Handex®

HANDEX ENVIRONMENTAL RECOVERY, INC., 500 Campus Drive, P.O. Box 451, Morganville, New Jersey 07751-0451 (908) 536-8500

AFP 59 704020

Mr. James B. Lister, P.E.
New York State Department of Environmental Conservation
Bureau of Eastern Remedial Action
Division of Hazardous Waste Remediation
50 Wolf Road
Albany, New York 12233-7010

RE: Transmittal of Workplan
Removal of Metal Plating Room Settling Tank
Lockheed Martin Facility
Johnson City, NY

Dear Mr. Lister:

Enclosed please find a copy of the above-referenced Workplan describing remedial actions to be undertaken at the Lockheed Martin facility in Johnson City, NY. At this time, it is proposed to remove the settling tank and dispose of the debris offsite. The non-contaminated debris will be disposed of as construction debris and the contaminated debris (concrete floor) will be disposed of as a RCRA hazardous waste in accordance with federal and state regulations. Handex is currently evaluating several disposal facilities for the material.

Handex is prepared to mobilize to the site to begin the remedial activities on monday September 16, 1996. The demolition and site restoration work will be completed in approximately 9 days.

Thank you in advance for your timely review of this document. If you have questions or need additional information, do not hesitate to call the undersigned or Terry Gillette at Lockheed Martin.

Sincerely,

Jonathan McCollom
Project Manager

cc.: Mr. Terry Gillette, Lockheed Martin
Ms. Melanie Sviatyla, Lockheed Martin

HANDEX ENVIRONMENTAL RECOVERY, INC., 500 Campus Drive, P.O. Box 451, Morganville, New Jersey 07751-0451 (908) 536-8500

REMEDIAL ACTION WORKPLAN
Removal of Metal Plating Room Settling Tank
Lockheed Martin Facility
Johnson City, NY

August, 1996

Prepared for:

Lockheed Martin
Control System Department
600 Main Street
Johnson City, NY 13790

Prepared by:

Handex Environmental Management, Inc.
500 Campus Drive
Morganville, NJ 07751

REMEDIAL ACTION WORKPLAN
Removal of Metal Plating Room Settling Tank
Lockheed Martin Facility
Johnson City, NY

1.0 Background

The Metal Plating Room Settling Tank is a subsurface structure constructed of reinforced concrete bottom and sidewalls and endwalls constructed of reinforced concrete block. The tank shares a common wall with the adjacent Spent Plating Waste Storage Tank. Plan view and Cross sectional views of the tanks are attached as Figures 1 and 2 respectively.

In October, 1993, Lockheed Martin conducted a sampling program at the Metal Plating Room Settling Tank at their Johnson City, New York facility. The sampling results indicated that the sidewall, endwalls and soil beneath the Metal Plating Room Settling Tank did not show evidence of significant contamination. Two of three samples collected from the concrete floor at the bottom of the Settling Tank contained levels of trichloroethylene in excess of the TCLP standard of 0.5 mg/kg. In March, 1995 the NYDEC acknowledged the sampling results discussed above and requested clarification on how the tank would be dealt with.

In May, 1995 Handex Environmental Management, Inc. (Handex) submitted a proposal to Lockheed Martin for the removal and disposal of the Metal Plating Room Storage Tank. This workplan presents an outline on how the removal and eventual disposal of the Metal Plating Room Settling Tank is to be conducted.

2.0 Health and Safety

All work will be conducted in accordance with Lockheed Martin safety protocol and the Site Health and Safety Plan (HASP) which is included as Appendix A. All Handex personnel working on the project have been provided with 40-hour OSHA training. All entry into the Metal Plating Room Settling Tank will be considered a non-permit confined space entry and will be performed in accordance with the confined space entry permit procedures included as part of the HASP.

3.0 Tank Removal

Prior to site mobilization, Handex will call in for a markout of underground utilities entering the site. Lockheed Martin will provide all available plans and documentation of onsite underground lines to Handex for review.

Staging areas for Handex equipment and materials, a decon area and a waste storage area will be established in locations designated by Lockheed Martin. Barricades will be placed to safely secure the work zone.

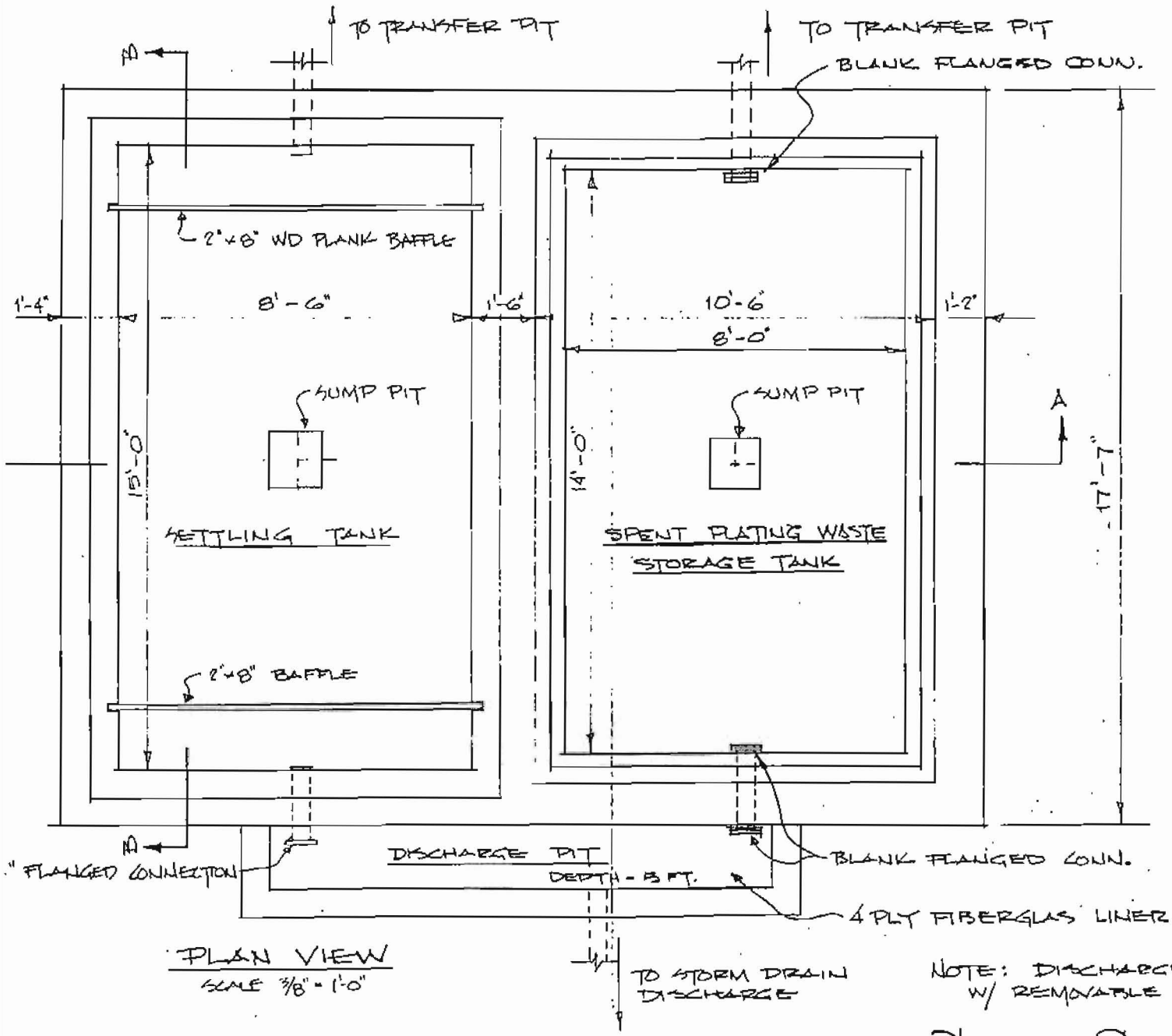
The tank cover will be removed and placed into a dumpster for disposal as construction debris. Handex will then utilize an excavator to remove an approximately two foot wide section of soil from behind the two endwalls and the sidewall of the tank. The excavation will be sloped or benched in accordance with OSHA standards.

Upon completion of soil removal, Handex will enter the tank in order to sawcut along the sidewalls and floor of the tank adjacent to the common wall of the Spent Plating Waste Storage Tank. Water will be used to minimize dust during sawcutting activities. The sawcut will facilitate clean removal of the materials while minimizing impact to the Spent Plating Waste Storage Tank which is to remain in place.

After the sawcutting has been completed, Handex will utilize a hoe-ram to break the endwalls and non-common sidewall into manageable pieces. Since these materials show no evidence of contamination, the pieces will be removed from the excavation by the excavator and placed into a dumpster for disposal at a local sanitary landfill as construction debris.

The concrete bottom of the tank will be broken into manageable pieces by the hoe-ram. This material will be removed from the excavation and placed into a lined roll-off box. The material will be sampled for disposal parameters. Upon receipt of the analytical data and acceptance of the waste profile sheet the material will be transported to a licensed disposal facility for incineration or landfilling. Documentation of the transportation and disposal will be provided to Lockheed Martin.

Immediately upon removal of the tank sidewalls and bottom, Handex will backfill the excavation with clean imported fill material. The fill will be compacted with a vibratory roller. Site cleanup and demobilization will take place after backfill and site restoration activities have been completed.

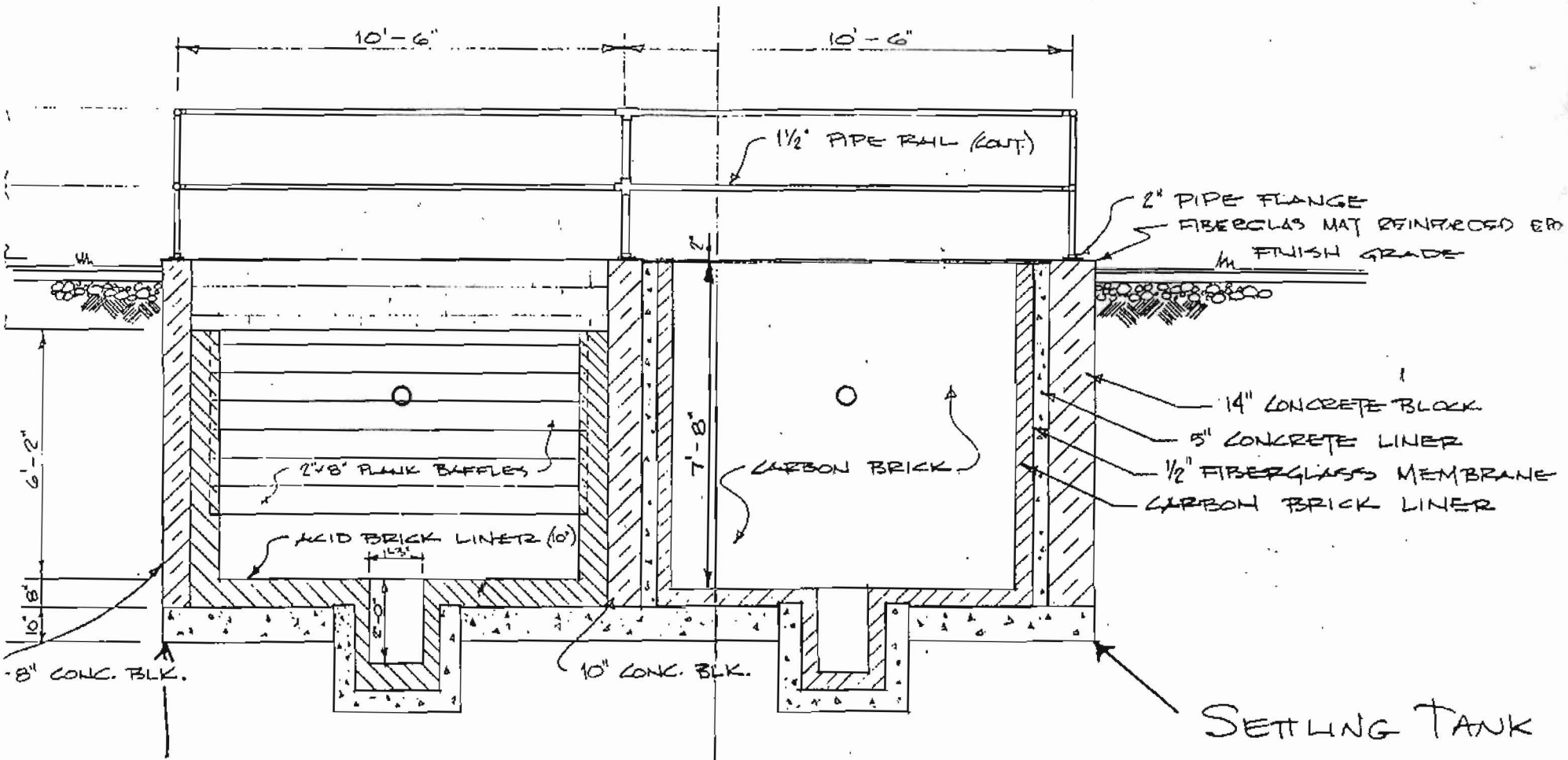


PLAN VIEW
SCALE 3/8" = 1'-0"

NOTE: DISCHARGE PIT IS COVERED W/ REMOVABLE DIAMOND PLATE COVERS

Figure 1

MARTIN MARIETTA CONTROL SYSTEM
METAL PLATING ROOM TANKS



SPENT PLATING WASTE STORAGE TANK

SECTION A-A

SCALE 3/8" = 1'-0"

Figure 2

MARTIN MARIETTA
CONTROL SYSTEMS
METAL PLATING ROOM
SETTLING TANK

10 9 FOLD 8 7

Appendix A - Health and Safety Plan

HANDEX Environmental Inc.
Health & Safety Plan

PREPARED FOR:

Lockheed Martin Facility
(customer name)

Johnson City, New York
(project location)

112774
(project number)

9-16-96
Start Date

10-31-96
End Date

PREPARED BY:

Jonathan McCollom
Name

8-27-96
Date

APPROVED BY:

Therese Perrette - Health & Safety Coordinator Date 9/4/96
Print Name Signature

Jonathan McCollom - Project Manager Date 9-4-96
Print Name Signature

ADDITIONAL APPROVALS
(if required)

Print Name Title Signature

Print Name Title Signature

Print Name Title Signature

PURPOSE

This document defines the Health and Safety considerations for the on-site management activities by HANDEX personnel and contractors. This document is required by HANDEX policies and programs and OSHA 29 CFR 1910.120. The basic requirements for the health and safety of the project workers are delineated in the HANDEX Health and Safety procedures. All personnel on site will be informed about the pertinent sections of the Health and Safety Plan.

HANDEX Environmental Inc.
Health & Safety Plan

Table of Contents

I. Type of Project

Check appropriate categories (more than one may apply)

- o Tank Decontamination
- ☒ Tank Excavation and Removal
- ☒ Soil Excavation
- o Filter Press Operation/Dewatering
- o Drum Sampling & Management
- o Other_____
- o On-site Treatment
- ☒ Confined Space
- o Drilling
- o Gauging/Sampling
- o System Installation
- o Other_____

A. Scope of Work

(Detailed description of project, including types of major equipment to be used, quantities of material to be managed, contaminants, number of specific job locations, (i.e., number of tanks, number of wells, sumps, etc.).

Removal of metal plating room settling tank. Project involves soil excavation around tank perimeter, sawcutting of tank sidewalls and concrete floor, removal and staging of concrete block walls as construction debris and removal and disposal of concrete floor as hazardous waste. Excavation to be backfilled upon completion of removal. Equipment to be utilized includes excavator, hoe-ram, compactor, and concrete saw. Tank entry is to be confined confined space entry. Sidewalls of tank are clean and will be disposed of as construction debris. Concrete floor of tank is contaminated with TCE and will be handled/transported/disposed as hazardous waste.

NOTE: * Appendix A - Appendix A should contain a site map which indicates existing facilities, work zones, evacuation routes, etc.

B. Site Location Information

1. Site Description: The site is an active light electronics manufacturing facility. The area of concern is located in the southern portion of the site behind the plant building.

2. Site History: The site has been an active manufacturing facility since the early 1950's.

3. Area of Concern: The area of concern is an underground vault known as the Metal Plating Room Settling Tank. The tank bottom is known to be impacted by TCE. Soils and sidewalls of this tank are not contaminated.

4. Neighborhood Description: The site is located in a mixed residential, industrial and light commercial area. A power plant exists to the south of the facility. Residential areas exist east and west of the site. Route 17-C exists at the northern property boundary.

5. Topography and Site Access: The site is generally flat lying and access is from Route 17C.

6. Additional Information:

II. Hazard Evaluation

A. Physical Hazards (trenches, utilities, terrain, noise, biological, etc.)

Auto Traffic ✓	Fire	Explosion	Trenches ✓
Overhead Utilities ✓	Underground Utilities ✓		Noise
Slip Trip Fall ✓	Uneven Terrain		Biological

Other: Describe

Note: * Appendix B: Attach a "hazard evaluation" for each task as part of Appendix B. (Tasks, Associated Risks and Hazards, Control Measures)

B. Chemical Hazards

The substances which are known or suspected to be on-site are marked on the Chemical Hazard Summary provided in Appendix G, wich identifies the primary hazard of each compound of potential concern. The idnetification of the compounds of potential concern is based on previous site investigation results, where available.

Note: Appendix C contains copies of MSDS for expected contaminants

C. Medical Monitoring

Entire crew received baseline physicals? ☒ YES ○ NO

If NO, Why not?

List any special tests required & frequency:

III. Manpower

A. Crew Size

	Number	Names
Project Manager	1	Jonathan McCollom
Hydrogeologist		
H&S Officer	1	Therese Perrette
Equipment Operator	1	Bobby Spears
Technician	1	Jeff Barkazi
Other		

B. Contractor — Pre-qualified o YES o NO (If no, see letter "C" below)

Name _____

Address _____

City/State _____ Contact Name & Phone Number _____

Scope of Work: _____

Training Required: _____

Each subcontractor must provide documentation of training, physical results and fit test at a minimum.

Subcontractor received required training? o YES o NO

Documented? o YES o NO

If no, Why? _____

C. If subcontractor is not pre-qualified, has pre-qualification package and contract approval been submitted to regional contract manager? o YES o NO

D. If NO, who has authorized use of subcontractor? _____

B. Contractor — Pre-qualified o YES o NO (If no, see letter "C" below)

Name _____

Address _____

City/State _____ Contact Name & Phone Number _____

Scope of Work: _____

Training Required: _____

Each subcontractor must provide documentation of training, physical results and fit test at a minimum.

Subcontractor received required training? o YES o NO

Documented? o YES o NO

If no, Why? _____

C. If subcontractor is not pre-qualified, has pre-qualification package and contract approval been submitted to regional contract manager? o YES o NO

D. If NO, who has authorized use of subcontractor? _____

IV. **Equipment (describe type)**

- o Decon/Shower _____
- o Manlift _____
- o Backhoe Komatsu
- o Generator _____
- o Hydraulic Ram _____
- o Excavator _____
- o Pump(s) _____
- o Chainsaws _____
- o Drill Rig _____
- o Other Hoe-Ram
- o Fork Truck _____
- o Crane _____
- o Compressor _____
- o Tamper _____
- o Dump Truck _____
- o Compactor _____
- o Vacuum Tnkr _____
- o Cutting Dvs Concrete Saw
- o Torches _____
- o Other _____

A. Is any special training required? Lockheed Martin requires all contractor employees to attend an onsite H&S training course.

B. Any task being performed for which an SOP is in place? If yes, list SOP training.

	APPLICABLE	TRAINING COMPLETE	TRAINING REQUIRED
1. Locating Utilities	✓	✓	
2. Trenching and Excavating	✓	✓	
3. Confined Space Entry	✓	✓	
4. Grounding & Bonding			
5. Line Breaking	✓	✓	
6. Lockout/Tagout/Tryout	✓	✓	
7. Labelling			
8. Pressure Washer Operations			
9. Container Management	✓	✓	
10. Heavy Equipment Decontamination	✓	✓	
11. Scrap Metal Decontamination			
12. PCB Wipe Sampling			
13. Manifesting Procedures	✓	✓	
14. Guzzler Vacuum Truck Operating			
15. Operation of Squeeze Filter Presses			
16. Project File Management	✓	✓	
17. Scaffolding			
18. Modutank Setup			

V. Levels of Protection:

Specific protective equipment for each level of protection is as follows:

Level A: Fully-encapsulating chemical resistant suit; pressure demand, atmosphere supplying respirator; inner chemical resistant gloves; radio communications; chemical resistant safety boots/shoes; cooling unit*; coveralls*; hard hat*; disposable gloves and boot covers*.

Level B: Pressure demand, atmosphere supplying respirator; chemical resistant protective clothing; inner and outer chemical resistant gloves; chemical resistant safety boots/shoes; hard hat; radio communications; coveralls*; disposable boot covers*; face shield*; long cotton underwear*.

Level C: Full-facepiece air-purifying respirator (with appropriate cartridges); chemical resistant protective clothing; inner and outer chemical resistant gloves; chemical resistant safety boots/shoes; hard hat; coveralls*; disposable boot covers*; face shield*; escape mask*; long cotton underwear*.

Level D: Coveralls; safety boot/shoes; safety glasses or goggles; hard hat; gloves*; escape mask*; face shield*.

*** Optional**

NO CHANGES TO THE SPECIFIED LEVELS OF PROTECTION SHALL BE MADE WITHOUT THE APPROVAL OF THE SAFETY COORDINATOR AND THE HYDROGEOLOGIST AT A MINIMUM.

Specific protective equipment modification for each level of protection is as follows:

Safety glasses and **safety boots** are required on all sites, without respect to the work being performed. **Hardhats** are required as well during installation, construction, drilling, and when other overhead hazards are present. **Earplugs** are required during drilling, jackhammering, and during other such loud activities. In addition, **safety vests** are advised (& may be required) during gauging and/or sampling activities.

V. **Worker Protection**

Please complete a form for **each** work task

A. Task Description: Tank Entry for Cutting

Level ___ A ___ B ___ C ✓ D

B. Respiratory Protection (check type which applies) (available)

- o Air Purifying

  Full Mask ✓ Cartridge Type ___ Dust Mask ___

- o Supplied Air

  SCBA ___ Airline ___ Escape Bottle ___ Other ___

  Breathing Air Certificate on file Yes If no, breathing air tested ___

C. Protective Clothing

Hard Hat ✓

Eye Protection

___ Full face respirator
✓ Safety glasses
___ Chemical resistant goggle
✓ Face shield
___ Other ___

Bodysuit

✓ Tyvek	___ Hooded	___ Sewn seam
___ Polytyvek	___ Hooded	___ Sealed seam
___ Saranex	___ Hooded	___ Strapped seam
___ Rain gear (PVC)		
___ Butyl		
___ other ___		

Gloves (Indicate "O" for Outer, "I" for Inner)

I Latex	___ Leather
___ Best-N-Dex (nitrile)	O Cotton
___ Surgical rubber	___ PVC
___ Neoprene	___ Viton
___ Neoprene (milled)	___ Silvershield
___ Nitrile	___ Other ___

Boots

✓ Leather - steel toed	___ PVC booties
___ PVC - Steel Toed	___ Tyvek booties
___ Neoprene - steel toed	___ Poly booties
___ Rubber slush boots	___ other ___
___ Latex (Nuke) booties	___ other ___

Hearing Protection

___ Ear muffs
✓ Ear plugs
___ Other ___

Note: This page may be duplicated for additional tasks

V. **Worker Protection**

Please complete a form for each work task

A. Task Description: Excavation/Backfilling

Level ___A ___B ___C ✓ D

B. Respiratory Protection (check type which applies) **(available)**

- o Air Purifying

  Full Mask_____ Cartridge Type_____ Dust Mask_____

- o Supplied Air

  SCBA_____ Airline_____ Escape Bottle_____ Other_____

  Breathing Air Certificate on file _____ If no, breathing air tested_____

C. Protective Clothing

Hard Hat ✓

Eye Protection

___ Full face respirator
✓ Safety glasses
___ Chemical resistant goggle
___ Face shield
___ Other_____

Bodysuit

✓ Tyvek ___ Hooded ___ Sewn seam
___ Polytyvek ___ Hooded ___ Sealed seam
___ Saranex ___ Hooded ___ Strapped seam
___ Rain gear (PVC)
___ Butyl
___ other_____

Gloves (Indicate "O" for Outer, "I" for Inner)

I Latex ___ Leather
___ Best-N-Dex (nitrile) O Cotton
___ Surgical rubber ___ PVC
___ Neoprene ___ Viton
___ Neoprene (milled) ___ Silvershield
___ Nitrile ___ Other_____

Boots

✓ Leather - steel toed ___ PVC booties
___ PVC - Steel Toed ___ Tyvek booties
___ Neoprene - steel toed ___ Poly booties
___ Rubber slush boots ___ other_____

___ Latex (Nuke) booties ___ other_____

Hearing Protection

___ Ear muffs
✓ Ear plugs
___ Other_____

Note: This page may be duplicated for additional tasks

VI. **Contamination Reduction and Decontamination**

A. Describe how work zones will be set up and maintained*: Work zone to be cordoned off with barricades and safety tape. Decon are to be at edge of work zone

B. **Decontamination Procedures:**

Personnel and equipment leaving an identified Exclusion Zone, (indicated in Section VI.A.) shall be thoroughly decontaminated.

The standard level "C" decontamination protocol shall be used with the following decontamination approach:

1. Wash gloves and/or boot covers using decon solution and water rinse.
2. Remove securing tape from wrists and ankles.
3. Remove disposable tyvek/or coveralls (without boots).
4. Remove boot covers and/or outer gloves.
5. Remove face mask respirator.
6. Remove inner gloves.

For Level "D," dress-down, follow steps 1,3,4, & 6, if protective equipment is worn.

Describe personnel decontamination procedures, if the procedures described above are not used:

C. Describe equipment decontamination procedures: Power wash eqpt. at edge of work area

D. How is contaminated equipment disposed? Place in lined roll-off to be used for hazard waste storage/transport.

E. Describe storage of usable protective gear: In work van.

F. Describe laundering procedure for uniforms: Return to shop for laundering

G. Locker room facility provided? o YES ☒ NO

Will a decon trailer be on site? o YES ☒ NO

If no, how will crew change clothing and shower? At offsite location on work van

I. Describe provision for restrooms: Lockheed Martin to make restroom available

Respirator cleaning and inspection procedures may be found in the Respiratory Protection Program.

***Note: Appendix A contains site maps which indicate locations of work zones.**

VII. **Safety Equipment**

Check the items that will be stationed on the project site:

___ Safety Showers
___ Portable eyewash
✓ Barriers
✓ Warning Signs
✓ Barrier Tape
___ Decon Trailer
___ Lighting
___ Ventilation
___ Grounding/bonding cables
___ Emergency Oxygen w/mask
✓ First Aid Station
___ Fume Hood
___ Grounding Rods
✓ Lifeline/harness
___ Extraction device
✓ Ladders
___ Air Horns

✓ Fire extinguishers (types & sizes) Type ABC

___ Spill Control Supplies (describe)_____

___ Other Safety Items:_____

VIII. **Communication Systems**

Describe on-site communication systems: Portable phone w/ work crew

IX. **Monitoring Ambient Air Monitoring**

The following equipment (check off appropriate ones and circle use) shall be used at intervals as specified:

___	Radiation Meter	Continuous/Hourly/2x Daily/Other_____
✓	Combustible Gas/O_2 Meter	Continuous/Hourly/2x Daily/Other Prior to entry and
___	Draeger Tubes (type)_____	Continuous/Hourly/2x Daily/Other if any odors detected
✓	Photo-Ionization Detector (type) HnU	Continuous/Hourly/2x Daily/Other Prior to entry and
___	OVA/FID	Continuous/Hourly/2x Daily/Other if any odors detected
___	H_2S Monitor	Continuous/Hourly/2x Daily/Other_____
___	CO Monitor	Continuous/Hourly/2x Daily/Other_____
___	Dust Monitor (type)_____	Continuous/Hourly/2x Daily/Other_____
___	Personal Monitors (List)_____	Continuous/Hourly/2x Daily/Other_____
___	Other_____	Continuous/Hourly/2x Daily/Other_____
___	Other_____	Continuous/Hourly/2x Daily/Other_____

Methodology/Frequency In accordance with manufacturer's recommendations

Calibration In accordance with manufacturer's recommendations

***Note: Appendix D contains results of real-time air monitoring surveys.**

Air Permits

List of Air Permits required:_____

Guidelines for Air Monitoring Gasoline Hazards (1)

Monitoring Instruments	Hazard	Measured Level	Action
CGI-Combustible Gas Indicator (% Lower) Explosive Limit of combustible Gases	Explosive Atmosphere in Immediate work area	< 10% LEL	Investigate with caution.
		> 10% LEL	Explosion hazard. Withdraw from area immediately.
CGI-Combustible Gas Indicator (Oxygen %)	Oxygen Concentration	< 19.5%	Monitor while wearing SCBA. **Note:** combustible gas readings are not valid in atmospheres with < 19.5% Oxygen
		19.5 - 23.0%	Continue investigation with caution.
		> 23.0%	Discontinue investigation monitoring. Fire hazard potential. Consult H&S Coordinator
Photoionization (Hnu)/Flame Ionization (OVA) Meters	Volatile Contaminants	Breathing Zone. Background to 10 ppm.	Level D Protection (2)
Actions taken are based on sustained or frequent readings.		10 to 50 ppm over background.	Level C Protection (2)
		50 to 500 ppm over background.	Level B Protection (2)
		Over 500 ppm over background.	**Evaluate exposure source** Consult H&S Coordinator

(1) - Gasoline is used for this guideline based on it higher volatility.

(2) - Meter readings are not the sole criteria for selecting the level of protection. These are only generalized guidelines.

XII. **Hazardous Waste Operation Contingency Plan**

Generator's Name: Lockheed Martin

Location, description and route to site: 600 Main Street, Johnson City, NY - Active light electronics manufacturing facility, site is accessible from route 17-C

Contact: Terry Gillette Phone No: (607) 770-2773

Project Manager: Jon McCollom

Emergency Phone Numbers:

Police: 911

Fire: 911

Hospital Name: Wilson Hospital

Phone/Address/Route to: (607) 763-6000 - Harrison Street, Johnson City - Exit site onto Route 17-C East - Go about 1 mile and turn right onto Harrison Street. The hospital will be on your left in about 1/4 mile.

Contact: Emergency Room

Alternate Contact:

Ambulance: 911

Interplant Medical:

Key Personnel: Office Resources - Phone Numbers

HANDEX Office	(908) 536-8500
Project Manager (Jon McCollom)	(908) 536-8500, Ext. 316 / Car Phone (908) 390-2893
Operations Manager (Jim Bartley)	(908) 536-1376, Ext. 633 / Car Phone (908) 309-2879
	Pager (___) ___-____
Health & Safety Coordinator (Therese Perrette)	(908) 536-8667, Ext. 366 / Car Phone (908) 309-2875
	Pager (___) ___-____
Emergency Contact: Medical and Health	(908) 536-7144
State Environmental Agency:	
Emergency Response 24 hour **action hotline**	(800) 457-7362
Poison Information Center	(908) 962-1253

Emergency Information

Has a copy of contingency plan been received by hospital listed? o YES o NO o N/A (explain) Not required for this project

Is it documented? o YES o NO o N/A (explain) Not required for this project

Has the hospital been notified of job site activities and chemical hazards? o YES o NO o N/A (explain) Not required for this project

Emergency Medical Provider Route Map:

Attach a map with written directions to the hospital and local medical provider as part of Appendix E.

Evacuation Route/Emergency Equipment Station Map:

Attach a site-specific map indicating evacuation route, location, and description of emergency safety equipment as part of Appendix A.

Evacuation Alarm Description: Proceed around plant building to front entrance.

Evacuation Route Description: At front gate of plant

Assembly Area Description:

HASP and Contingency Plan Sign-Off

Name: Jonathan McCollom Date: 8-27-96

Person who completed plan

Customer Name: Lockheed Martin Job Site: Johnson City

All site personnel (employees and their subcontractors) have reviewed the attached HASP and Contingency Plan. This plan provides site personnel with an orientation to the job task including:

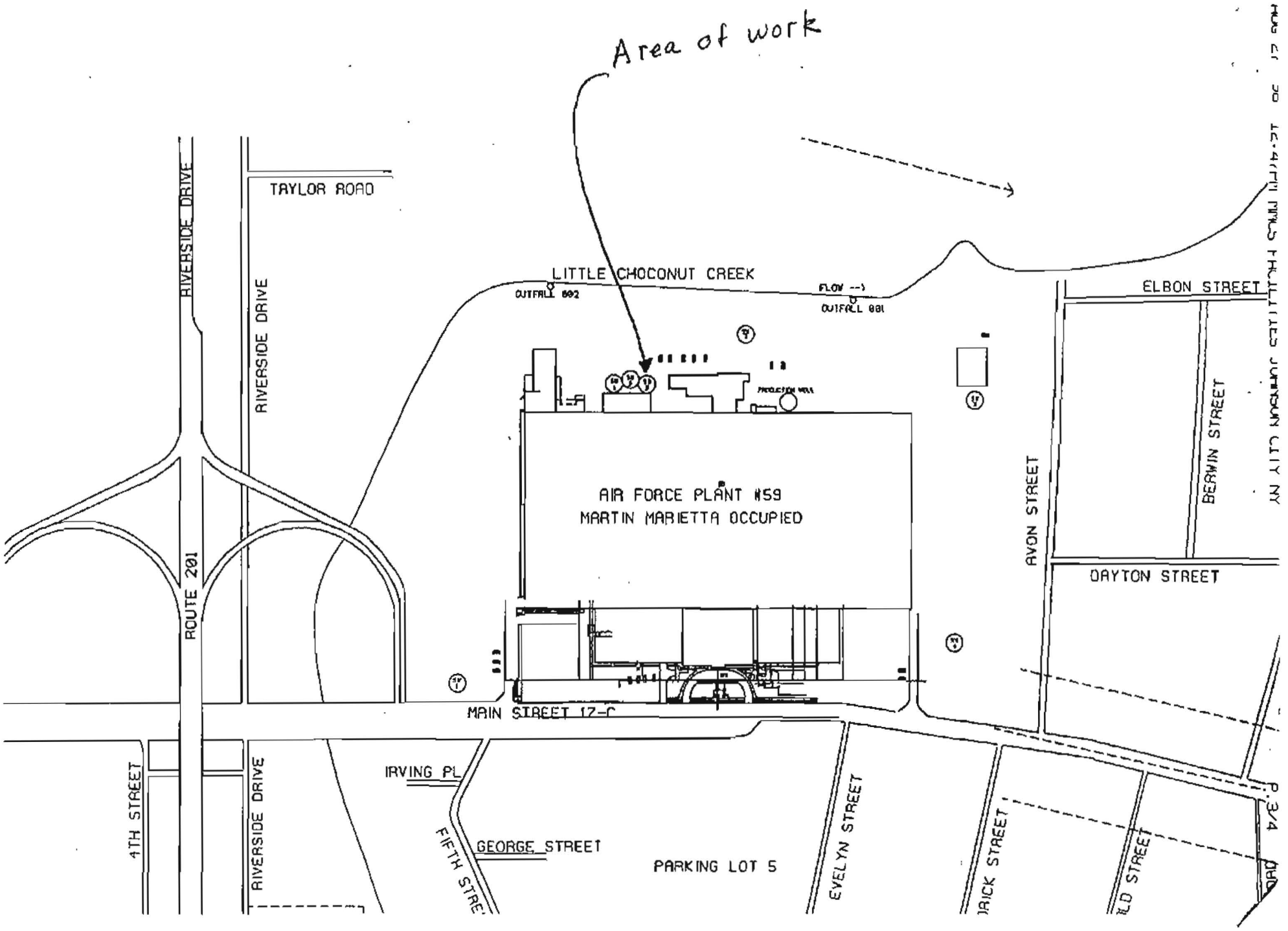
- Site Overview
- Emergency Response Procedures
- Potential physical & health hazards of on-site hazardous materials
- PPE requirements
- Site Security
- Hazards of confined spaces
- Site-specific environmental regulatory requirements

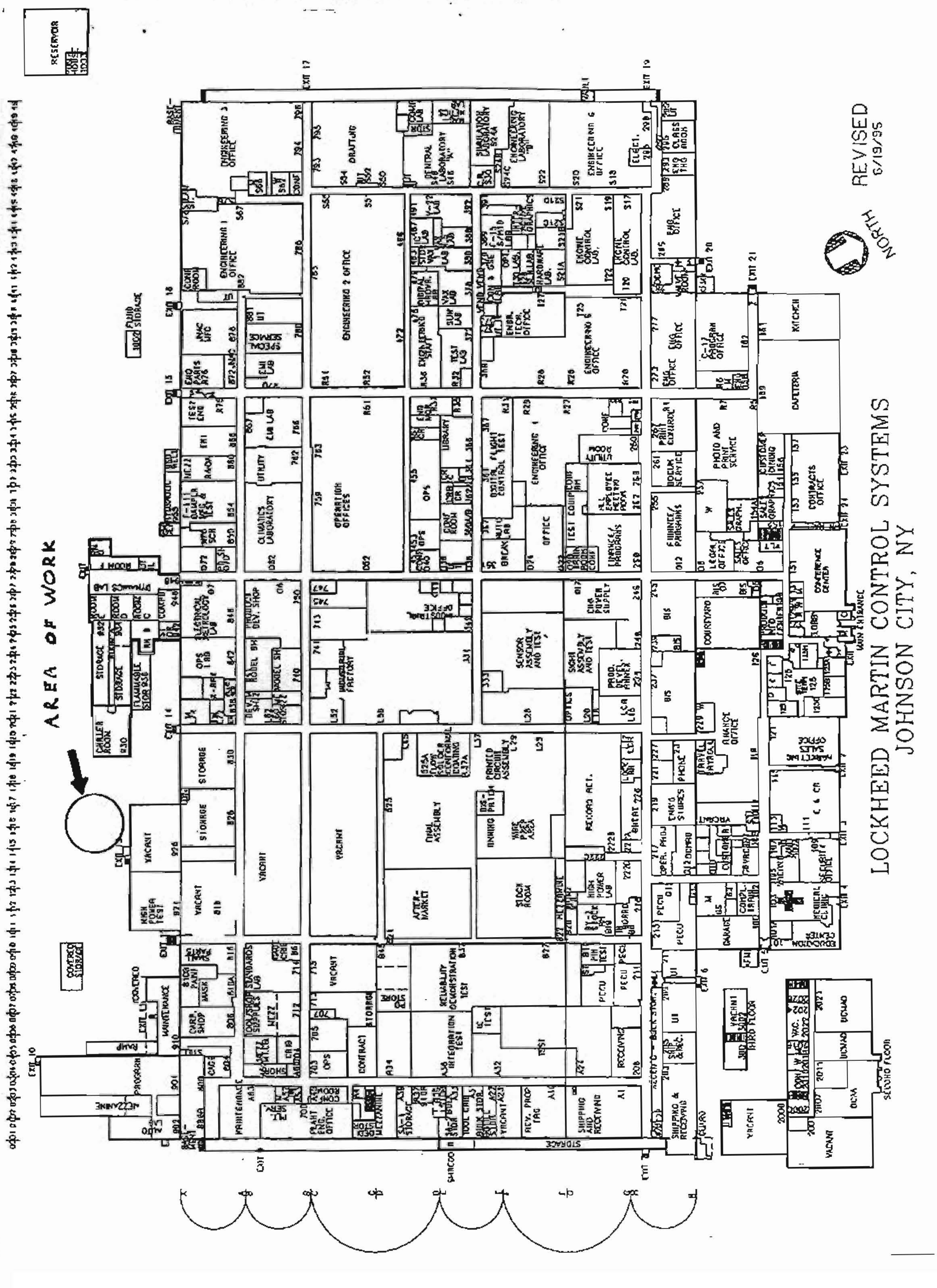
All sub-contracted employees have also been provided a written work plan.

Name	Signature (Yes/No)	Date	Subcontractor

Appendix A

Site Maps


Area of work
TAYLOR ROAD
RIVERSIDE DRIVE
RIVERSIDE DRIVE
LITTLE CHOCONUT CREEK
OUTFALL 002
FLOW -->
OUTFALL 001
ELBON STREET
BERWIN STREET
AIR FORCE PLANT #59
MARTIN MARIETTA OCCUPIED
AVON STREET
DAYTON STREET
ROUTE 201
MAIN STREET 17-C
4TH STREET
RIVERSIDE DRIVE
IRVING PL
FIFTH STREET
GEORGE STREET
PARKING LOT 5
EVELYN STREET


AREA OF WORK
LOCKHEED MARTIN CONTROL SYSTEMS
JOHNSON CITY, NY
REVISED
6/19/95
NORTH

Appendix B

HANDEX

Activity Hazard Analysis

Site Name Lockheed Martin

Site Location Johnson City Date 8-27-96

Major Tasks/Activities	Hazards	Precautionary Measures/Controls
Confined Space Entry	See attached	
Soil Excavation	See attached	
Backfilling	See attached	
Decon	See attached	
General Site Work	See attached	

May 1996 | ACTIVITY HAZARD ANALYSIS | Page 1 of 2

Activity Confined Space Entry Analyzed by Date 8/96 Reviewed by TT

Principal Steps	Potential Hazards	Recommended Controls
1. Confined Space Entry	Conditions immediately dangerous to life and health, i.e. explosive atmosphere, inadequate oxygen concentration, elevated toxic levels.	Monitor atmosphere for explosive gases & vapors, and contaminants above established limits. Ventilate or purge space with a Coppus blower or equivalent to reduce concentrations of contaminants. Open all manways for additional air movement. Emergency response planned in Level B. Top entry rescues will be performed with safety line, harness and tripod and winch. A stretcher will be available.

Equipment to be Used	Inspection Requirements	Training Requirements
Safety harness/belts. (Hand radios) Tripod Rescue rope	All equipment before & after any entry.	Confined space.

Activity Confined Space Entry

Principal Steps	Potential Hazards	Recommended Controls
Confined Space Entry (Continued).	Spread/inhalation of contaminants.	Use of Level B or C protective equipment to prevent skin and respiratory contamination.
	Handling hazardous waste material.	Use PPE to prevent skin contamination. Use cold cutting methods when dealing with flammables to prevent fire/explosions. Have spill control supplies on hand to address spills.

Equipment to be Used	Inspection Requirements	Training Requirements

STANDARD OPERATING PROCEDURE 10.H02

CONFINED SPACE ENTRY PROGRAM

Issue Date: July 14, 1995

Applicability: All HANDEX Operations

Prepared By:

Therese Perrette, Director, Health & Safety

Issuing Department:

Health & Safety

Approved By:

Nelson Mossholder, Vice President Operations

STANDARD OPERATING PROCEDURE 10.H02

CONFINED SPACE ENTRY PROGRAM

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ATTACHMENTS

May 1995	ACTIVITY HAZARD ANALYSIS	Page 1 of 2
Activity Decontamination	Analyzed by Date 8/96	Reviewed by Date TT

Principal Steps	Potential Hazards	Recommended Controls
1. Decon of equipment.	Pressure washing equipment Splash with detergent or caustic cleaning solutions, burns occurring from steam. Hot Water/steam	Use proper personnel protective equipment, use respiratory protection. If no respiratory protection is required, wear a hard hat with face shield. Remove as much solid dirt/rocks from machines prior to commencing pressure washing to limit flying rock/objects. Proper PPE. Never point wand towards body.

Equipment to be Used	Inspection Requirements	Training Requirements

May 1995	ACTIVITY HAZARD ANALYSIS	Page 2 of 2
Activity Decontamination	Analyzed by Date 8/96	Reviewed by Date TT

Principal Steps	Potential Hazards	Recommended Controls
4. Generation of contaminated water.	Spills.	Perform decontamination process on decon pans so rinseate can be contained and processed.
	Cross contamination.	Splash protection.
	Spill & fire hazards, handling combustible flammable mixtures.	Clean machines with rags and brushes and non-flammable solvents.

Equipment to be Used	Inspection Requirements	Training Requirements

May 1995	ACTIVITY HAZARD ANALYSIS	Page 1 of 85
Activity General Site Activities	Analyzed by Date 8/96	Reviewed by Date TP

Principal Steps	Potential Hazards	Recommended Controls
1. Working in/around noisy equipment	Noise induced hearing loss	Implement a Hearing Conservation Program to comply with OSHA standards including exposure monitoring, employee training, engineering/administrative controls, personal hearing protection devices and audiometric testing.
2. Working in hot environments	Heat Stress	Implement a Heat Stress Control Program when necessary due to environmental conditions and use of PPE. Program to include environmental monitoring; training; acclimatization; scheduling; work/rest regimes; personal protection devices (i.e. vests); shaded areas and cool rest areas;

Equipment to be Used	Inspection Requirements	Training Requirements
Various depending on task. See task specific hazard analysis	Housekeeping inspections to be done daily by all site employees. Corrective action for housekeeping should be performed to reduce risk to all site personnel.	Knowledge of requirements of HASP Continued reinforcement of safe work practices during daily safety meeting.

Activity General Site Activities Analyzed by Date 8/96 Reviewed by Date 77

Principal Steps	Potential Hazards	Recommended Controls
		electrolyte and water replacement fluid; and biological monitoring when necessary.
3. Working in Cold environments	Cold Stress	Implement a Cold Stress Control Program including environmental monitoring; training; heavy winter clothing; heated rest areas.
4. All site activities	Head, eye and foot injuries	Hard hats, goggles or safety glasses and steel toed boots are required in all site locations.

Equipment to be Used	Inspection Requirements	Training Requirements

May 1995	ACTIVITY HAZARD ANALYSIS	Page 3 of 85
Activity General Site Activities	Analyzed by Date 8/96	Reviewed by Date TP

Principal Steps	Potential Hazards	Recommended Controls
	Misuse of hand tools	Use the tool for its intended purpose, is the most important rule. Implement an ongoing maintenance program for all tools.
	Slip, trip and fall hazards common to all construction sites	Safety training to stress the fundamentals, such as the cause and prevention of slip, trip and fall hazards; safe lifting techniques; and their prevention. Barricades construction signs, flashing warning devices, red lanterns, or guards shall be placed as required and maintained during construction to protect people from injury and to avoid damage to excavations.

Equipment to be Used	Inspection Requirements	Training Requirements

May 1995	ACTIVITY HAZARD ANALYSIS	Page 4 of 85
Activity General Site Activities	Analyzed by Date 8/96	Reviewed by Date 7P

Principal Steps	Potential Hazards	Recommended Controls
5. Working in inclement weather	Biological Hazards (i.e. poison ivy, ticks and bees) Inclement Weather (i.e. lightning, heavy rain, etc.)	Safety training dealing with Biological hazards, poison ivy, ticks bees, etc., to be addressed during daily safety meeting (i.e. Lyme Disease, poison ivy, rabid animals, etc.) Proper PPE will include skin protection designed to keep biological exposure to plants and ticks at a minimum. Monitor local weather thru available media. During daily safety briefing, address inclement weather procedures:

Equipment to be Used	Inspection Requirements	Training Requirements

Activity General Site Activities Analyzed by Date 8/96 Reviewed by Date TP

Principal Steps	Potential Hazards	Recommended Controls
	Lightning	Shutdown heavy equipment and proceed to support zone Await further instructions from PM and H&S
	Heavy rain/winds	If visibility is affected, shutdown heavy equipment and proceed to support zone Await further instruction from PM and H&S

Equipment to be Used	Inspection Requirements	Training Requirements

Appendix C

Material Safety Data Sheets

MATERIAL SAFETY DATA SHEET

GENIUM PUBLISHING CORPORATION
1145 CATALYN STREET
SCHENECTADY, NY 12303-1836 USA
(518) 377-8855

GENIUM PUBLISHING CORP.

NO. 312

TRICHLOROETHYLENE

Revision D

Date July 1979

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: TRICHLOROETHYLENE
OTHER DESIGNATIONS: TCE, Trichloroethylene, Ethylene Trichloride, Ethenyl Trichloride, $CHCl=CCl_2$, GE Material D5B56, CAS# 000 079 016
MANUFACTURER & TRADE NAMES: BLACO-TRI (Baron-Blakeslee); ALK-TRI, HI-TRI and NEU-TRI (Dow); KAYNIDE (Kraft); PERM-A-CLOR and TRIAD (Detrex); TRICHLOR (PPG); TRICLENE D & MD (Diamond Shamrock)

SECTION II. INGREDIENTS AND HAZARDS	%	HAZARD DATA
Trichloroethylene + Stabilizer* *Stabilizers such as amines or epoxy compounds are usually added at low levels to increase resistance to oxidation and to polymerization. Vapor degreasing grades require higher stabilizer levels. **ACGIH (1979 Intended Changes List) proposes an 8-hr TWA of 50 ppm with STEL 150 ppm. NIOSH (1978) reviewed TCE as a suspected carcinogen and suggested a TWA of 25 ppm as readily attainable. Unresolved controversy on TCE carcinogenicity at present.	ca 100	TLV 100 ppm with 200 ppm Ceiling level** Human, Oral LDLo 857 mg/kg Human, Inhal. TCLo 160 ppm/83 min (central nervous system)

SECTION III. PHYSICAL DATA

Boiling point, 1 atm, deg F (C)	188 (87)	Specific gravity 20 C	1.45-1.47*
Vapor pressure @ 20°C, mm Hg	58	Volatiles %	ca 100
Vapor density (Air = 1)	4.54	Evaporation rate (CCl_4=1)	0.69
Water solubility @ 25°C, %	0.1	Freezing point, deg C	-73 to -86*
		Molecular weight	131.39

Appearance & Odor: Colorless, mobile liquid with a characteristic, sweet, ether-like odor whose recognition threshold is 21.4 ppm in air (unfatigued, 100% of test panel).
*Depends on stabilizer and level used.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits		LOWER	UPPER
None	770 F (410 C)	in air, Vol %	@ 57C	15	40
			@100C	2.5	90%

Extinguishing Media: Use that which is appropriate for surrounding fire. Trichloroethylene is normally considered noncombustible. However, when 15% vapor in air at 33 C is exposed to intense heat (electric arc) or to ordinary flame at vapor-air temperatures exceeding 50 C, it can be made to burn mildly. Combustibility increases in O_2-enriched air.
Self-contained breathing apparatus should be used for protection against TCE vapors and their toxic and corrosive decomposition products in a fire situation.

SECTION V. REACTIVITY DATA

TCE is considered to be a stable compound under normal conditions of storage and handling. However, when it is heated (as in a vapor degreaser) or exposed to sunlight, it requires stabilization against oxidation, degradation and polymerization. When it is exposed to high temperatures, hydrogen chloride and phosgene (highly toxic) can be produced as decomposition products. It is slowly decomposed by light when moist.
TCE can react with NaOH, KOH, or other strong alkali to form explosive mixtures of chloroacetylenes. Soda ash does not react.
Polymerization of TCE is catalyzed by aluminum chloride. Magnesium or aluminum powder can react with TCE.

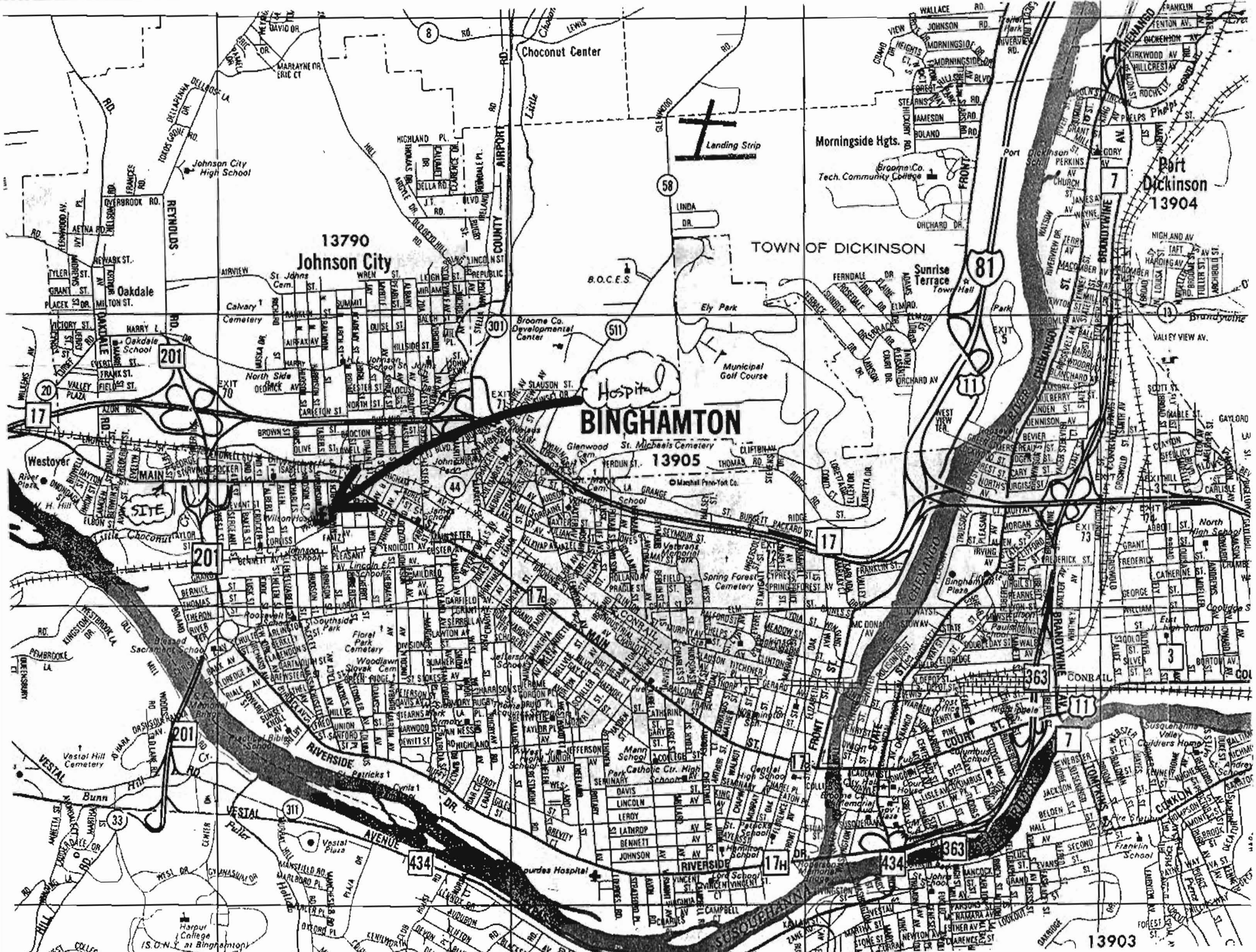
Appendix D

Monitoring Results

Instrument	Date/Time	Readings	Location

Appendix E

Hospital and Local Medical Provider Maps



Hospital
SITE
BINGHAMTON
13905
Johnson City
13790
Port Dickinson
13904
TOWN OF DICKINSON
Morningside Hgts.
Choconut Center
Landing Strip
Broome Co. Tech. Community College
Sunrise Terrace
Town Hall
Oakdale
Westover
Johnson City High School
Calvary Cemetery
Broome Co. Developmental Center
B.O.C.E.S.
Ely Park
Municipal Golf Course
North Side Park
Glenwood Cem.
St. Michaels Cemetery
Spring Forest Cemetery
Floral Park Cemetery
Binghamton Plaza
North High School
East High School
Vestal Hill Cemetery
Vestal Plaza
Harpur College (S.U.N.Y. at Binghamton)
Lourdes Hospital
Susquehanna Valley Childrens Home
Franklin School
13903

Appendix F

Safety Plan Amendments

Safety Plan Amendments

Site Name:_____ Start Date:_____ End Date:_____

Scope of Work/Change/Amendment/Update/Modification Made to the Plan:

_____

_____

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eason For Amendment:_____

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Hazard Evaluation:_____

_____

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_____

Level of Protection:_____

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Air Monitoring:_____

_____

_____

_____

Person Requesting Amendment:

_____
Name

_____
Title

_____
Date

_____
Signature

Approval:

_____
Name

_____
H&S Coordinator

_____
Date

_____
Signature

Appendix G
Chemical Hazard Summary Table

NOTE: THIS TABLE TO BE USED FOR SITES WITH LARGE COMPOUND LIST - DELETE THIS LINE UPON SELECTION

APPENDIX G
CHEMICAL HAZARD SUMMARY TABLE

The substances which are known or suspected to be on-site are marked on the Chemical Hazard Summary provided below, which identifies the primary hazard of each compound of concern.

Chemical Name	PEL/TLV*	IDLH**	Exposure Route	Symptoms	First Aid
Benzene	1 ppm	Ca (3000 ppm)	Inhalation, skin absorption, ingestion, skin or eye contact	Inh: Eye, nose & respiratory irritation Abs: giddy, headache, nausea, staggered gait, fatigue, anorexia Con: lassitude, dermatitis, bone marrow depressant	Eye:A Skin:E Breath:C Swallow:D
1,1-Dichloroethane	100 ppm	4000 ppm	Inhalation, ingestion	Inh: CNS, depressant, skin irritation Ing: liver & kidney damage	Eye:A Skin:E Breath:C Swallow:D
Gasoline	250 ppm	N/A	Inhalation, skin absorption, ingestion, skin or eye contact	See BTEX compounds	Eye:A Skin:E Breath:C Swallow:D
Tetrachloroethylene	25 ppm 200 ppm ceil	Ca (500ppm)	Inhalation, ingestion, skin or eye contact	Inh: Irritated eyes/nose/throat Ing: nausea, flush face & neck Con: vertigo, dizziness,incoordination, headache, somnolence, skin erythema, liver damage	Eye:A Skin:E Breath:C Swallow:D
Toluene	100 ppm 150 ppm STEL	2000 ppm	Inhalation, skin absorption, ingestion, skin or eye contact	Inh: fatigue, weak, confused, euphoria Abs: dizziness, headache, dilated pupil Ing: lacrimation, nervousness, muscle fatigue, insomnia Con: paresthesia, dermatitis	Eye:A Skin:E Breath:C Swallow:D
1,1,1 Trichloroethane	350 ppm	1000 ppm	Inhalation, ingestion, skin or eye contact	Headache, lassitude, central nervous system depressant, poor equili-brium, eye irritation, dermatitis, cardiac arrhythmias	Eye:A Skin:E Breath:C Swallow:D
Trichloroethylene	50 ppm 100 ppm STEL	Ca	Inhalation, ingestion, skin or eye contact	Inh: Headache, vertigo, visual disturbance Ing: tremors, somnolence, nausea Con: vomiting, eye irritation, dermatitis, cardiac arrhythmias, paresthesia	Eye:A Skin:E Breath:C Swallow:D

Chemical Name	PEL/TLV*	IDLH**	Exposure Route	Symptoms	First Aid
Xylene	100 ppm	1000 ppm	Inhalation, skin absorption, ingestion, skin or eye contact	Inh. dizziness, excitement, drowsiness Abs: incoordination, staggering gait Ing: eyes, nose and throat irritation Con: corneal vacuolization, anorexia, nausea, vomiting, abdominal pain, dermatitis	Eye:A Skin:E Breath:C Swallow:D
Cadmium	0.2mg/m3	Ca	Inhalation, inges-tion,	Inh: Pulmonary edema, dyspnea Ing: cough, tight chest, substernal pain, head, chills, muscle aches, nausea, diarrhea, anosmia, emphysema, proteinuria, anemia	Eye:A Skin:E Breath:C Swallow:D
Chromium	0.5mg/m3	N/A	Inhalation, Ingestion	Inh: histologic fibrosis of lungs	Eye:A Skin:E Breath:C Swallow:D
Copper	1mg/m3	N/A	Inhalation, Ingestion, skin or eye contact	Inh: Irritation mucous membrane Ing: pharynx, nasal perforation Con: eye irritation, metal taste, dermatitis	Eye:A Skin:E Breath.C Swallow:D
Lead	0.05mg/m3	700 mg/m3	Inhalation, Ingestion, skin or eye contact	Inh: lassitude, insomnia Ing: pallor, anorexia Con: low-weight, malnutrition, constipation, abdominal pain, colic, anemia, gingival lead line, tremor, paralysis wrist	Eye:A Skin:E Breath:C Swallow:D
Mercury	0.05mg/m3	28 mg/m3	inhalation, skin absorption, skin or eye contact	Inh: cough, dyspnea Abs: bronchal pneumonia, tremor Con: insomnia, irritability, indecision, headache, fatigue, weak, stomatitis, salivation, gastrointestinal, anorexia, low weight, proteinuria, eye & skin irritation	Eye:A Skin:E Breath:C Swallow:D
Thallium	0.1mg/m3	20mg/m3	Inhalation, skin absorption, ingestion, skin or eye contact	Inh: nausea, diarrhea, abdominal pain Abs: ptosis, strabismus Ing: peripheral neuritis, tremor Con: paresthesia legs, retrosternal tightness, chest pain, pulmonary edema, seizure, chorea, psychosis, liver & kidney damage	Eye:A Skin:E Breath:C Swallow.D
Zinc as Zinc Oxide Fume	5mg/m3 10mg/m3 STEL	N/A	Inhalation	Sweet metal taste, dry throat, cough, chill, fever, tight chest, dyspnea, rales, low pulmonary function, headache, blurred vision, muscle cramps, back pain, nausea, vomiting, fatigue	Breath:C
Arsenic	0.01mg/m3	Ca (100 mg/m3)	Inhalation, skin absorption, ingestion, skin or eye contact	Inh: Viceration of nasal septum Abs: Dermatitis, GI disturbances Con: Peripheral neurapathy, irritated respiratory tract Ing: Hyperpigmentation of skin	Eye:A Skin:E Swallow:D
Butane	800 ppm		Inhalation	Inh: Drowsiness, asphyxiant	Eye:A Skin:B Breath:C Swallow:D

Chemical Name	PEL/TLV*	IDLH**	Exposure Route	Symptoms	First Aid
Cyclohexane	300 ppm	10,000 ppm	Inhalation, skin absorption, skin or eye contact	Inh: Irritated eyes & respiratory system Abs: drowsiness, dermatitis, narcosis Con: Coma	Eye:A Skin:B Breath:C Swallow:D
Ethylbenzene	100 ppm 125 ppm STEL	2,000 ppm	Inhalation, ingestion	Inh: Irritated eyes & mucus membranes Ing: Headache, dermatitis, narcosis, coma	Eye:A Skin:B Breath:C Swallow:D
Heptane	400 ppm 500 ppm STEL	5,000 ppm	Inhalation, ingestion, skin, or eye contact	Inh: Lightheaded, giddy, stupor Ing: No appetite, nausea, dermatitis Con: Chemical pneumonia, unconsciousness	Eye:A Skin:E Breath:C Swallow:D
Hexane	50 ppm	5,000 ppm	Inhalation, ingestion, skin or eye contact	Inh: Lightheaded, nausea, headache Ing: Numb extremities, muscles Con: Weakness, irritated eyes & nose, dermatitis, chemcial pneumonia, giddy	Eye:A Skin:E Breath:C Swallow:D
Pentane	600 ppm 750 ppm STEL	15,000 ppm (LEL)	Inhalation, ingestion	Inh: Drowsiness, irritated eyes & nose Ing: Dermatitis, chemcial pneumonia	Eye:A Skin:B Breath:C Swallow:D
Trimethylbenzene	25 ppm		Inhalation, ingestion, skin or eye contact	Inh: CNS depression, anemea, bronchitis Ing: Mildly toxic Con: Irritating to skin & eyes	
Tert-butyl alcohol	100 ppm 150 ppm STEL	8,000 ppm	Inhalation	Inh: Drowsiness, irritated skin & eyes	Eye:A Skin:B Breath:C Swallow:D
Methyl-tertbutyl ether	100 ppm		Inhalation, skin or eye contact	Inh: Possible anesthetic effects, CNS sedation Con: Mildly irritating to skin & eyes	

* Permissible Exposure Limit (OSHA) or Threshold Limit Value (ACGIH) for time-weighted average for an 8-hour workday or 40-day work week.

** Immediately dangerous to life and health

Ca Potential Human Carcinogen, no NIOSH IDLH listed

FIRST AID (A) Irrigate Immediately (B) Water Flush Immediately
(C) Artificial Respiration (D) Medical Attention Immediately
(E) Soap Wash Immediately

Note: Appendix C contains copies of MSDS for expected contaminants, where available

NOTE: THIS TABLE TO BE USED FOR SERVICE STATION SITES - DELETE THIS LINE UPON SELECTION

APPENDIX G
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Ethylbenzene	100 ppm 125 ppm STEL	2,000 ppm	Inhalation, ingestion	Inh: Irritated eyes & mucus membranes Ing: Headache, dermatitis, narcosis, coma	Eye:A Skin:B Breath:C Swallow:D
Gasoline	250 ppm	N/A	Inhalation, skin absorption, ingestion, skin or eye contact	See BTEX compounds	Eye:A Skin:E Breath:C Swallow:D
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Tert-butyl alcohol	100 ppm 150 ppm STEL	8,000 ppm	Inhalation	Inh: Drowsiness, irritated skin & eyes	Eye:A Skin:B Breath:C Swallow:D
Methyl-tertbutyl ether	100 ppm		Inhalation, skin or eye contact	Inh: Possible anesthetic effects, CNS sedation Con: Mildly irritating to skin & eyes	
Lead	0.05mg/m3	700 mg/m3	Inhalation, ingestion, skin or eye contact	Inh: lassitude, insomnia Ing: pallor, anorexia Con: low-weight, malnutrition, constipation, abdominal pain, colic, anemia, gingival lead line, tremor, paralysis wrist	Eye:A Skin:E Breath:C Swallow:D

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STANDARD OPERATING PROCEDURE 10.H02

CONFINED SPACE ENTRY PROGRAM

1.0 Objective

To provide a procedure for the safe entry of confined spaces to clean, conduct repairs, testing and/or inspection.

2.0 Scope

This procedure applies to all Confined Space Entry operations.

3.0 Responsibility

3.1 The Health and Safety Coordinator is responsible for the administration of the Confined Space Entry program.

3.2 Site Supervisors have the responsibility for the following:

- To ensure that only trained and qualified personnel may conduct confined space operations.
- To provide and maintain the equipment required to successfully perform confined space operations.
- To ensure the required safety procedures including the frequency of inspections and testing of the confined space are conducted throughout the course of the confined space operations.
- To ensure that employees are aware of contingency procedures necessary in the event of emergency conditions.

3.3 Employees have the responsibility to:

- Conduct their work activities in accordance with the Confined Space Entry Program and established health and safety policies and procedures.

4.0 Confined Space Labeling

4.1 Confined spaces in the workplace shall be identified and labeled to alert Site personnel of their presence. Attachment #1 is a list of confined spaces at the site. (this list will be completed after project start-up.)

5.0 Training

5.1 Employees involved in the performance of confined space operations must be instructed and acquire the understanding, and skills necessary for the safe performance of a confined space entry. This will include as a minimum:

- Program Procedures
- Health and Safety Hazards
- Signs and Symptoms of Exposure
- Understanding the Consequences of Exposure
- Duties of Authorized Entrants
- Duties of Attendant/Standby Observer
- Duties of Entry Supervisor
- Duties of Rescue Services
- Lockout/Tagout Procedures
- Line Breaking Procedures
- Duties of Emergency Coordinator

- Hot Work Procedures
- Inerting of the Spaces
- Ventilation Techniques
- Testing of Atmosphere and Inspection Procedures
- Completion of Confined Space Entry Permit
- Emergency and Contingency Procedures

5.2 Employees involved in the performance of confined space operations shall have:

- Completed the Confined Space Entry training program.
- Complete a Refresher Course on Confined Space Entry on an annual twelve month period.

5.3 Response Team Leaders and emergency response team members involved in the performance of confined space rescue operations must be trained in basic first aid and CPR, at least one member shall hold current certification in first aid and CPR.

6.0 Pre-Entry Procedures

The following steps must be taken prior to entering the confined space:

6.1 The entry supervisor shall insure that the confined space will be positively isolated to prevent introduction of hazardous materials. This may include removal of spool pieces or valves, the insertion of blanks and the closing, locking and tagging of double block and bleed valves in series. Cross reference Line Breaking Procedure.

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CONFINED SPACE ENTRY PROGRAM

6.2 The entry supervisor shall insure that mechanical, or electrical hazards including sources of ignition in the confined space shall be positively locked out and tagged out. This includes items such as fans, agitators and electrical circuits. Cross reference Lockout Procedures.

6.3 Each authorized entrant who enters the confined space shall place his/her own lock, to which only he/she has the key, on each item to be locked out.

6.4 The immediate area around the confined space shall be inspected by the attendant and entry supervisor to assure that no chemical or physical hazards exist which may have an adverse effect in the confined space.

6.5 Barriers should be constructed around the confined space to prevent the unauthorized entry; of pedestrians, vehicular traffic, and other workers, into the confined space area. When necessary guards/barriers shall also be placed to prevent objects from falling into the confined space.

6.6 A constant source of fresh air (i.e., ventilation system), introduced in such a manner to insure complete air exchange shall be provided. The ventilation shall be such as to ventilate the immediate areas where the entrant(s) is or will be working within the space and shall continue until all entrant(s) have left the confined space. The intake of the ventilation system shall be located away from sources of contaminated air. Electrical equipment for forced fresh air (ventilation system) shall be grounded and connected via a ground fault circuit interrupter.

If a confined space internal atmosphere test meets the requirements of section 7.2 for the following conditions:

1) Oxygen content (% oxygen)
2) Flammable gases and vapors (% LEL) and
3) Potential toxic air contaminants (PPM)

The use of a fresh air ventilation system may be downgraded. Approval must be given by the Health & Safety Coordinator prior to the downgrading.

6.7 Emergency equipment (e.g., body harness, life line, self-contained breathing apparatus/in-line air system), must be on hand and in working condition. The location of emergency use phones and communication system must be checked/verified. The operation of the communication system shall be checked. Emergency equipment and communications system checks must be documented.

6.8 Electrical equipment to be used inside confined space shall be properly grounded and connected via a ground fault circuit interrupter. Intrinsically safe or explosion proof equipment, labelled with an Underwriter's Laboratory or Mine Safety and Health Administration (MSHA) approval, is required in all spaces where the possibility of a flammable hazard exists.

6.9 A response Team Leader who is a qualified individual shall be assigned to the confined space operation. This individual may be the entry supervisor, attendant or other designated individual.

7.0 Inspection Testing and Entry Permits

7.1 No authorized entrant may enter the confined space without a Confined Space Entry Permit (Attachment 2 or equivalent) having been properly executed, reviewed and signed by all individuals associated with the confined space entry. The permit is good for one time - one place. A new permit shall be completed prior to each shift of after an extended work stoppage (greater than one hour).

7.2 Before an entrant may enter a confined space, the internal atmosphere shall be tested, with a calibrated direct - reading instrument, for the following conditions in the order given:

1.) Oxygen content, (% oxygen)
2.) Flammable gases and vapors (% LEL), and
3.) Potential toxic air contaminants (PPM)

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No one may enter the confined space if the oxygen content is less than 19.5% or greater than 23.0%, flammable vapor level is 10% or more of the LEL. If concentrations of toxic materials are in excess of 50 ppm on an FID or PID, entry may be performed with permission of the Project Health & Safety Coordinator. Entry into IDLH atmospheres is not permitted unless approved by the Director Health & Safety. Readings must be noted on the Confined Space Entry Permit (Attachment 2) (Note: An equivalent form may be used.). The confined space should be cleaned from the exterior, purged or ventilated prior to retesting if levels are exceeded.

The attendant is required to periodically test the confined space atmosphere to assure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. Consideration must be given to type of operation, time of day, ambient temperature and all factors that may alter the atmosphere inside the confined space. If accumulation of a hazardous atmosphere presents itself, all entrants must exit the confined space and the confined space must be reevaluated.

If tests indicate the atmosphere is initially safe but the work may produce a hazardous atmosphere from such processes such as cutting and welding, disturbing of accumulated sludge or use of solvents, entry will only be permitted with continuous atmosphere testing.

7.3 Based on the hazard inspection and atmosphere testing, the decision to enter is made. The protective and emergency equipment must be available and noted on the Confined Space Entry Permit.

7.4 No one may enter the confined space until every item on the Confined Space Entry Permit is completed. The completed permit shall be posted in a location near the entry point. Do not leave blanks; complete each item or place an N/A, or cross out the section to show that the question has been addressed. Entries must be done in ink.

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7.5 The minimum information that must be included on the Confined Space Entry Permit is listed below:

- The identification of the space to be entered.
- The purpose of the entry.
- The date and the authorized duration of the entry.
- A listing of the authorized entrants.
- The person, by name, currently serving as attendant.
- A listing of the hazards.
- A list of the specific measures to be used for isolating the confined space and for eliminating or controlling the hazards.
- A list of the acceptable entry conditions.
- The recorded test results along with the signature or initials of the tester and an indication of when the tests were performed.
- The name of the Response Team Leader and the means for summoning the Emergency Response Team.
- Communication procedures to be used by attendants and authorized entrants during entry.
- Air monitoring equipment to be provided for compliance with the permit space entry.
- Any additional permits, such as hot work permits, that have been issued to authorized entrants must be identified on the permit.

7.6 The Confined Space Entry Permit must be retained for one year. Send the completed or canceled permits to the Health and Safety Coordinator.

7.7 The following signatures are required on the Confined Space Entry Permit prior to entry:

1) Authorized Entrant(s)
2) Atmosphere Tester
3) Attendant
4) Entry Supervisor
5) Health and Safety Officer

NOTE: Persons 2, 3, 4 and 5 may be the same.

8.0 Duties of Authorized Attendant

8.1 Review the standby observer checklist (Attachment 3) prior to the entry.

8.2 Shall know the hazards that may be faced during the entry, including information, on the mode, signs or symptoms, and consequences of exposure.

8.3 Shall be aware of possible behavioral effects of hazard exposure on authorized entrants.

8.4 Maintain a continuous accurate count of all authorized entrants in the confined space and a means to identify who authorized the entrants.

8.5 Shall remain outside the confined space during entry operations until he/she is relieved by another authorized attendant. UNDER NO CIRCUMSTANCES SHOULD THE ATTENDANT ENTER THE CONFINED SPACE.

8.6 Communicate with the entrants as necessary to monitor entrants status and to alert authorized entrants to the need to evacuate the confined space.

8.7 Monitor entrant's retrieval lines if used.

8.8 Monitor the activities inside and outside the confined space to determine if it is safe for entrants to remain in the confined space and to order the authorized entrants to evacuate the confined space immediately under the following conditions:

- If he/she detects a prohibited condition.
- If he/she detects any behavioral effects of hazard exposure in an authorized entrant.
- If he/she detects a situation outside the space that could endanger the authorized entrant.
- If he/she cannot effectively and safely perform all the duties required.

8.9 Summon Response Team Leader and rescue emergency services as soon as it is determined that an emergency exit from the permit space is necessary.

8.10 Take actions prescribed when unauthorized persons approach or enter the confined space while entry is going on.

- Warn the unauthorized persons that they must stay away from the confined space work area.
- Shall remove unauthorized individuals who enter or who attempt to enter the confined space during entry operations.
- Shall inform the entry supervisor that an unauthorized person has entered or attempted to enter the confined space.
- Shall terminate the entry when a condition that is not allowed under the permit arises in or near the confined space.
- Shall determine, at intervals dictated by the hazards, that entry operations remain consistent with the terms of the Confined Space Entry Permit and that acceptable entry conditions are maintained.

8.11 Required to perform non-entry rescues. **ATTENDANT MAY ENTER THE CONFINED SPACE RESCUE ONLY IF HE/SHE HAS BEEN REPLACED BY ANOTHER AUTHORIZED ATTENDANT.**

9.0 Duties of Breathing Air System Monitor (May be the same person as attendant) For entries which require air supplied systems:

9.1 Monitor Breathing Air Supply System

- Maintain a pressure of 100 psig on bottled air system regulator, low pressure side.

9.2 Shall know the hazards that may be faced during the entry operations.

9.3 Shall remove unauthorized individuals who enter or who attempt to enter the confined space during entry operations.

NOTE: The Breathing Air System Monitor person shall not be assigned any duties that are not part of the confined space entry.

10.0 Duties of Authorized Entrants

10.1 Shall know the hazards that may be faced during entry, including information on mode of exposure. Must be able to recognize the signs or symptoms of exposure and understand the consequences of exposure to hazards. **Material Safety Data Sheets (MSDS) should be provided for this information where applicable.**

10.2 Shall use the proper equipment.

10.3 Shall communicate with the attendant as necessary to enable the attendant to monitor entrant status and enable the attendant to alert them in the need to evacuate the confined space.

10.4 Shall alert the attendant when he/she recognizes any warning signs or symptoms of exposure to dangerous conditions or when he/she detects a prohibited condition.

10.5 Shall exit from the confined space as quickly as possible, whenever the attendant or entry supervisor orders evacuation, whenever he/she recognizes any warning signs or symptoms of exposure to a hazardous substance, whenever he/she detects a prohibited condition, and whenever an evacuation alarm is activated.

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11.0 Duties of the Entry Supervisor

11.1 Shall know the hazards which may be faced during the entry.

11.2 Shall verify, by checking that the appropriate entries have been made on the permit, that all tests specified on the permit have been conducted and that all procedures and equipment specified on the permit are in place, before endorsing the permit and allowing entry to begin. The HSS/HST, if not the entry supervisor, shall also verify the permit and tasks associated with the permit are complete prior to entry.

11.3 Shall terminate the entry when the operations covered by the permit have been completed or when a condition that is not allowed under the permit arises in or near the confined space.

11.4 Shall verify that Response Team Leader and rescue services are available and that the means for summoning them are operable.

NOTE: The Entry Supervisor shall be responsible to see that all safety conditions and practices are followed and continued throughout the entire confined space entry.

12.0 Duties of Rescue Teams

12.1 Non - Entry Rescue

- Employees shall have the proper rescue equipment as noted on the permit, (e.g. entrant with harness, lifeline attached to a retrieval system) in place and in proper working condition when an authorized entrant enters a confined space.

- When a vertical entry of five feet or greater is made, a mechanical retrieval system shall be used.

- The attendant and entry supervisor shall attempt to rescue the authorized entrant by means of an extraction device prior to attempting an entry rescue.

12.2 Emergency Coordinator (EC)

- Emergency Coordinator (EC) ensures that emergency services (police, fire, ambulance) are called inform them that a Confined Space Entry rescue is taking place. The EC shall also give the location of the emergency rescue entry.

- Activate the facility emergency alarms.

12.3 Employee Entry rescue

- A minimum of three individuals are required for confined space entry rescue.

- Assure all employee rescuers are equipped with, and trained to use, all personal protective equipment necessary prior to entry.

- Rescue attempts shall be made in a minimum of Level B PPE Protection (in-line air supplied), chest or full body harness with lifeline attached to a retrieval system.

- At least one Response Team Member shall be trained in first aid and CPR with current certification.

12.4 Once the victim has been successfully rescued, the Material Safety Data Sheet (MSDS) for the probable contaminants shall be provided to the treating medical facility.

13.0 General Rules

13.1 If a ladder is used to enter the vessel, it must be secured at the top and must not be removed while anyone is inside.

13.2 When dealing with welding and burning equipment:

- A separate "hot work" permit must be issued and posted prior to commencement of any welding or burning.
- Torches, hoses, cables, and electrodes will be the only welding and burning equipment permitted in the confined space. Gas cylinders and/or welding machines will be left outside of the vessel.
- Welding and burning equipment used inside a vessel must be equipped with quick shut-offs and be under the control of the standby attendant.
- When gas welding or burning is suspended for an indefinite period of time, the gas supply is to be shut-off at the cylinders, and the torch removed from the vessel.

13.3 When only one access way to the confined space exists, the opening should be wide enough to allow proper ducting to facilitate required ventilation and still allow access and egress from the vessel.

13.4 Battery powered lanterns (low voltage lighting systems) will be used for work in wet tanks and in tanks partially filled with liquid.

13.5 When entering a vertical confined space, the following air monitoring procedures will be incorporated:

- Initial readings will be taken from the ground level using extension probes. The air sampling devices will be used in accordance with the manufacturers operating instructions. Any instrumentation used to perform air monitoring must be calibrated to the manufacturer's operating instructions before using. For spaces greater than 10 feet in depth, readings should be taken from at least 3 different levels.

- The sampling equipment will then be given to the person entering the space, after the is permit issued.

- The person entering a vertical confined space will be lowered 10 feet at a time. At each level, the person will wait a sufficient period of time for the instruments to stabilize. The readings will be reported by radio to the standby observer. If the levels are within those specified then the observer will give the okay to lower the person to the next ten (10) foot level.

- Once the confined space entry technician has reached the desired level the air monitoring will continue until the space is exited.

14.0 Definitions

14.1 "ATTENDANT": An individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the Confined Space Entry Program.

14.2 "AUTHORIZED ENTRANT": An employee who is authorized by the employer to enter a permit space.

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CONFINED SPACE ENTRY PROGRAM

14.3 "CONFINED SPACE":

A Confined Space is an enclosure or compartment that:

- has a limited means of exit or entry;
- has unfavorable natural ventilation or inadequate ventilation;
- could contain or has the potential for producing accumulations of toxic air contaminants, flammable or explosive agents, and/or depletion of oxygen; and
- is not intended for continuous occupancy.

At Handex sites confined spaces include, but are not limited to trench excavations, tanks. When in doubt, contact the Health and Safety Coordinator.

14.4 "ENTRY SUPERVISOR": The person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this program.

NOTE: An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required by this program for each role he or she fills. Also , the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

14.5 "HAZARD": Hazards which may be commonly encountered by personnel working in confined spaces may include:

- Toxic vapors,
- Flammable gases,
- Oxygen deficiency,

- Electric shock from installed and portable electric equipment,
- Injury from mechanical equipment inside of the confined space,
- Physical hazard such as falling and slipping, and/or
- Hazards resulting from steam, water, chemical, etc. lines being opened into the confined space.

14.6 "HAZARDOUS ATMOSPHERE": An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

1.) Flammable gas, vapor, or mist in excess of 10 percent of its lower explosive limit (LEL);

2.) Airborne combustible dust at a concentration that meets or exceeds its LEL;

NOTE: This concentration may be approximated as a condition in which the dusts obscures vision at a distance of 5 feet (1.52 m) or less.

3.) Atmospheric oxygen concentration below 19.5 percent or above 23.0 percent;

4.) Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of the standard and which could result in employee exposure in excess of its dose or permissible exposure limit.

NOTE: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.

5.) Any other atmospheric condition that is immediately dangerous to life or health.

NOTE: For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Material Safety Data Sheets that comply with the Hazard Communication Standard, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

14.7 "IMMEDIATELY DANGEROUS TO LIFE OR HEALTH (IDLH)": Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

NOTE: Some materials - hydrogen fluoride gas and cadmium vapor, for example - may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim "feels normal" from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.

14.8 "INERTING": The displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

NOTE: This procedure produces an IDLH oxygen-deficient atmosphere.

ATTACHMENT 1

PERMIT REQUIRED CONFINED SPACES

NOTE: To be completed for each operating site.

ATTACHMENT 2

CONFINED SPACE ENTRY PERMIT

GANDEX CONFINED SPACE ENTRY PERMIT

(2 sided)

DATE: ____/____/____ PERMIT DURATION _____ TO _____

PERMIT EXPIRES _____ AM/PM ____/____/____

NTRY TIME _____ AM/PM TO _____ AM/PM _____ AM/PM TO _____ AM/PM _____

OCATION: (Address & Location on site) _____

TYPE

_____ TANK; _____ PIT; _____ TRENCH; _____ BSMT; _____ BLDG;

_____ MANHOLE; _____ SEWER; _____ OTHER (Explain) _____

PURPOSE OF ENTRY

_____ FABRICATE; _____ MAINT. _____ INSTALL; _____ REPAIR;

_____ Other (Explain) _____

PERSON IN CHARGE OF ENTRY: _____

ATMOSPHERE TEST TO BE TAKEN:

ACTION LIMITS	TIME	READING	TIME	READING	TIME	READING	TIME	READING	TIME	READING
% OF OXYGEN - 19.5% + 23%										
LEL + 10%										
CO 10 PPM										
H_2S 1 PPM										
ORGANIC VAPORS										
RADIATION 2 MR/HR										
CO2 500 PPM										

PERSON TAKING READINGS _____

NSTRUMENTS USED _____

_ J HAZARDOUS ATMOSPHERES EXIST? _____ YES _____ NO DESCRIBE _____

PHYSICAL HAZARDS (identify) _____ Limited Egress; _____ Falling Materials

_____ Low Overhead; _____ Bottom Liquid; _____ Mechanical Equipment _____ Footing;

_____ Welding/Burning; _____ Electrical Exposure; _____ Pool Light

_____ Other (Explain) _____

TANK/VESSEL GROUNDED? _____ YES _____ NO VENTILATION NEEDED? _____ YES _____ NO

TYPE VENTILATION USED: _____ FORCE AIR IN _____ FORCE AIR OUT _____ BOTH

VEHICLE/PEOPLE CONTROL _____ GUARD _____ BARRIERS _____ TAPE _____ CONES

EMERGENCY EVACUATION PLAN _____

SPECIAL REQUIREMENTS

LOCKOUT _____ YES _____ NO LIFELINES _____ YES _____ NO

LINES CAPPED/BLANKED _____ YES _____ NO PURGE _____ YES _____ NO

FIRE EXTINGUISHER _____ YES _____ NO RADIOS _____ YES _____ NO

TRIPODS _____ YES _____ NO LOW VOLTAGE LIGHTS _____ YES _____ NO

LEVEL OF PROTECTION NEEDED (Check) _____ Level A _____ Level B _____ Level C _____ Level D

I, THE SUPERVISOR SIGNED BELOW, AUTHORIZED THIS CONFINED SPACE ENTRY

SIGNATURE OF SUPERVISOR _____ DATE SIGNATURE OF ENTRANT(S) _____ DATE

JATURE OF ATTENDANT _____ DATE _____ DATE

SIGNATURE OF H&S OFFICER _____ DATE _____ DATE

FORM 10.H02-010-695

ENTRY TEAM MEMBERS:

SAFETY OFFICER _____

FOREMAN _____

ATTENDANT _____

_____

_____

_____

LOCAL EMERGENCY CONTACTS:

POLICE: _____

FIRE: _____

EMS: _____

HOSPITAL: _____

COMMENTS:

_____
SAFETY OFFICER
(AFTER FILLING OUT ABOVE INFORMATION)

_____
SAFETY OFFICER/FOREMAN
(JUST PRIOR TO ENTRY AFTER PERSONALLY CHECKING PRECAUTIONS TO BE FOLLOWED)

ATTACHMENT 3

STANDBY OBSERVER'S CHECKLIST

ATTACHMENT 3

STANDBY OBSERVER'S CHECKLIST

1.	Valid confined space entry permit posted.	[ ]
2.	Harness and life line used.	[ ]
3.	Location of telephone or two-way radio.	[ ]
4.	Knows how to report emergency.	[ ]
5.	Knows not to leave site when employee(s) are inside, except to make emergency call.	[ ]
6.	Knows NOT TO ENTER CONFINED SPACE FOR ANY REASON.	[ ]
7.	Knows location of safety shower and first aid equipment.	[ ]
8.	Knows location of fire extinguisher and how to use it.	[ ]
9.	Understands operation of blower or other fresh air source.	[ ]
10.	Knows the operation of supplied air respirators (air line and self contained).	[ ]
11.	Has all necessary equipment including alarm horn.	[ ]
12.	Knows how to shut off welding/burning equipment.	[ ]
13.	Hazards of job and methods to safely perform work explained.	[ ]

_____ _____

Supervisors Signature Date

Form 10.H02-011-695

May 1995 | ACTIVITY HAZARD ANALYSIS | Page 1 of 4

Activity Soil Excavation | Analyzed by Date 8/96 | Reviewed by Date TP

Principal Steps	Potential Hazards	Recommended Controls
1. Heavy Equipment	Maneuvering Equipment	Use trained qualified operators, establish verbal/hand communication between spotters and operators. Ensure backup alarms and warning lights. Establish traffic patterns.
	Roll-over	Roll-over protection and use of seat belts. Emergency shut-off operative.
	High noise	If greater than 85 dBA hearing protection required.
	Boom swing, stuck-by	Stand clear of swing radius.
Equipment to be Used	**Inspection Requirements**	**Training Requirements**
Earth moving equipment	Walk around prior to use Ensure PM schedule in place Fire extinguisher in place Useable seat belts	Demonstrated competency Hearing conservation Knowledge of trenching/excavating OHSA Standard

May 1995	ACTIVITY HAZARD ANALYSIS	Page 2 of 4
Activity Soil Excavation	Analyzed by Date 8/96	Reviewed by Date TT

Principal Steps	Potential Hazards	Recommended Controls
2. Open Excavation	Overhead loads	Use hand signals, respect operators field of vision.
	Cave-in	Use proper sloping or shoring protection.
		Inspect daily for stability.
		Remove water from excavation.
	Creation of dust	Control & minimize creation & dispersion of dust, i.e. wet methods.
	Underground Lines	Identify presence prior to excavating. Use spotter and flag area. Stockpile spoils at least 3 feet from edge of excavation.

Equipment to be Used	Inspection Requirements	Training Requirements

May 1995	ACTIVITY HAZARD ANALYSIS	Page 3 of 4
Activity Soil Excavation	Analyzed by Date 8/96	Reviewed by Date TP

Principal Steps	Potential Hazards	Recommended Controls
	Rough Uneven Terrain	Keep ground personnel to a minimum, use equipment in place of labor.
	Contact with contaminant	Wear designated PPE
		Real-time & personal sampling during all excavation activities.

Equipment to be Used	Inspection Requirements	Training Requirements

May 1995	ACTIVITY HAZARD ANALYSIS	Page 4 of 4
Activity Soil Excavation	Analyzed by Date 8/96	Reviewed by Date TP

Principal Steps	Potential Hazards	Recommended Controls
3. Removal of Debris	Heavy Load	Use proper rated slings, all slings/chains to be inspected prior to use.
	Crushing	All personnel stand clear of radius, use tag lines as necessary.
	Manual Handling	Training in proper material handling techniques. Use equipment.
	Strains/Sprains due to lifting.	Use equipment instead of manual labor. Training in proper material handling techniques.

Equipment to be Used	Inspection Requirements	Training Requirements
Chains/Slings	Prior to use & during use	Proper lifting techniques

May 1995	ACTIVITY HAZARD ANALYSIS	Page 1 of 2
Activity Backfill	Analyzed by Date 8/96	Reviewed by Date TP

Principal Steps	Potential Hazards	Recommended Controls
1. Backfill	Heavy truck traffic. Compaction (Use of tampers and jumping jacks.)	Backup alarms and spotters. Use spotter as directed by supervisor and keep operators aware of ground personnel locations at all times. Use proper lifting practices, keep feet clear of equipment, and use approved steel toe boots.

Equipment to be Used	Inspection Requirements	Training Requirements
Crane Compaction Equipment Lines/Cables/Slings	Daily crane inspection. Weekly Project Managers Inspection Daily	

May 1995	ACTIVITY HAZARD ANALYSIS	Page 2 of 2
Activity Backfill	Analyzed by Date 8/96	Reviewed by Date TP

Principal Steps	Potential Hazards	Recommended Controls
Placement of Trench Box (Continued)	Placement of cribbing.	If lifting for cribbing, only one end of box will be lifted at a time allowing the box support from the base. At no time will personnel be allowed under the box.

Equipment to be Used	Inspection Requirements	Training Requirements