contaminated clothing once they are in a location of safety and leave it near the exclusion zone or in a safe place.

The HSO will conduct a head count to ensure that all personnel have been evacuated safely.

In the event that emergency site evacuation is necessary, all personnel are to:

- 1) Escape the emergency situation;
- 2) Decontaminate to the maximum extent practical; and,
- 3) Meet at the established offsite rally point.

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**Blank Forms**

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**Memorandum of Safety Plan Modifications**

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**Closed Permits and Safety Meeting Forms**

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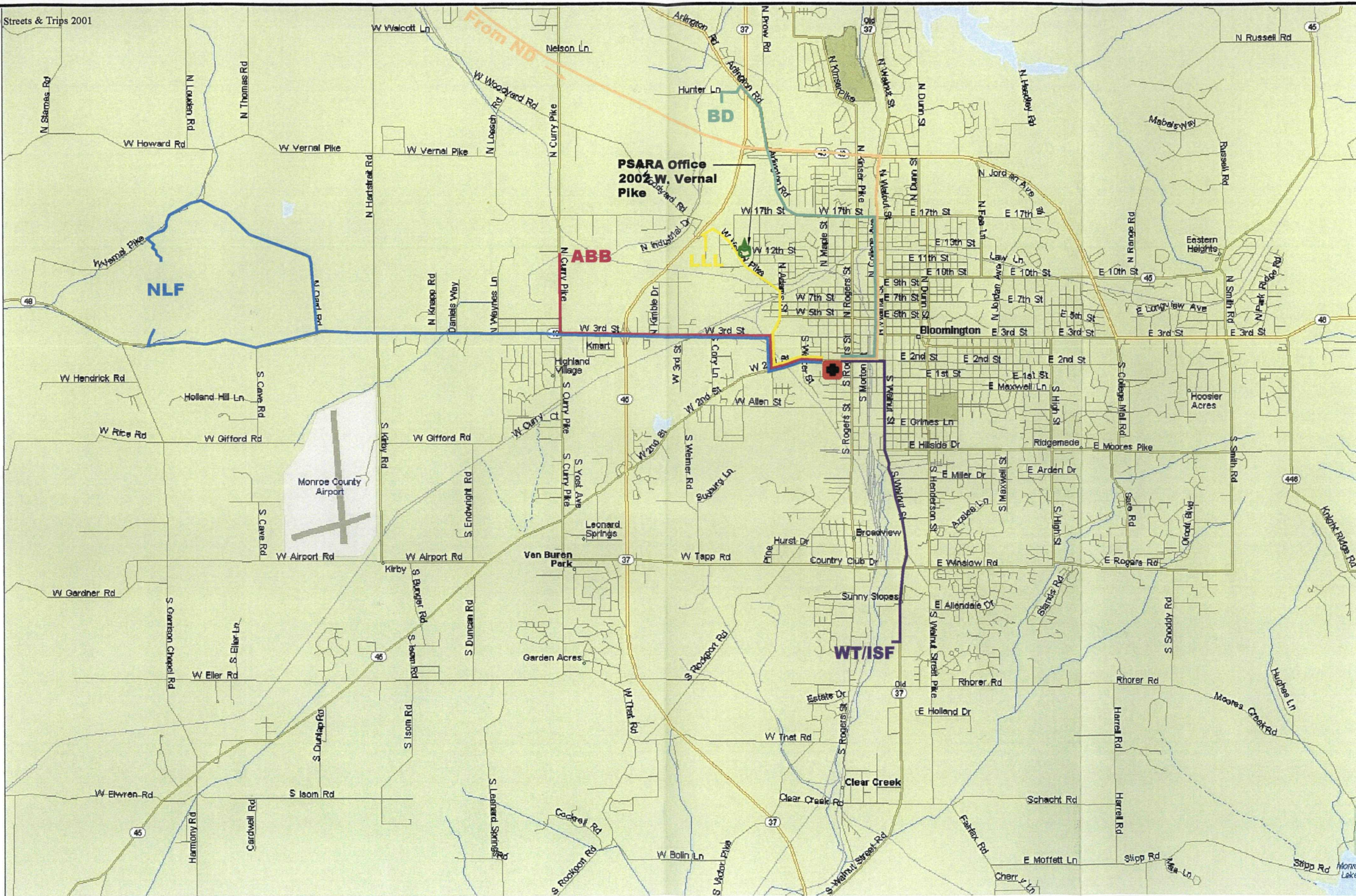


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## **Standard Operating Procedures**

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Hospital route.dwg



- |  |  |  |                       |
|--|--|--|-----------------------|
|  | <b>NLF</b> Neal's Landfill                             |  | <b>ND</b> Neal's Dump |
|  | <b>ABB</b> ABB Plant                                   |  | Hospital              |
|  | <b>LLL</b> Lemon Lane Landfill                         |  | PSARA Office          |
|  | <b>BD</b> Bennett's Dump                               |  |                       |
|  | <b>WT/ISF</b> Winston Thomas/ Interim Storage Facility |  |                       |

**LEGEND**

**VIACOM INC.**

**Figure 2.**  
Hospital Routes  
Bloomington, Indiana

Drawn By: RLR	Date: 2/10/03	Scale: NTS
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