

REMOVAL ACTION WORK PLAN

FOR THE

**CLINTON, IOWA
FORMER MANUFACTURED GAS PLANT SITE**

Clinton Coal Gas
ID: IS 098 4591438
Book: 20
Date: LDF 07NY
10/06/2004

40212844



SUPERFUND RECORDS

Prepared for

**INTERSTATE POWER AND LIGHT COMPANY
CEDAR RAPIDS, IOWA**

Project No. 1912839.0102

October 2004

Prepared by

**MWH
11153 Aurora Avenue
Des Moines, Iowa 50322
515-253-0830**

REMOVAL ACTION WORK PLAN

TABLE OF CONTENTS

	PAGE
SECTION 1 INTRODUCTION.....	1-1
1.1 Purpose and Objectives	1-1
1.2 Site Description and History	1-2
1.2.1 Site Description.....	1-2
1.2.2 Site History.....	1-3
1.3 Identification of Media and Areas of Concern.....	1-4
1.3.1 Special Consideration Areas	1-4
1.3.1.1 Accessible Gas Holders and Tar Wells.....	1-4
1.3.1.2 Storm Sewers and River Intake.....	1-5
1.3.1.3 Surface Soil "Hot Spot"	1-5
1.3.1.4 Residual Lead.....	1-5
1.3.1.5 Railroad Corridor	1-6
1.3.1.6 Inaccessible Gas Holder.....	1-6
1.3.2 Vadose Zone Soils.....	1-6
1.3.2.1 Preliminary Remediation Goals	1-6
1.3.2.2 Surface Soil.....	1-7
1.3.2.3 Deeper Vadose Zone Soil.....	1-7
SECTION 2 OVERVIEW OF REMOVAL ACTION ACTIVITIES	2-1
2.1 Removal Action Activities.....	2-1
2.2 ARARs.....	2-2
2.2.1 Determination and Designation.....	2-2
2.2.2 Excavation and Removal.....	2-2
2.2.3 Accumulation and Storage	2-3
2.2.4 Transportation	2-3
2.2.5 Manifests	2-3
2.2.6 Marking, Labeling, and Placarding	2-4
2.2.7 Record Keeping and Reporting	2-4
2.2.8 Special Wastes and Non-Hazardous Waste Handling.....	2-4
2.3 Compliance with Permitting.....	2-4
2.3.1 Wastewater Discharge.....	2-5
2.3.2 Non-Hazardous Waste Disposal Facilities and Transporters.....	2-5
2.3.3 Hazardous Waste Disposal Facilities and Transporters.....	2-5
2.4 Project Organization and Responsibilities	2-5
SECTION 3 SITE PREPARATION.....	3-1
3.1 Security Fencing.....	3-1
3.2 Haul Routes/Access Agreements	3-1
3.3 Office and Support Facilities.....	3-1
3.3.1 Field Office	3-1
3.3.2 Mobile Laboratory.....	3-2
3.3.3 Equipment and Supplies.....	3-2
3.3.4 Truck Scale and Access Roads.....	3-2

REMOVAL ACTION WORK PLAN

TABLE OF CONTENTS (CONTINUED)

	PAGE
3.4 Decontamination Facilities.....	3-2
3.4.1 Decontamination Pad and Building.....	3-2
3.4.2 Water Treatment System and water Storage.....	3-2
3.4.3 Personal Decontamination.....	3-3
3.5 Utilities.....	3-3
3.5.1 Utility Locations.....	3-3
3.5.1.1 Subsurface Utilities.....	3-3
3.5.1.2 Overhead Utilities.....	3-3
3.5.2 Utility Installations.....	3-3
3.6 Monitoring Well Abandonment.....	3-4
3.7 Relocation of District Office Yard Operations.....	3-4
3.8 Run-Off Control.....	3-4
3.9 Establishment of Site Grid.....	3-5
3.10 Garage Removal.....	3-5
3.11 Clearing/Grubbing and Pavement Removal.....	3-5
3.11.1 Site 1.....	3-5
3.11.2 Site 2.....	3-5
3.12 Lead Delineation.....	3-6
3.13 PCB Delineation.....	3-6
SECTION 4 EXCAVATION AND MATERIAL HANDLING – FMGP-RELATED IMPACTS.....	4-1
4.1 Removal Action Description.....	4-1
4.1.1 Procedures and Equipment.....	4-1
4.1.2 Extent of Excavation.....	4-2
4.1.3 Material Characterization.....	4-2
4.2 Material Segregation and Disposal.....	4-3
4.2.1 Soil.....	4-3
4.2.2 Metal.....	4-3
4.2.3 Wood.....	4-3
4.2.4 Rubble.....	4-3
4.2.5 Free-Phase Liquid.....	4-4
4.2.6 General Refuse.....	4-4
4.3 Material Transportation.....	4-4
4.3.1 General Procedures.....	4-4
4.3.2 Transporter Qualifications and Restrictions.....	4-4
4.4 Odor and Dust Control.....	4-5
4.5 Existing Structures.....	4-5
4.5.1 Site 1 Western Property Boundary.....	4-5
4.5.2 Site 1 Eastern Property Boundary.....	4-5
4.5.3 Excavation along the Railroad Corridor.....	4-6
4.6 Site Dewatering.....	4-6
4.7 Equipment Decontamination.....	4-6

REMOVAL ACTION WORK PLAN

TABLE OF CONTENTS (CONTINUED)

	PAGE
SECTION 5 EXCAVATION AND MATERIAL HANDLING – SURFACE SOIL “HOT SPOT” AND RESIDUAL LEAD.....	5-1
5.1 Removal Action Description.....	5-1
5.1.1 Procedures and Equipment.....	5-1
5.1.2 Extent of Excavation.....	5-1
5.2 Material Handling and Disposal.....	5-2
5.3 Nearby Structures and Utilities.....	5-2
5.4 Equipment Decontamination.....	5-3
SECTION 6 STORM SEWER AND RIVER INTAKE LINE ABANDONMENT.....	6-1
6.1 Removal Action Description.....	6-1
6.1.1 Procedures and Equipment.....	6-1
6.1.2 Access Points and Video Survey.....	6-2
6.2 Abandoned City Sewer.....	6-2
6.3 Nearby Structures and Utilities.....	6-2
SECTION 7 PROGRESSION OF REMOVAL ACTION.....	7-1
7.1 Phase I - Surface Soil “Hot Spot”.....	7-1
7.2 Phase II – Site 1 FMGP-Related Impacts.....	7-1
7.2.1 Former Gas Holder No. 1.....	7-1
7.2.2 Tar Wells Nos. 1, 2, and 3.....	7-1
7.3 Phase III – Site 2 FMGP-Related Impacts.....	7-2
7.3.1 Former Gas Holder No. 2.....	7-2
7.3.2 Sluice Pond.....	7-2
7.3.3 Tar Well No. 4.....	7-2
7.3.4 Flume.....	7-3
7.4 Phase III – Line Abandonment.....	7-3
7.5 Phase IV – Residual Lead-Impacted Soil.....	7-3
SECTION 8 CONFIRMATION SAMPLING PLAN.....	8-1
SECTION 9 AIR MONITORING.....	9-1
9.1 Rationale for Air Sampling.....	9-1
9.2 Air Monitoring Program Summary.....	9-1
9.2.1 Direct-Read Instruments.....	9-2
9.2.2 Continuous Real-Time Air Monitoring Stations.....	9-2
9.2.3 Discrete Sample Air Monitoring Stations.....	9-2
SECTION 10 TRAFFIC CONTROL.....	10-1
10.1 Transportation Routes.....	10-1
10.2 Traffic Controls.....	10-1
10.3 Pedestrian Traffic.....	10-2

REMOVAL ACTION WORK PLAN

TABLE OF CONTENTS (CONTINUED)

	PAGE
SECTION 11 SITE SAFETY AND SECURITY	11-1
11.1 Site Safety.....	11-1
11.1.1 Site-Specific SSP Addendum.....	11-1
11.1.2 Excavation Requirements.....	11-1
11.1.3 Air Monitoring	11-1
11.2 Fencing.....	11-2
11.3 Site Access Control.....	11-2
11.4 Excavation and Material Handling Equipment	11-2
11.5 Equipment and Supplies Storage.....	11-3
11.6 Security Lighting.....	11-3
11.7 Site Patrol	11-3
SECTION 12 SITE RESTORATION.....	12-1
12.1 Backfill Material and Compaction	12-1
12.2 Final Grade and Cover Material.....	12-1
12.3 Replacement of Monitoring Wells	12-2
12.4 Replacement of Streets, Sidewalks, and Structures	12-2
12.5 Demobilization.....	12-2
12.5.1 Equipment Demobilization	12-2
12.5.2 Decontamination Pad and Building.....	12-2
12.5.3 Fencing.....	12-2
12.5.4 Shoring and Bracing.....	12-2
12.5.5 PPE Disposal.....	12-3
12.6 Engineering Controls.....	12-3
12.6.1 Site 1.....	12-3
12.6.2 Site 2.....	12-3
12.7 Institutional Controls.....	12-3
12.8 Final Inspections.....	12-4
SECTION 13 DOCUMENTATION AND REPORTING.....	13-1
13.1 Field Documentation and Records	13-1
13.1.1 Field Logbooks.....	13-1
13.1.2 Field Screening and Laboratory Results.....	13-1
13.1.3 Daily Activity Reports.....	13-1
13.1.4 Excavation and Treatment Records.....	13-1
13.1.5 Field Change Requests	13-1
13.1.6 Chain-of-Custody Documentation	13-2
13.2 Progress Reports.....	13-2
13.3 Removal Action Report.....	13-2
13.4 Project Records	13-3

REMOVAL ACTION WORK PLAN

TABLE OF CONTENTS (CONTINUED)

	PAGE
SECTION 14 COMMUNITY RELATIONS	14-1
14.1 Information Repository	14-1
14.2 Local Notification.....	14-1
14.2.1 News Release	14-1
14.2.2 Fact Sheet	14-1
14.2.3 Door-to-Door Canvassing	14-2
14.2.4 Law Enforcement and Emergency Response	14-2
14.2.5 Additional Notifications.....	14-2
14.3 Designated Spokespersons	14-3
SECTION 15 SCHEDULE OF IMPLEMENTATION	15-1
15.1 Removal Action.....	15-1
15.2 Progress Reports.....	15-1
15.3 Removal Action Report.....	15-1

LIST OF APPENDICES

APPENDIX A - Administrative Order on Consent for Removal Activities	A-1
APPENDIX B - Sampling and Analysis Plan	B-1
APPENDIX C - Site Safety Plan	C-1
APPENDIX D - Soil Action Level for Lead.....	D-1
APPENDIX E - DCI Environmental, Inc. Permits.....	E-1
APPENDIX F - Air Monitoring Data Sheets	F-1
APPENDIX G - Field Forms	G-1

**REMOVAL ACTION WORK PLAN
TABLE OF CONTENTS (CONTINUED)**

LIST OF TABLES

**TABLE
NO.**

1-1	Soil Action Levels
2-1	Potential Chemical-Specific Applicable or Relevant and Appropriate Requirements
2-2	Potential Location-Specific Applicable or Relevant and Appropriate Requirements
2-3	Potential Action-Specific Applicable or Relevant and Appropriate Requirements
9-1	FMGP Air Monitoring Plan - Key Parameters to be Monitored
15-1	Preliminary Milestone Schedule

LIST OF FIGURES

**FIGURE
NO.**

1-1	Site Location Map
1-2	Site Layout Map
1-3	Overlay of FMGP Structures
1-4	Surface Sampling, Soil Boring and Monitoring Well Locations
1-5	Special Consideration Areas
1-6	Surface Soil PRG Exceedance Areas for PAH Compounds
3-1	Site Preparations
4-1	Anticipated Extent of Excavation
9-1	Continuous Real-Time Air Monitoring Station Locations
10-1	Site Traffic Routes
10-2	Transportation Route

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

ARAR	applicable or relevant and appropriate requirement
BETX	benzene, ethylbenzene, toluene, and xylenes
bgs	below ground surface
BIRA	Baseline Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
City	City of Clinton
Consent Order	Administrative Order on Consent
COC	constituent of concern
COPC	constituent of potential concern
DAR	Daily Activity Report
DCI	DCI Environmental, Inc.
DOT	Department of Transportation
DRI	direct-read instrument
EE/CA	Engineering Evaluation/Cost Analysis
EPA	United States Environmental Protection Agency, Region VII
FCR	Field Change Request
FMGP	former manufactured gas plant
FSP	Field Sampling Plan
GC	gas chromatograph
GC/MS	gas chromatograph/mass spectrometer
GPS	global positioning system
HSC	Health and Safety Coordinator
IAC	<u>Iowa Administrative Code</u>
IC&E	Iowa, Chicago & Eastern Railroad Corporation
IDNR	Iowa Department of Natural Resources
IPL	Interstate Power and Light Company
mg/kg	milligrams per kilogram
MGP	manufactured gas plant
NAAQS	National Ambient Air Quality Standard
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
OSHA	Occupational Safety and Health Administration
PAHs	polynuclear aromatic hydrocarbons
PCB	polychlorinated biphenyl
PID	photoionization detector
PM	Project Manager
PPE	personal protective equipment
PRG	Preliminary Remediation Goal
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance/quality control
RAWP	Removal Action Work Plan
RCRA	Resource Conservation and Recovery Act
RSI	Rail Systems, Inc.

GLOSSARY OF ABBREVIATIONS AND ACRONYMS (CONTINUED)

SAP	Sampling and Analysis Plan
SCA	special consideration area
SIP	State Implementation Plan
SOW-I	Scope of Work for the Removal Action at the Clinton Coal Gas Site, Clinton, Iowa
SOW-II	Statement of Work for Respondent Conducted Remedial Investigation and Feasibility Study
SSP	Site Safety Plan
TCLP	Toxicity Characteristics Leaching Procedure
TSDf	Treatment, storage, and disposal facility
VOCs	volatile organic compounds

SECTION 1

INTRODUCTION

Interstate Power and Light Company (IPL) and the United States Environmental Protection Agency (EPA), Region VII have entered into an Administrative Order on Consent (Consent Order), Docket No. CERCLA-07-2004-0307, for the former manufactured gas plant (FMGP) site in Clinton, Iowa. The Consent Order contains two attachments outlining additional work to be conducted by IPL at the site: Attachment I – Scope of Work for the Removal Action at the Clinton Coal Gas Site, Clinton, Iowa (SOW-I); and Attachment II – Statement of Work for Respondent-Conducted Remedial Investigation and Feasibility Study (SOW-II). A copy of the Consent Order is contained in Appendix A.

This Removal Action Work Plan (RAWP) has been prepared by MWH on behalf of IPL for the Clinton FMGP site. This document generally follows the format and content guidelines associated with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended; the National Oil and Hazardous Substances Pollution Contingency Plan (NCP); EPA guidances including, but not limited to, the Guidance for Conducting Non-Time-Critical Removal Actions Under CERCLA (EPA/540-R-93-057); and SOW-I. Activities required under SOW-II will be conducted concurrently with the removal activities but are detailed in a separate work plan.

From approximately 1869 to 1952, the site was occupied by a manufactured gas plant (MGP), which generated gas for use in the Clinton area. Gas manufacturing residues left on site resulted in impacted soil and groundwater. Through a series of environmental investigations, the extent of these impacts has been defined.

The removal action detailed in this RAWP are intended to address residual soil impact and source areas that generally occur in the upper 10 feet of unconsolidated material at the site. An integral component of the removal action will also be the implementation of institutional controls.

1.1 PURPOSE AND OBJECTIVES

The purpose of this RAWP is to provide detailed plans for removal of impacted soil at the FMGP site. The RAWP defines field efforts throughout the response action. As part of the overall RAWP, a Sampling and Analysis Plan (SAP) and a Site-Specific Site Safety Plan (SSP) Addendum have also been prepared, and are contained in Appendices B and C, respectively. The SAP consists of two primary parts: a Field Sampling Plan (FSP) and a Quality Assurance Project Plan (QAPP). The FSP generally describes the number, type, and location of samples to be collected to further define the extent of impact or confirm results of the removal activities. The QAPP describes the project organization, functional activities, and quality assurance/quality control (QA/QC) activities to be followed. The SSP Addendum defines the safety procedures to be followed to ensure the protection of site personnel and the general public during field operations.

The basic objective of the removal action is to reduce the risk to human health and the environment by removing accessible materials at the site that have concentrations exceeding site-specific risk thresholds, which will result in a reduction of potential risks to human health and the environment. In order to meet this objective in a safe and effective manner, the RAWP, SAP, and SSP Addendum detail the following aspects of the remedial activities:

- Project organization for planning and implementing the removal action.
- Applicable or relevant and appropriate requirements (ARARs) associated with the implementation of the remedial activities and strategies.
- Implementation of treatment and disposal options for soil and fill, steel and pipe, wood, rubble, free-phase material, and impacted groundwater.
- Plans for obtaining and complying with applicable permits.
- Sampling and analysis to verify removal of contaminated soil/fill from the site.
- Health and safety procedures and monitoring to be followed.
- Restoration of the site.
- Future site uses.
- Public relations.

1.2 SITE DESCRIPTION AND HISTORY

1.2.1 Site Description

The site is located in the SW ¼, SE ¼, Section 6, Township 81 North, Range 7 East, in the City of Clinton (City), Clinton County, Iowa as shown in Figure 1-1. The current site layout is shown in Figure 1-2. The site consists of two main parcels divided by a railroad right-of-way. The property west of the railroad tracks is currently owned and occupied by IPL. The property east of the railroad tracks is known as the former Allied Steel property, and has recently been purchased by IPL. For the purposes of identifying the parcels in this RAWP, the property west of the railroad tracks will be referred to as Site 1 and the property east of the railroad tracks will be referred to as Site 2.

Site 1 is occupied by IPL and used for a district office and service center. The property is used primarily for vehicle and equipment storage and as a substation. The area is mostly graveled, with isolated areas of concrete and grass. A chain-link fence surrounds most of Site 1.

Site 2 is currently vacant, but was occupied by a 160,000-square-foot structural steel building, a concrete block office building, and small production support buildings. These facilities were used by Allied Steel for fabrication of steel beams. The buildings were demolished in 1998, leaving the concrete and asphalt floors and foundations in place. A chain-link fence surrounds Site 2.

Along the east side of Site 2, and separating the site from the Mississippi River, is Riverview Park. Riverview Park contains a fountain, band shell, a swimming pool, miniature golf course, and tennis courts. The eastern edge of Riverview Park is a flood control levee built by the United States Army Corps of Engineers. Docked adjacent to the levee is a riverboat casino. A marina is located a short distance upstream. North of the site, Riverview Park includes a baseball stadium.

The remainder of the site is surrounded primarily by commercial and retail operations. One residence is located adjacent to the northwest corner of the site, with additional residential areas west of businesses on North 2nd Street.

1.2.2 Site History

Manufactured gas was produced at the site from 1869 until 1952. By 1956, all of the manufactured gas equipment and facilities were removed or demolished. A map showing the historic MGP facilities is presented in Figure 1-3. An electric power plant was also constructed on the site by the Clinton Gas Light and Coke Company and first produced electricity in 1895. The location of the electric power plant is also shown in Figure 1-3. The electric plant continued to operate until 1951 when it was replaced by an electric generating station located south of Clinton. With the exception of the main power plant building, the electric plant facilities were decommissioned and removed. Much of the original power plant building remains on the site as part of the district office building.

On Site 2, steel fabrication activities began in approximately 1924 and continued until 1984. On site operations resulted in lead impacts in near-surface soil. Riverview Partners purchased the property and contracted for investigation and subsequent remedial activities. These activities targeted only lead impacts and did not include MGP wastes or residues. The Iowa Department of Public Health determined a corrective action level of 3,840 milligrams per kilogram (mg/kg) for the lead impacts using a risk-based corrective action approach using a construction worker scenario.

IPL subsequently conducted a series of environmental investigations to determine the magnitude and extent of MGP impacts, the associated health risks, and need for remedial action. These activities were conducted as part of an Engineering Evaluation/Cost Analysis (EE/CA) for the site. Potential remedial alternatives were then evaluated, and select alternatives were chosen to manage soil and groundwater impacts. Figure 1-4 shows the locations of surface sampling points, soil borings, and monitoring wells completed as part of the EE/CA. Results and conclusions of the EE/CA are documented in the reports listed below:

<u>EE/CA Report</u>	<u>Date</u>
Part I – Site Characterization	June 2000
Part II – Baseline Risk Assessment	August 2001
Part III – Removal Alternatives Evaluation	July 2002
Indoor Air Evaluation	May 2003

Each report was submitted to and has been accepted by the EPA. Additional information on the description and history of the site can be found in the October 1997 EE/CA Work Plan and EE/CA Part I – Site Characterization report.

Potential source areas related to the manufactured gas operations at the site include gas holders, tar wells, condensers, scrubbers, underground piping, fuel oil tanks, gas generation areas, and a sluice pond. Contaminants of concern identified at the site through the investigations include polynuclear aromatic hydrocarbons (PAHs) and benzene, ethylbenzene, toluene, and xylenes (BETX). The removal action activities will address risks associated with PAHs and BETX.

1.3 IDENTIFICATION OF MEDIA AND AREAS OF CONCERN

EE/CA Part II – Baseline Risk Assessment (BIRA) developed quantitative estimates of chronic noncarcinogenic and carcinogenic risks, presented with reference to a specific benchmark or threshold level. Based on these estimates, present conditions are not considered to pose a potential human health concern to site workers, construction workers, visitors, and trespassers involved in nonintrusive soil activities. However, if construction workers or site workers were to excavate into the subsurface soils and become exposed to impacted soils, there is the potential for elevated noncarcinogenic and carcinogenic risks through incidental ingestion and/or dermal contact. These risk estimates assume the workers do not use protective clothing (e.g., gloves) to prevent soil exposure, and perform manual labor that would bring them in direct contact with impacted soil during their entire exposure period.

The scope of the removal action will encompass the areas and exposure pathways of impacted media identified in the EE/CA Part II – BIRA as presenting potential exposure risks. Site 1 and Site 2 have different site uses and exposure potentials, and will continue to do so in the future. Therefore, different strategies are appropriate for these areas. Based on results of the EE/CA Part II – BIRA, removal actions were proposed for impacted areas exceeding the risk thresholds. In addition, cleanup standards are being proposed for impacted soil to verify the extent of the removal action is adequate to protect human health and the environment. Areas to be addressed by this RAWP are discussed in the following sections.

1.3.1 Special Consideration Areas

Special consideration areas (SCAs) are those areas or structures that are not typical of the soil matrix, or are inaccessible due to buildings or specific land uses. These areas include gas holders, tar wells, the railroad corridor, and former storm sewer and water intake lines. Based on previous experience at other FMGP sites, these locations generally require some type of action. See Figure 1-5 for locations of the SCAs. The SCAs to be addressed are described below. Sections 3 through 5 of this RAWP describe the selected removal action technologies and strategies for the SCAs.

1.3.1.1 Accessible Gas Holders and Tar Wells. Based on the results of site characterization activities documented in EE/CA Part I – Site Characterization report, a total of two accessible historic gas holders with below-ground basins and four tar well locations were identified on the

site. During operation of the FMGP, condensate from product gas accumulated in gas holder basins and was periodically removed. Typically, when FMGP sites were decommissioned, the gas holder tank was removed and sold for scrap, and the basins were filled with miscellaneous debris and fill. Residual condensate then has the potential to serve as a continuing source of impacts to soil and groundwater. Locations of the two accessible gas holders are shown in Figure 1-5.

The tar wells were typically small concrete basins used to collect manufactured gas by-product tar. These basins were also usually filled in place when the gas plant operations ceased. All four of the tar well locations appeared to have subsurface structures, which may contain FMGP product residue; therefore, these locations were also considered SCAs. The locations of the four tar wells are shown in Figure 1-5.

1.3.1.2 Storm Sewers and River Intake. Two abandoned 36-inch-diameter storm sewer lines and one 30-inch diameter water intake line exist on Site 2 and extend toward the Mississippi River. The depths of the lines range from approximately 10 to 20 feet below ground surface (bgs). Based on results of the site characterization activities, the lines may contain impacted groundwater and/or sediment, and have the potential to serve as a conduit for migration of impacts. At this time it appears that the twin storm sewer lines combine into a single line; however, the available information is somewhat unclear. For planning purposes, it is assumed that the twin sewers extend to the western edge of the concrete floor of the former steel production building on Site 2. The locations of the storm sewers and river intake are shown in Figure 1-5.

Drawings obtained from the City also show the location of an apparently abandoned City sewer. The location of this sewer could not be determined during site characterization. Because intrusive activities are planned during the removal action, efforts will be made to locate the former City sewer and assess its condition. If remediation is necessary, the sewer will be treated with the former storm sewer and water intake SCA. Other unidentified utility conduits may exist on Site 2. As conditions warrant, discovered conduits will be assessed. The location of the abandoned City sewer, based on the drawings from the City, is shown in Figure 1-5.

1.3.1.3 Surface Soil "Hot Spot." Based on the EE/CA Part II – BIRA and the location-specific risk determination, exposure risks associated with surface soil on Site 1 were dominated by an isolated area of polychlorinated biphenyl (PCB) impacts, as shown in Figure 1-5. This area was identified by a single sample and does not appear to be extensive. Additional sampling will be performed to delineate the horizontal and vertical extent of PCB impacts prior to the removal action. The soil action level for PCBs is 25 mg/kg, as noted in the Consent Order.

While these impacts are not related to FMGP operations, this area is nonetheless a result of IPL operations and is being addressed under this RAWP. Without the contribution from the PCBs, residual surface soil risks are limited and will be addressed in conjunction with the vadose zone soil.

1.3.1.4 Residual Lead. Based on preliminary screening conducted by the EPA, some soils under the pavement on the former Allied Steel property contain lead concentrations in excess of

the previous lead cleanup level of 3,840 mg/kg. In addition, some areas of the former Allied Steel property may contain surficial lead impacts that range between the previous lead cleanup level and currently accepted residual lead concentrations. In Appendix D of this RAWP, a revised cleanup level for lead is developed and proposed for the site. As part of the removal action, additional surface soil sampling will be conducted on the former Allied Steel property to identify areas with lead concentrations above the previous and revised cleanup levels. Details of the surface sampling and the proposed removal action are presented in Sections 3 and 4, respectively.

1.3.1.5 Railroad Corridor. While direct investigative activities were not possible during the site characterization phase because of the very active nature of the railroad corridor, results from nearby borings indicate that soil and groundwater impacts probably extend beneath the railroad corridor. Because there were no known FMGP structures or facilities in the existing railroad right-of-way, impacts in the railroad corridor are likely due to lateral migration. Therefore, the area being considered as the railroad corridor SCA connects documented impacts on Site 1 with those on Site 2, as shown in Figure 1-5.

1.3.1.6 Inaccessible Gas Holder. The location of the inaccessible gas holder is shown in Figure 1-5. Approximately half of this gas holder basin is covered by the IPL district office building. Based on air monitoring results from the IPL district office building, the inaccessible gas holder does not appear to be impacting air quality within the building.

1.3.2 Vadose Zone Soils

The vadose zone consists of soil and fill material above the seasonal low water table. These soils correspond to the depth of soil most likely to be encountered in construction or other intrusive activities. The EE/CA Part II – BIRA indicates impacted vadose zone soil exists on Site 1 and Site 2 that may present unacceptable human health risks when exposed through intrusive activities. Impacted vadose zone soil will be addressed as surface soil (0 to 2 feet deep) and deeper vadose zone soil (from 2 feet to the groundwater table).

1.3.2.1 Preliminary Remediation Goals. Preliminary Remediation Goals (PRGs) for carcinogenic PAHs in vadose zone soils were drafted for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(ah)anthracene, and indeno(1,2,3-cd)pyrene. The proposed PRGs are intended to be used initially as a guide to determine the areas on site where remediation might need to take place, and as cleanup levels for the removal action.

PRGs were calculated for the four different receptors that were evaluated in the EE/CA Part II – BIRA report: site commercial/industrial workers, site visitors, recreational visitors, and construction workers. The potential exposure pathways evaluated included direct ingestion of soil and dermal contact with soil. Inhalation of fugitive dust from soils for the FMGP-related constituents was found to be insignificant based on the results of the EE/CA Part II – BIRA, and, thus, were not included in the PRGs development. In addition, volatilization of PAHs was not addressed because the carcinogenic PAHs that are being evaluated are considered nonvolatile. The PRGs and the rationale were provided to the EPA in a Technical Memorandum dated August 18, 2004.

Based on the PRGs calculated for the 1×10^{-5} excess lifetime cancer risk level, recommended soil action levels for the site are based on the industrial worker scenario for the 0-to-2-foot depth interval, and the construction worker scenario from a depth of 2 feet to the water table. These recommended soil action levels are presented in Table 1-1. Also included in Table 1-1 are soil action levels for PCBs and lead.

1.3.2.2 Surface Soil. Surface soil impacts exceeding the PRGs for FMGP-related constituents are generally limited to the vicinity of the FMGP production area. Surface sample locations with concentrations exceeding the PRGs are shown in Figure 1-6.

1.3.2.3 Deeper Vadose Zone Soil. Soil in the deeper portions of the vadose zone (ranging from 2 feet bgs to the water table) with concentrations greater than the PRGs include areas around the FMGP structures and several of the SCAs. This also includes impacted soil in the vicinity of the former power plant flume and sluice pond area. Historically the flume and sluice pond areas were a marshy lowland where cooling water was discharged from the power plant. Historic site maps also indicate an overflow drain line from the gas plant that discharged into a nearby portion of the sluice pond. Because the flume and tar well drain are absent of distinct structures to define them as SCAs, subsurface impacts from FMGP residues in these general areas are addressed as impacted vadose zone soils. The locations of the flume and sluice pond are shown in Figure 1-3.

SECTION 2

OVERVIEW OF REMOVAL ACTION ACTIVITIES

This section introduces the treatment and disposal options selected for the various impacted materials at the site and summarizes the implementation of removal action. Also, the removal action must meet the standards, requirements, and criteria that are considered ARARs under the CERCLA. ARARs are identified and discussed in this section, along with plans for obtaining and maintaining compliance with the necessary permits and various activities to be undertaken to prepare for removal action.

2.1 REMOVAL ACTION ACTIVITIES

Because Site 1 and Site 2 have differing site uses and exposure potentials, a single response action is not appropriate. A variety of strategies were developed for each side of the site. The overall goal of providing risk management and protection of human health and the environment includes:

Site 1:

- Excavation of the contents of the accessible gas holder and tar wells, and impacted soil to remove potential source material and reduce the potential for continued releases or leaching of impacts to soil and groundwater.
- Implementation of institutional controls for the inaccessible gas holder to prevent possible future exposure risks.
- Implementation of institutional controls and engineering controls to limit intrusive site work, restrict infiltration, and eliminate the direct exposure pathway (unauthorized access) to impacted vadose zone soil.
- Excavation of PCB-impacted surface soil to eliminate the direct contact exposure pathway in surface soil.

Site 2:

- Excavation of the contents of the accessible gas holder and tar well and impacted soil to remove potential source material and to reduce the potential for continued releases or leaching of impacts to soil and groundwater.
- Implementation of institutional controls to manage exposure risks by limiting intrusive work.
- Design and implementation of contingent engineering controls on an as-needed basis in conjunction with future site development to prevent exposure to impacted soil.
- Abandonment of former storm sewer lines and the water intake line to minimize potential conduits for migration of possible impacted sediment and/or groundwater.

- Delineation and removal of lead-impacted surface soil to eliminate the direct contact exposure pathway.

Additionally, institutional controls are intended to be applied to the railroad corridor to restrict activities and/or other land uses in this area.

2.2 ARARs

ARARs can be divided into three groups: chemical-specific, location-specific, and action-specific. Chemical-specific ARARs (Table 2-1) are usually health- or risk-based numerical values or methodologies that, when applied to site-specific conditions, result in numerical values that establish the acceptable amount or concentration of a chemical that may be found in, or discharged to, the ambient environment. Action-specific ARARs (Table 2-2) are usually technology- or activity-based requirements or limitations on actions taken with respect to hazardous wastes. These requirements are triggered by the particular remedial activities that are selected to accomplish a remedy. A site's location is a fundamental determinant of its impact on human health and the environment. Location-specific ARARs (Table 2-3) are restrictions placed on the concentration of hazardous substances or the conduct of activities solely because they are in specific locations.

The remainder of this section discusses the Federal, State, and Local ARARs, as well as requirements specified in the Consent Order in terms of the specific activities and issues that will occur during the removal action.

2.2.1 Determination and Designation

Except for PCB-impacted soil, impacted materials present at the site are not Resource Conservation and Recovery Act (RCRA)-listed hazardous wastes. After excavation and prior to transportation off-site, PCB-impacted soils will be sampled and analyzed to determine whether or not the waste exceeds the maximum allowable toxicity characteristic concentrations (40 Code of Federal Regulations [CFR] §261.24). All material that is taken off-site as RCRA-characteristic waste for treatment or disposal will comply with RCRA requirements.

2.2.2 Excavation and Removal

The National Ambient Air Quality Standards (NAAQSs), which have been promulgated for emissions of sulfur oxides, particulate matter, carbon monoxide, ozone, nitrogen dioxide, and lead (40 CFR Part 50), as found in Iowa's State Implementation Plan (SIP); are applicable to excavation activities at the site. Due to the nature of the material and the remedial activities, particulate matter (40 CFR §50.6) and lead (40 CFR §50.12) will be the only NAAQS of concern during the site remediation. Chapter 567 Iowa Administrative Code (IAC) Section 23.3(2)(c) requires reasonable precautions be taken to prevent particulate matter from becoming airborne at nuisance levels. Air monitoring will be conducted during site activities.

2.2.3 Accumulation and Storage

The substantive requirements listed in 40 CFR §262.34 will be met for any RCRA hazardous wastes containerized on site for subsequent off-site disposal or recycling.

2.2.4 Transportation

Materials shipped as part of the site removal action are subject to packaging requirements presented in 49 CFR Part 173. Transporters of waste material must be knowledgeable of and comply with the applicable portions of 49 CFR Parts 107 and 171 through 177. Transporters of RCRA hazardous waste also must be knowledgeable and comply with applicable provisions of 40 CFR Part 263.

Requirements for the off-site transportation of RCRA hazardous wastes (40 CFR §263.10[b]) are applicable to off-site transportation of RCRA-characteristic wastes. An EPA identification number for the site has been retained by IPL, which will be utilized when transporting any RCRA hazardous waste. RCRA hazardous waste will only be offered to a transporter who has an EPA identification number (40 CFR §262.12).

Transportation of materials that are not RCRA-characteristic wastes will be conducted in accordance with applicable United States Department of Transportation (DOT) regulations.

Trucks used to haul impacted materials will be in good repair in order to prevent inadvertent leakage of the contents under normal conditions. Each dump truck will be covered with a tarpaulin during transportation of impacted materials.

2.2.5 Manifests

Shipping papers will be prepared for transported hazardous material in accordance with 49 CFR Part 172. Descriptions of the hazardous materials will comply with 49 CFR Part 172 Subpart C. The following paragraph will be printed on the manifests for hazardous waste shipments and signed by a representative or agent of IPL (49 CFR §172.204):

This is to certify that the above-named materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to the applicable regulations of the DOT.

Additionally, the hazardous materials manifests will contain emergency response information required by 49 CFR §172.600 through §172.604. An emergency response telephone will be monitored at all times during the transportation of the hazardous material, including storage incidental to transportation. The person monitoring the emergency response telephone will be knowledgeable about the material or have immediate access to a person who has comprehensive emergency response and incident mitigation information.

Any RCRA hazardous wastes that are transported off site for treatment, storage, or disposal will be manifested using EPA Forms 8700-22 and 8700-22A (as necessary) in compliance with

40 CFR §262.20 through §262.23. These manifests will be used in a manner consistent with 49 CFR §172.205.

2.2.6 Marking, Labeling, and Placarding

Before offering hazardous materials to a carrier for transportation, all packages, freight containers, and transport vehicles will be marked and labeled in accordance with 49 CFR Part 172 subparts D, E, and F. Marking, labeling, and placarding will be suitable for ORM-E hazardous substances shipped in bulk (i.e., packages greater than 110 gallons in volume). The labeling of empty containers will comply with 49 CFR §173.29.

2.2.7 Record Keeping and Reporting

The record keeping and reporting requirements for RCRA hazardous wastes (40 CFR Part 262 Subpart D) will be adhered to for any off-site activities associated with RCRA hazardous wastes. Signed copies of all RCRA hazardous waste manifests will be retained for at least six years from the date the waste was accepted by the initial transporter, as required by the Consent Order.

For the duration of off-site transportation of RCRA hazardous wastes to a Treatment, Storage, and Disposal Facility (TSDF), a Biennial Report will be submitted to the EPA Regional Administrator by March 1 of each even numbered year on EPA Form 8700-13A in accordance with 40 CFR §262.41.

If a copy of the manifest, signed by the owner or operator of the designated receiving facility, is not received by the generator within 35 days of the date the RCRA hazardous waste was accepted by the initial transporter, the transporter and/or owner or operator of the facility will be contacted to determine the status of the hazardous waste. If a copy has not been received within 45 days, an Exception Report (40 CFR §262.42) will be submitted to the EPA Regional Administrator.

2.2.8 Special Waste and Non-Hazardous Waste Handling

Certain wastes at the site may be granted Special Waste Authorization (SWA) by the Iowa Department of Natural Resources (IDNR). An SWA will permit disposal of those wastes in a sanitary landfill.

Concrete rubble and other debris not visibly impacted, or that has been satisfactorily cleaned, will not require an SWA and will be disposed of in a sanitary landfill or dedicated construction and demolition debris landfill.

2.3 COMPLIANCE WITH PERMITTING

This section discusses the plans for obtaining and maintaining compliance with the permits necessary to implement the removal action.

2.3.1 Wastewater Discharge

The City will not accept treated decontamination water or excavation dewatering effluent from the FMGP site at their wastewater treatment facility. For the removal activities, wastewater will be held in on-site storage tanks. DCI Environmental, Inc. (DCI) will then transport the wastewater to their facilities in Cedar Rapids, Iowa for further treatment and effluent discharge to the City of Cedar Rapids wastewater treatment facility.

2.3.2 Non-Hazardous Waste Disposal Facilities and Transporters

Impacted soil and fill will be transported to the thermal treatment site at the Bluestem Solid Waste Landfill in Cedar Rapids, Iowa for treatment and disposal by DCI under IDNR Solid Waste Permit 57-SDP-31-02P-SMF. Copies of DCI's operating permits are included in Appendix E.

Other non-hazardous material (i.e., demolition debris, trash, and general refuse) generated by the removal action will be disposed of at a local commercially operated sanitary landfill. The materials will be transported using tandem-axle dump trucks. Prior to exiting the site, each truck will be covered with a secure tarpaulin; and a bill of lading form, weight ticket, or other applicable documentation will be completed.

2.3.3 Hazardous Waste Disposal Facilities and Transporters

Materials that are considered hazardous wastes will be disposed of in accordance with applicable regulations. Individual hazardous waste disposal facilities will, if requested, provide copies of applicable permits and their expiration dates. Alternatively, the results of the facilities' most recent audit may be requested, or an independent facility audit performed. Transportation of the hazardous waste will be conducted in accordance with 40 CFR Part 263, including proper placarding, manifests, and notifications.

2.4 PROJECT ORGANIZATION AND RESPONSIBILITIES

A description of the project organization, responsibilities, training, subcontractor management, sampling procedures, and quality management is presented in the SAP contained in Appendix B.

SECTION 3

SITE PREPARATION

This section discusses the various activities to be undertaken to prepare the site for the removal action.

3.1 SECURITY FENCING

Fencing is currently installed around the perimeter of much of the FMGP site. Prior to initiation of removal activities, the existing fencing will be inspected and repaired, as necessary, to prevent unauthorized access to the site. In addition, fencing will be constructed along North 2nd Street and 3rd Avenue North. The new fencing will be connected to the existing structures or fences to eliminate gaps in the barrier. All newly installed fencing will be commercial-grade chain-link fence that is a minimum of 6 feet in height. The approximate location of the additional fencing is shown in Figure 3-1.

Visual barriers will be affixed to the perimeter fence as deemed appropriate by IPL or the MWH Project Manager (PM). The purpose of the visual barriers is to prevent distractions to passing traffic and congregation of observers in areas of high vehicular traffic. Throughout the removal action, the fencing will be maintained to prevent site access and limit visibility. Warning signs will be posted on the fencing at gates and approaches to the site. The signs will be approximately 12 inches by 14 inches and will read: "Danger - Unauthorized Personnel Keep Out."

3.2 HAUL ROUTES/ACCESS AGREEMENTS

The haul routes for trucks transporting material to and from the site will be proposed to the City and the Iowa DOT for approval. Additionally, IPL will coordinate with Iowa, Chicago & Eastern Railroad Corporation (IC&E) regarding the excavation of soil adjacent to the railroad property.

3.3 OFFICE AND SUPPORT FACILITIES

3.3.1 Field Office

A trailer will be mobilized to the FMGP site for use as a field office. As a safety precaution, the field office will be positioned so that remedial activities can be observed from the trailer. The field office will be used for administrative activities and storage of on-site files, sample containers, coolers, sampling equipment, and personal protective equipment (PPE). It will also serve as the check-in point for all personnel and site visitors. Pertinent health and safety data, such as Occupational Safety and Health Agency (OSHA) requirements, emergency telephone numbers, and a hospital location map will be posted in the field office for easy access.

The field office trailer will be set up on Site 1 or Site 2 to correspond the occurrence of the removal activities on the west and east portions of the site, respectively. Anticipated locations for the field office trailer are shown in Figure 3-1.

3.3.2 Mobile Laboratory

A mobile laboratory trailer will be used for analysis of the soil verification samples. The laboratory will be stationed on Site 2 throughout the removal activities to minimize setup and calibration of the analytical equipment. The mobile laboratory will be positioned outside the exclusion zone for the removal activities, but within the existing fencing of Site 2. Access to the mobile laboratory will be through an existing gate. The anticipated location of the mobile laboratory trailer is shown in Figure 3-1.

3.3.3 Equipment and Supplies

DCI will mobilize trailers as needed for storage of equipment and supplies. The trailers will be parked inside fenced areas of the site, but will be located as determined appropriate by DCI.

Additional temporary equipment storage trailers or other facilities will be mobilized to the site as needed. All equipment and supplies will be stored within the fenced areas of the site.

3.3.4 Truck Scale and Access Roads

The truck scale exists on Site 2 from previous site uses. This scale was recently inspected and it was determined that the scale could be renovated and used to weigh trucks loaded with impacted soil before leaving the site, as well as trucks bringing backfill material to the site. The scale will be repaired and calibrated prior to use for the removal action.

Access roads on the site will be constructed as needed using recycled concrete or crushed brick. Use of these materials to construct the access roads will minimize dust and reduce tracking of mud during wet weather.

3.4 DECONTAMINATION FACILITIES

3.4.1 Decontamination Pad and Building

Because the removal activities are targeted for the winter months, a temporary decontamination building will be erected for wet decontamination activities, housing the water treatment system, and storing accumulated water. The decontamination building will be approximately 40 feet wide by 80 feet long and will be constructed on the concrete slab of the former Allied Steel building on Site 2, as shown in Figure 3-1. Within the decontamination building, an asphalt decontamination pad will be constructed on the existing concrete that will provide containment for the wash water and a low point from which water and sediment can be removed. The building will be heated to prevent freezing of the decontamination equipment, water treatment system, and water storage tanks.

3.4.2 Water Treatment System and Water Storage

A water treatment system will be constructed inside the decontamination building. The primary system will consist of an oil/water separator and stilling basin and water storage tanks. In

addition, activated carbon canisters will be available if needed to reduce concentrations in the accumulated water. The water treatment system will be used to treat and temporarily store decontamination wash water. Periodically, the stored water will be transported to the DCI facility in Cedar Rapids, Iowa for final treatment and disposal.

3.4.3 Personal Decontamination

A decontamination trailer will be mobilized to the FMGP site for use by all personnel entering or leaving the exclusion zone. Plastic fencing will be used to direct all persons through the trailer and decontamination stations when leaving the site. The trailer will be supplied with electricity and water. Wastewater from personal decontamination will be containerized and hauled off site.

3.5 UTILITIES

3.5.1 Utility Locations

Known buried utility conduits, both active and inactive, on the FMGP site will be located and marked prior to implementation of any site preparation or remediation activities. The locations of the conduits will be identified and marked by the company or department responsible for the conduit. Conduit markings will be painted on the ground surface using standard color codings. In addition to paint markings, conduits in areas that are not paved will be identified with flags. Should the markings wear off or be destroyed during the soil remediation activities, the appropriate utility company or department will be contacted to relocate the conduits. The locations of known utility conduits will be compiled on site-wide figures. These figures will be updated, as appropriate, and retained on site as a reference.

3.5.1.1 Subsurface Utilities. Other than one abandoned 30-inch-diameter water intake line and two unused 36-inch-diameter storm sewer lines, there are no other known subsurface utilities on Site 2. However, given the prior industrial nature of the property, other undetected abandoned subsurface utilities likely exist on this portion of the site.

On Site 1, subsurface utilities consist of communication (wire and fiber optic), electric, gas, sewer, and water. While all active subsurface utilities are probably known, abandoned utilities or pipe runs associated with FMGP operation may also exist (i.e., steam or former product lines).

3.5.1.2 Overhead Utilities. On Site 1, in surrounding streets, and on nearby commercial and residential properties; overhead utilities consist of communication (wire) and electric. No overhead utilities are known to exist near the areas of excavation on Site 2. Overhead utilities in the railroad corridor consist of communication (wire) and electric.

3.5.2 Utility Installations

The field office mobile laboratory and decontamination building will be supplied with electrical service. The field office will also be supplied with telephone service.

Water service for Site 1 activities will be provided through the IPL district office building or a valve will be installed at the nearest fire hydrant. Site 2 activities will acquire water service from the nearest fire hydrant or the old water line that once supplied the former Allied Steel facility. Water for the decontamination building will be provided by a hard-line connection to the City distribution system.

3.6 MONITORING WELL ABANDONMENT

Monitoring wells located in areas to be excavated will be abandoned prior to implementation of the removal action. Abandoning of monitoring wells will be performed by an Iowa-certified well driller in accordance with IDNR-approved procedures.

To the extent practicable, monitoring wells near the anticipated excavation areas will not be abandoned. However, if an area of excavation expands and approaches a well location, the depth of the well will dictate the approach for continued work. If a water table well is encountered, the well will be abandoned or removed concurrent with excavation. If an intermediate depth or bedrock surface well is approached, efforts will be made to protect the well during excavation by carefully removing soil and material from around the well while stabilizing the casing as needed to prevent movement or damage to the well. Clean backfill material will be placed around the wells as quickly as practicable to provide additional stability.

If a well cannot be preserved, the casing will be removed and the borehole abandoned according to IDNR well abandonment guidelines. Removed well casings will be cleaned and disposed of as described in Section 4.2.2. Protective covers from removed wells may be cleaned and retained for reuse. Well casing materials will not be reused. Monitoring wells removed during the excavation will not be replaced until all excavation and backfill activities have been completed.

3.7 RELOCATION OF DISTRICT OFFICE YARD OPERATIONS

The utility yard located north of the District Office building is subject to heavy vehicle traffic (cherry pickers, support trucks and other IPL fleet vehicles); these types of vehicles and their associated operations will be relocated until removal action and restoration of this area have been completed. Electrical transformers, poles, and cables currently stored in the yard north of the District Office building will also be relocated. Relocation of the equipment and fleet operations will permit unencumbered access for excavation equipment and the remedial activities being conducted.

3.8. RUN-OFF CONTROL

Run-off from excavation areas and any areas with exposed impacted soil and/or debris will be controlled by the earthen berms, silt fencing, hay bails, or other barriers constructed to prevent surface run-on in to these areas. Precipitation collected within the earthen berms will be containerized with treated wastewater.

Silt fencing will be erected around on-site storm sewer inlets to prevent potentially impacted sediment from entering during storm events. Silt fencing will also be installed, as necessary, in any areas where overland flow poses an erosion risk at the site.

3.9 ESTABLISHMENT OF SITE GRID

Prior to excavation activities, an on-site grid consisting of an alphanumeric system will be laid out over the site. The grid will be based on 20-foot north-south and east-west intervals and keyed into permanent site features and a coordinate system. The grid will also be integrated into a hand-held global positioning system (GPS) unit that will be used to identify sampling locations, the extent of the excavations, buried structures, utility lines and conduits, and other pertinent items.

3.10 GARAGE REMOVAL

Prior to proceeding with the excavation of the tar wells on Site 1, the garage located along the eastern edge of Site 1 between the district office building and the warehouse will be removed. The garage is constructed of metal sheeting over a pole and rafter framework. The garage floor is not paved, therefore, no additional concrete removal will be necessary.

3.11 CLEARING/GRUBBING AND PAVEMENT REMOVAL

3.11.1 Site 1

On Site 1, shrubs located along the fence currently dividing the customer parking lot from the service center yard (north of the district office building) will be removed. No other vegetation is located within the anticipated areas of excavation.

Pavement in the anticipated areas of excavation on Site 1 will be removed as necessary to allow the excavation to proceed. It is likely that pavement will remain in place as long as possible to allow truck traffic and loading to be conducted on hard surfaces. This will also allow the loading area to be kept clean of any spilled soil and minimize potential tracking of impacted material. Removed concrete will be scraped to remove as much soil as practicable. Concrete that is not determined impacted through visual observation will be retained for use as backfill in the excavations. Visibly impacted concrete will be power washed to remove as much contamination as possible and stockpiled for use as backfill.

3.11.2 Site 2

Clearing and grubbing activities on Site 2 have been initiated with the removal of trees and brush along the railroad corridor and in the former sandblasting pit in the northwest corner of the former Allied Steel building. Trees and brush were removed and disposed of off-site. Additional clearing and grubbing will likely be needed in the vicinity of the field office and mobile laboratory to facilitate access to the gates. Other areas will be cleared as necessary.

Concrete and asphalt pavement of the former Allied Steel building will be removed as needed to access impacted soil. Removed concrete will be scraped to remove as much soil as practicable.

Concrete that is not determined impacted through visual observation will be retained for use as backfill in the excavations. Concrete that is determined impacted through visual observation will be power washed to remove as much contamination as possible and stockpiled for use as backfill. Asphalt that is removed will be scraped to remove as much soil as practicable, then will be transported off site for recycling. Additional pavement removal may be completed as determined by IPL for future site development or site restoration.

3.12 LEAD DELINEATION

Additional surface soil sampling will be conducted on Site 2 to determine the distribution of residual lead impacts above the soil action levels. Sampling will be conducted at the beginning of the removal action activities on Site 1 to provide an estimate of the volume of impacted material so that disposal alternatives can be evaluated. A detailed description of the sampling locations and screening/analysis planned for the lead delineation is contained in the SAP.

In preparation for the removal of the FMGP-impacted soil on Site 2, soil with lead concentrations greater than the soil action levels that are also within the anticipated area of the FMGP-impacted soil removal will be removed and stockpiled on site for later disposal. The lead-impacted soil will be removed from these areas concurrently with the excavation activities on Site 1 in order to avoid difficulties of removing surface soil under frozen conditions, which are likely to be encountered during the removal of the FMGP-impacted soil on Site 2. The stockpiles will be covered with polyethylene sheeting to control dust and prevent infiltration or erosion of the stockpile.

3.13 PCB DELINEATION

Additional surface soil sampling will be conducted in the vicinity of the PCB "hot spot" identified on Site 1 during the Site Characterization. Samples will be collected in an effort to delineate the lateral extent of the "hot spot" and allow a more accurate estimate of the volume of soil to be removed. A description of the sampling locations and analysis planned for the PCB delineation is contained in the SAP.

SECTION 4

EXCAVATION AND MATERIAL HANDLING – FMGP-RELATED IMPACTS

This section discusses the general implementation and logistics of excavation and material handling activities, with emphasis on the excavation of the two accessible gas holders, four tar wells, and additional areas of concern in the vadose zone soil (Figure 4-1).

4.1 REMOVAL ACTION DESCRIPTION

Based on results of the EE/CA Part I – Site Characterization, the accessible gas holders and tar wells appear to be locations of the highest concentrations of volatile organic compounds (VOCs) and PAHs in the vadose zone and are viewed as potential sources of groundwater impacts. Given these conditions, the contents of the gas holders and tar wells will be excavated to the full depth of the structure. Surrounding soil with PAH concentrations exceeding the soil action levels in Table 1-1 will be excavated down to the water table. Debris and fill material from the excavations would most likely either be transported to a landfill and disposed of as construction debris or thermally treated by an off-site thermal desorption unit. The excavation will then be backfilled with clean material obtained from an off-site source.

4.1.1 Procedures and Equipment

Soil will be excavated and transported using common soil excavation and earth moving equipment, as appropriate, for the volume of soil being moved and the distance of transfer. Most of the excavation will likely be performed using a track excavator. To the extent possible, excavated soil will be placed directly in the trucks to be transported off site. However, once excavated, materials may be moved around the site or stockpiled using a rubber-tired loader or backhoe. All of the excavation activities will be performed in accordance with the applicable requirements of 29 CFR §1926.650 for slope stability and worker safety.

To the extent possible, large debris, rubble, and pipe will be segregated from impacted soil. The remaining soil and fill material will be shipped directly to the DCI facility for screening and treatment. Segregated metal, wood, and trash will be cleaned and stockpiled for disposal as described in Section 4.2. Heavily impacted oversized rubble will be stockpiled for treatment, along with impacted soil and small debris. Concrete, brick, and rock not visibly impacted will be stockpiled on site, and retained for backfill in the excavation. Any segregated soils that do not appear impacted will be sampled for compliance with the soil action levels prior to being stockpiled for use as backfill in the excavation. Excessively wet soil will be allowed to drain into the excavation before being screened or placed on an operations pad. Wet materials may also be blended with drier soils to improve material handling characteristics. If encountered, heavily stained soil and fill material may be blended with less impacted material before transporting for thermal treatment.

Reasonable precautions will also be taken to prevent particulate matter and dust from becoming airborne in quantities sufficient to become a nuisance. Excavated material and traveled portions

of the site may be wetted with water to limit dust. Only municipally supplied water will be used, with application only in sufficient quantities to temporarily control dust.

4.1.2 Extent of Excavation

The excavation is intended to remove impacted soil and debris contained in the targeted FMGP structures (gas holders and tar wells) and surrounding soil exhibiting concentrations of the constituents of concern (COCs) above the soil action levels listed in SOW-I and in Table 1-1. Surface soil, as defined for the soil action levels, consists of the upper 2 feet of unconsolidated soil. The deeper soil is assumed to extend vertically from 2 feet bgs to the groundwater surface. Contents of the gas holders and tar wells to be excavated will be removed to the full depth of each structure. Foundations of the gas holders and tar wells, or other remnant structures, are intended to be left in place.

The anticipated extent of the excavation will be guided by soil sample screening for VOCs and PAHs; and verified by laboratory analysis of samples collected from the sidewalls and, where appropriate, floor of the excavation. The extent of excavation will be limited by groundwater, access, existing utilities, and structures located in the area.

Soil samples for field screening will be collected periodically from the sidewalls and floor of the excavation, as well as directly from the excavator bucket. The samples will be screened for VOCs using a photoionization detector (PID).

Confirmation samples for laboratory analysis will be collected from the walls and floor of the excavation when screening results indicate contaminant concentrations are below the cleanup criteria. The spatial frequency of samples, sampling protocol, and analytical requirements are outlined in detail in Section 8 of this report and in the FSP contained in Appendix B.

The lateral extent of the excavation and the locations of verification samples will be mapped using a hand-held GPS unit. Buried structures or other features that limit the extent of excavation will also be mapped using the GPS unit.

4.1.3 Material Characterization

Prior to transporting soil to the DCI facility, a representative sample of the material will be characterized to determine if it exceeds limits established by the IDNR for the thermal treatment unit. The IDNR Construction Permit for Air Emission Sources limits the concentration of VOCs in the soil to be processed at 2 weight percent total VOCs. It is assumed this total VOC concentration includes compounds not normally considered volatile (such as PAHs) but which are volatilized in the thermal treatment process. The total detected concentrations of VOCs and PAHs will be summed to determine the weight percent of total VOCs.

Recent legislation provides that FMGP-derived wastes are handled similarly to common petroleum-derived wastes, and, as such, are exempt from Toxicity Characteristics Leaching Procedure (TCLP) characterization analysis and RCRA hazardous waste determination.

Therefore, no RCRA hazardous waste characterization will be performed on excavated material from the site.

4.2 MATERIAL SEGREGATION AND DISPOSAL

4.2.1 Soil

To the extent practicable, impacted soil will be removed from the excavation and placed directly in trucks for transportation to the DCI facility. In an effort to minimize odors and potential exposure risks, the soil will not be routinely placed into stockpiles outside of the excavation. However, if it becomes necessary to stockpile soil prior to transportation, the stockpiles will be covered with reinforced polyethylene to prevent volatilization of contaminants and infiltration of precipitation while awaiting transport to the thermal treatment site.

4.2.2 Metal

Recovered metal, including pipe, will be scraped to remove as much soil and gross contamination as possible, then washed on the decontamination pad with a high-pressure, high-temperature sprayer to remove residual soil and sediment. Oily residues will be pressure washed to remove as much material as possible. Metal products will then be bent or crushed to reduce their size and stockpiled as scrap for recycling.

Any metal drums containing soil cuttings and PPE from the previous or ongoing site investigations will be emptied, cleaned, and disposed of as described above.

4.2.3 Wood

Timbers, railroad ties, and other large pieces of wood will be segregated from the soil and fill. The recovered wood will then be stockpiled for disposal by Rail Systems, Inc. (RSI) in LaCrosse, Wisconsin. RSI chips the wood and sells it to Xcel Energy to be burned in their French Island power plant as a supplemental fuel.

4.2.4 Rubble

Upon excavation, oversized rock, brick, and concrete (including large excavated portions of concrete foundations or other structures) will be cleaned of gross soil and sediment. Rubble that is visibly contaminated with coal tar or oily material will be stockpiled for treatment. Rubble that is not contaminated will be stockpiled for use as backfill material.

Visibly contaminated in-place concrete foundations or other permanent structures with impacted soil, coal tar, or oily residues will be washed clean with a high-temperature, high-pressure sprayer. The water will be captured and pumped through the water treatment system and held for disposal.

4.2.5 Free-Phase Liquid

Any free-phase liquid contaminants will be recovered, to the extent possible, and containerized in United States DOT 17H open-top drums. Should more than one apparent type of free-phase material be encountered, attempts will be made to containerize only like materials in a given container. The drums will be labeled to identify the contents and the date filled. The lids will be secured and the drums stored on the segregation pad pending proper disposal.

4.2.6 General Refuse

Trash, stockpile covers, and general refuse generated by the removal action, including any uncontaminated trash recovered during the excavation, will be disposed of at the local sanitary landfill.

4.3 MATERIAL TRANSPORTATION

4.3.1 General Procedures

The thermal treatment unit will be stationed at the DCI facility at the Bluestem Solid Waste Landfill in Cedar Rapids, Iowa. Contaminated soil and fill will be transported to the thermal treatment site using dump trucks or tandem-axle truck-and-trailer combinations. Details of the treatment and processing of impacted materials are discussed in a permit that has been issued by the IDNR for the DCI facility (Appendix E).

Once loaded, the truck bed will be covered with a tarpaulin and the truck will go through a "dry decontamination" consisting of sweeping any spilled soil from the outside of the truck. Spilled soil will be swept or scraped away from the tires before the truck is allowed to move to prevent tracking of soil. The truck will then be driven to the decontamination pad for final inspection and "wet decontamination" as needed. Prior to leaving the site, a bill of lading form, weight ticket, or other applicable documentation will be completed, and the truck will proceed to the thermal treatment site.

Locally provided clean fill material will be transported to the site for backfill of the excavation and subsequent restoration of the site.

4.3.2 Transporter Qualifications and Restrictions

Transportation of impacted material will be in accordance with the EPA, United States DOT, and Iowa DOT regulations as appropriate for the type and classification of the material.

While loading is being performed within the exclusion zone, drivers who are not properly trained must remain in the vehicle while it is being loaded. Drivers may get out of their trucks and leave the exclusion zone only before loading begins or after loading is completed and the exterior of the vehicle has been decontaminated. As with other workers in the exclusion zone, drivers will not be allowed to eat, drink, or smoke in their vehicle when it is in the exclusion zone.

4.4 ODOR AND DUST CONTROL

The primary means of odor control will be to spray odor suppressant foam onto the open face of the excavation. An additional method would involve spreading a layer of clean soil over the floor of the excavation to reduce volatilization and odors. Any stockpiled soil will be covered overnight with polyethylene sheeting to control odors and prevent infiltration of precipitation.

To control fugitive dust from the site, as well as to enhance overall material handling, dry soils may be blended with wet soils. Clean water may also be applied to soil piles, on-site haul routes, and open soil to control dust. Water pumped from the excavation will not be used for dust control. To control dust from transport trucks, all loads will be covered with a tarpaulin prior to leaving the site. The tarpaulin will not be removed from the load until the truck arrives at the designated treatment or disposal facility.

4.5 EXISTING STRUCTURES

Based on the history of the site, numerous buried foundations or other substructures are expected. Unknown structures will be addressed on a case-by-case basis as they are discovered. In addition, currently operating utilities are present. Plans for working near existing utilities and structures are discussed in the following subsections.

4.5.1 Site 1 Western Property Boundary

Excavation near the western property boundary of Site 1 will be performed at former gas holder No. 1. Between the western edge of the gas holder and the curb of North 2nd Street is an 8-inch-diameter gas line, approximately 2 to 3 feet underground. Given the location and diameter of the gas holder, excavation of the gas line is not expected. A fenced "buffer" zone will be erected around the western perimeter of the excavation; this "buffer" zone will extend to the sidewalk along the east side of North 2nd Street.

If it becomes necessary to uncover the gas line, the methods used to remove soil and/or backfill would consist of using conventional excavation equipment, a vacuum, or manual digging. To prevent movement of the gas line and provide as much support as possible, impacted backfill material below the midline of the gas line will be removed in sections and immediately backfilled with sand or flowable fill slurry. Use of flowable fill will provide uniform support of the gas line without having to compact granular backfill under the pipe. The recovered backfill will be screened and treated in the same manner as other impacted soil and fill. Since the gas line cannot be taken out of service or rerouted, remedial efforts in this area will be limited to those that do not jeopardize the integrity of the gas line. Representatives of the utility will be informed of the activities and schedule.

4.5.2 Site 1 Eastern Property Boundary

Activities to be conducted near the eastern edge of the Site 1 property boundary include the excavation of tar wells 1, 2, and 3. Prior to commencing excavation, a metal garage will be removed. Additionally, along the eastern property boundary are overhead high voltage lines that

will not be rerouted, so it will be necessary to take extra safety precautions when working in this area.

While tar well No. 3 is near the IC&E railroad right-of-way, rail operations are not expected to affect the excavation.

4.5.3 Excavation along the Railroad Corridor

Because continued operation of the railroad track between the two sides of the site is vital, excavation of soil immediately adjacent to the right-of-way will be performed in segments such that a minimum amount of the adjacent wall is exposed at any given time. After an area is excavated, clean backfill material will be placed in the area of excavation as soon as practicable. It is intended the excavation wall will be sloped along the railroad corridor to provide additional stability to the soil along the eastern and western edges of the railroad corridor SCA, as shown in Figure 1-5. The excavation contractor will be responsible for evaluation of soil conditions as necessary to prevent soil slumping or caving.

4.6 SITE DEWATERING

To facilitate excavation and material handling, the contractor may dewater the site as needed. Removing groundwater or accumulated precipitation will be performed by placing submersible pumps or suction hoses in the excavations or in dewatering sumps. All dewatering effluent will be pumped through the oil/water separator and stilling basin to separate free-phase product and allow sediment to settle out. The water will then be transported to the DCI treatment facility for further treatment and disposal. Effluent samples from the water treatment system at the DCI treatment facility will be collected and analyzed in accordance with the requirements of DCI's permit from the City of Cedar Rapids.

4.7 EQUIPMENT DECONTAMINATION

All excavation equipment that contacts contaminated soil, will be decontaminated prior to mobilization off site. Large equipment (excavator, loader, roll-off boxes, etc.) will be manually scraped to remove as much gross contamination and soil as possible, followed by washing with a high-temperature, high-pressure sprayer. The equipment will be cleaned on the decontamination pad, and all wash water recovered from decontamination will be treated and transported to the DCI treatment facility for further treatment and disposal.

Small equipment, such as pumps, hoses, shovels, etc. will initially be scraped to remove gross contamination and soil, then decontaminated with a high-temperature, high-pressure sprayer. If additional decontamination is needed, the equipment will be washed in a mixture of water and Alconox[®] detergent. A methanol rinse may also be used if significant contamination is noted on the equipment.

Soil sampling equipment will be decontaminated prior to sample collection. Initially, all sampling equipment will be manually scraped to remove as much gross contamination and soil as possible. Small sampling equipment (spoons, trowels, shovels) will then be decontaminated by

washing in a mixture of water and Alconox[®] detergent, thoroughly rinsed in distilled water, and air dried.

Water generated by equipment decontamination will be collected for off site treatment and disposal. Accumulated sediment from decontamination activities will be collected and added to a truckload of soil slated for treatment.

SECTION 5

EXCAVATION AND MATERIAL HANDLING – SURFACE SOIL PCB “HOT SPOT” AND RESIDUAL LEAD

This section discusses the general implementation and logistics of excavation and material handling of the PCB-impacted surface soil “hot spot” on Site 1 and the lead-impacted surface soil on Site 2.

5.1 REMOVAL ACTION DESCRIPTION

Based on results of the EE/CA Part II – BIRA, an isolated area of “hot spot” surface soil impacts appears to generate unacceptable human health risks. This area is located on Site 1 as shown in Figures 1-5 and 4-1. The risks in this area are derived from PCBs in surface soil. Although this is not related to the FMGP operations, this impacted area is on Site 1 and will be addressed during the on-site remedial activities.

In addition to the PCB surface soil impacts, residual lead-impacted surface soil on Site 2 will be addressed during the removal action. Similarly, the lead impacts are not related to the FMGP operations. The extent of lead-impacted soil to be removed will be determined by the additional sampling and analysis described in the SAP.

Surface soil removal in the PCB “hot spot” and areas of residual lead impacts are expected to result in excavations approximately 1 foot in depth. Soil impacted with PCBs will be transported to an appropriately approved landfill for disposal. Treatment and/or disposal options for soil containing elevated lead will be evaluated after the extent and magnitude of the lead impacts have been defined. The recommended alternative will be submitted to the EPA for approval prior to removing the lead-impacted soil. The area of excavation from the surface soil excavations will be backfilled or graded to match the surrounding grade.

5.1.1 Procedures and Equipment

The shallow impacted soil and nearby surrounding soil will be excavated and transported using common soil excavation and earth moving equipment as appropriate for the volume of material being moved and the distance of transfer. Prior to excavation, the anticipated outline of the excavation perimeter will be marked on the ground surface. During the excavation of the impacted soil, workers will wear Level C PPE, and water may be applied if deemed an appropriate precautionary measure to prevent particulate matter and dust from becoming airborne. While conducting backfilling and compaction operations, Level D PPE will be worn. During all work, air monitoring will be performed.

5.1.2 Extent of Excavation

The surface soil PCB “hot spot” excavation is intended to remove PCB-impacted soil and debris mixed with the soil to a depth of approximately 1 foot bgs. Based on the existing data, it is

estimated that 267 cubic yards or 400 tons of soil will be removed. The extent of the excavation will be determined by the results of confirmation sampling.

Confirmation sampling of the PCB "hot spot" excavation sidewall and floor will be accomplished by the collection of composite samples. The samples will be composed of equally sized subsamples that are placed directly in a stainless steel bowl. One sample jar for each composite sample interval will be dedicated for PCB analysis and labeled as such. Identification, labeling, handling, chain-of-custody documentation, and QA/QC procedures for the samples are discussed in Appendix B. After verifying the samples are less than or equal to 25 mg/kg (as bulk remediation waste for low occupancy areas, per 40 CFR §761.61 [a][4]), the excavation will be backfilled with gravel and compacted.

The extent of excavation for the residual lead impacts will be initially estimated using the results of the lead delineation sampling. Up to approximately one foot of soil will be excavated from each identified area of residual lead impacts. Verification sampling will then be conducted in accordance with the verification sampling plan contained in the SAP. Additional excavation and subsequent verification sampling, will be conducted as needed to remove the lead-impacted soil. After the lead-impacted soil has been removed, the areas of excavation will either be backfilled with soil from an off-site source, or graded to blend with the surrounding grade and prevent ponding of precipitation.

5.2 MATERIAL HANDLING AND DISPOSAL

Once loaded, the truck will be covered with a tarpaulin and driven to the decontamination pad. The tarpaulin will not be removed from the load until the truck arrives at the designated disposal landfill. Debris and fill material from the PCB "hot spot" excavation will be transported to the US Ecology, Inc. disposal facility in Beatty, Nevada. The EPA ID number of the US Ecology, Inc. facility is NVT3300100000.

As previously indicated, recommendations for treatment and/or disposal of the lead-impacted soil will be submitted to the EPA for approval after the nature and extent have been determined.

5.3 NEARBY STRUCTURES AND UTILITIES

Remedial activities near the western edge of Site 1 will be performed with the excavation of shallow PCB-impacted soil. Based on the history of the site and the planned depth of the excavation (1 to 2 feet deep), it is unlikely that undocumented buried foundations or other substructures may be discovered during excavation of the PCB-impacted soil. However, the IPL warehouse and overhead electrical lines are located nearby the planned excavation perimeters, but are not expected to interfere with this shallow and relatively limited excavation.

With the exception of existing pavement, the excavation of lead-impacted soil is not expected to extend laterally or vertically to any existing structures or utilities. Pavement will be removed as necessary to access the impacted soil.

5.4 EQUIPMENT DECONTAMINATION

All excavation equipment will be decontaminated prior to further use. The equipment will be cleaned on the loading and decontamination pad, and all wash water recovered from decontamination will be sent to the water treatment system. The water will then be transported to the DCI treatment facility for further treatment.

SECTION 6

STORM SEWER AND RIVER INTAKE LINE ABANDONMENT

This section discusses the general implementation and logistics of abandoning the former storm sewer and the river intake lines associated with FMGP operations.

6.1 REMOVAL ACTION DESCRIPTION

One abandoned 30-inch-diameter water intake line and two unused 36-inch-diameter storm sewer lines exist in the central portion of Site 2 and trend in a southeast direction toward the Mississippi River. The depths of the lines range from approximately 10 feet to 20 feet bgs. The locations of these lines are shown in Figures 1-5 and 4-1. Based on results of the EE/CA Part I – Site Characterization, the lines may contain impacted groundwater and sediment, and have the potential to serve as a conduit for migration of impacts. The former storm sewers and river intake will be abandoned by filling with a lightweight foam-formulated concrete. The foam concrete will eliminate potential migration of impacted groundwater through the lines, immobilize remaining sediment, and prevent collapse of the lines.

Drawings obtained from the City also show the location of an apparently abandoned City sewer. The location of the sewer could not be confirmed during site characterization; neither a manhole cover nor manway could be located. Because intrusive activities are anticipated during the removal action phase, efforts will be made to locate the former City sewer and assess its condition. If necessary, the sewer will be abandoned with the former storm sewer and water intake lines. Also, based on 1993 IDNR sampling, the pump station pit adjacent to Site 2 will be further assessed. The locations of the storm sewers, river intake, City sewer, and pump station pit are shown in Figures 1-5 and 4-1. As previously mentioned, it is possible that other unidentified utility conduits exist on Site 2. As conditions warrant, discovered utility conduits will be assessed.

6.1.1 Procedures and Equipment

Line abandonment of the storm sewer and river intake lines would initially consist of a video inspection (i.e., remote control video camera) and evaluation of the line. Where possible, access to the lines will be obtained through existing manholes, and, if necessary, access will be gained by either excavating down to the line using common soil excavation and earth moving equipment or advancing a hollow-stem auger or double-cased hollow-stem auger into the line.

Based on results of the site characterization, it appears that portions of the lines are at or below the water table, such that shoring or other water control measures may need to be implemented for some of the excavated access points. Due to the depth of the lines, engineering controls would not be proposed with abandonment.

Unimpacted soil removed from the vadose zone will be temporarily stockpiled near the access point, covered with a tarpaulin and used for backfilling. Impacted soil and sediment will be

transported to the thermal treatment site and impacted debris, after cleaning will be transported to an approved landfill for disposal.

During all excavation and abandonment activities, air monitoring will be performed. Dependent on air monitoring data either level C or D PPE will be donned.

6.1.2 Access Points and Video Survey

After gaining access to a line, a video survey using a remotely controlled video camera will be utilized to assess the integrity of the line and amount of sediment and/or water in the line. Following review of the video survey, if necessary, an air or water jetting system and subsequent vacuuming may be used to remove sediment from the line. The line will be abandoned by filling with foam concrete. After abandoning the line, the manholes will be removed and the access points backfilled to the surrounding grade.

6.2 ABANDONED CITY SEWER

Field activities near the abandoned 18-inch former City sewer will be performed with abandonment of the FMGP storm sewer. The City sewer is not expected to interfere with the abandonment of the FMGP storm sewer. However, it is unknown if the FMGP storm sewer passes above or below the abandoned former City sewer. It is possible that collapse of one of the sewers may have affected the integrity of the other sewer. The video surveying equipment will be used to assess the condition of the FMGP storm sewer. If during the course of the storm sewer abandonment, the former City sewer is discovered, efforts will be made to assess its condition and if necessary implement remedial action.

6.3 NEARBY STRUCTURES AND UTILITIES

Based on the history of the site, undocumented buried foundations or other substructures may be discovered during excavation. If, during the course of the water intake and storm sewer abandonment, other structures or utilities are discovered, efforts will be made to assess their condition and, if necessary, implement remedial action. While the remedial response will be evaluated on a case-by-case basis, some possible remedial actions include documenting the location for implementation of institutional controls, removal, or abandonment.

SECTION 7

PROGRESSION OF REMOVAL ACTION

This section describes the proposed progression of excavation and the division of the excavation and related actions into distinct phases and elements. Each excavation will progress as determined by the EPA, IPL, MWH, and the excavation contractor, based on field and laboratory evidence of contaminants. Typically, backfill will not be placed in the excavation until confirmation samples from the sidewalls and/or floor of the excavation indicates cleanup levels have been reached. Excavation activities at the site will be divided into five phases in order to maximize efficiency and minimize disruptions to neighboring business owners and on-site activities of IPL personnel. Excavation activities will be conducted on Site 1 first, followed by Site 2. The phases and elements comprising the phases are described below.

7.1 PHASE I – SURFACE SOIL “HOT SPOT”

Phase I excavation will consist of the PCB-impacted surface soil in the northern portion of Site 1, near the IPL warehouse (Figure 4-1). This area will be excavated, sampled, and backfilled before proceeding with Phase II.

7.2 PHASE II – SITE 1 FMGP-RELATED IMPACTS

Phase II consists of the excavation of the contents of former gas holder No. 1 and tar wells 1, 2, and 3 on Site 1. The sequence of the excavation of these areas will be determined in the field by IPL, DCI, and MWH. The elements comprising Phase II and a summary of the intended activities are presented below.

7.2.1 Former Gas Holder No. 1

This element of Phase II excavation will be performed on the western side of Site 1 at former gas holder No.1 (Figures 1-5 and 4-1). Excavation will begin with the removal of existing concrete and fill to unearth the perimeter of the former gas holder. Once the structure perimeter has been unearthed, the “clean-out” stage will begin. During this stage, debris and fill will be removed from the inside of the former gas holder. Following this “clean-out” stage, surrounding impacted soil will be removed to meet the clean-up standards listed in Table 1-1. Approximately 600 cubic yards (900 tons) of material is expected to be removed from gas holder No. 1. Following receipt of confirmation samples, the excavation will be backfilled with clean material.

7.2.2 Tar Wells Nos. 1, 2, and 3

Phase II excavation also consists of tar wells Nos. 1, 2, and 3 and reasonably accessible impacted vadose zone soil exceeding the cleanup standards on the eastern portion of Site 1 (Figure 4-1). Excavation will begin along the eastern fence. Exploratory excavations for tar wells Nos. 1, 2, and 3 will be conducted and will proceed until the structures are located. The contents of the structures will be excavated, along with reasonably accessible impacted soil above groundwater

(estimated at 10 feet in depth). During this stage of the excavation it has been calculated that approximately 6,120 cubic yards (9,200 tons) of soil will be removed. Pending analysis of excavation sidewall and floor samples, the area will be restored to original grade with clean fill and graveled.

Upon completion of backfilling and compaction on the eastern portion of Site 1, excavation equipment will be decontaminated and transferred to Site 2 to begin Phase III of the excavation.

7.3 PHASE III – SITE 2 FMGP-RELATED IMPACTS

Phase III consists of the excavation of former gas holder No. 2, the sluice pond, tar well No. 4, and the flume area on Site 2. A summary of each of these elements is provided below.

7.3.1 Former Gas Holder No. 2

The first of the excavation activities on Site 2 will be on the northern portion of the site at former gas holder No. 2 (Figures 1-5 and 4-1). The excavation will begin by removing portions of the concrete pad and crane footings as needed. Removal of the concrete will enable excavation equipment to remove approximately 2 feet of fill to expose the perimeter of the former gas holder. Once the structure perimeter has been unearthed, the “clean-out” stage will begin. During this stage, debris and fill will be removed from the inside of the former gas holder. Following this “clean out” stage, surrounding impacted soil will be excavated as needed to meet the clean-up standards listed in Table 1-1.

As the depth of the perimeter excavation increases, sloping of the sidewalls surrounding the structure will be necessary to prevent soil collapse. Following removal of the fill material in the gas holder (estimated to be approximately 1,700 cubic yards, or 2,550 tons) and associated surrounding soil, soil sampling and backfilling of the excavation will occur.

7.3.2 Sluice Pond

The sluice pond area is located on Site 2 southwest of former gas holder No. 2 and east of the property line and the adjacent railroad corridor (Figure 4-1). Excavation activities will involve the removal of impacted soils related to an overflow pipe from tar well No. 3 to the former sluice pond. Upon removal of approximately 3,790 cubic yards (5,700 tons) of impacted soil, the excavation sidewalls and floor will be sampled. Pending analysis of the verification samples, the area will be restored to original grade.

7.3.3 Tar Well No. 4

This area is located on Site 2 south of the sluice pond excavation and will be similar in scope to tar wells on Site 1, where exploratory excavation would proceed until the structure is located. The contents of the structure will be excavated, along with reasonably accessible soil above groundwater (estimated at 10 feet in depth). During this stage of the excavation, it has been estimated that approximately 1,050 cubic yards (1,600 tons) of soil will be removed. Pending

analysis of excavation sidewall and floor samples, the area will be restored to original grade with clean fill.

7.3.4 Flume

The flume excavation area is located on Site 2 south of tar well No. 4 and east of the property line and adjacent railroad corridor (Figure 4-1). This area is comprised of the western extents of the river intake and storm sewer lines in addition to the flume that connected the former power plant and the FMGP with the sluice pond. Based on the history of the site, other structures (City oil tanks, a drain from the gas plant, a former well and pump house, and an intake cistern) may be discovered during excavation. If other structures are discovered, efforts will be made to assess their condition and, if necessary, implement remedial action. While the remedial response will be evaluated on a case-by-case basis, some possible remedial actions include documenting the locations for implementation of institutional controls, removal or abandonment. Upon the removal of an estimated 3,120 cubic yards (4,700 tons) of soil, the excavation sidewalls and floor will be sampled. Pending analysis of the verification samples, the area will be restored to original grade.

7.3.4 PAH Surface Soil Area

Within Site 2, an area of surface soil impacts from PAHs was identified under the asphalt of the former Allied Steel building (see Figure 4-1). This area was once identified as a storage area for spent purifier oxide materials. However, during the site characterization, no metal or wood chips were found in this area.

Surface soil in this area will be excavated to approximately 1 to 2 feet bgs based on field screening and observations. The soil handling and verification sampling will be conducted in the same manner as the other PAH excavation areas. Depending on the depth of the excavation, this area of excavation may be backfilled or graded to blend with the surrounding grade to prevent ponding of precipitation and runoff.

7.4 PHASE III – LINE ABANDONMENT

For completing Phase III on Site 2, access points will be located for the river intake and storm sewers at existing manholes and other points deemed necessary by the contractor. The lines will then be video surveyed, and, if necessary, sediment will be removed from the lines. Starting from the east, the lines will then be abandoned by filling with foam concrete. Following abandonment, the access points will be backfilled.

7.5 PHASE IV – RESIDUAL LEAD-IMPACTED SOIL

Removal of the residual lead-impacted soil on Site 2 will be conducted during warmer weather months to avoid frost or frozen ground. As indicated previously, the extent of the lead-impacted soil removal will be determined by the additional surface soil sampling and EPA approval of the proposed soil action level. Lead impacts are expected to be limited to the upper 1 foot of soil. Surface soil in the impacted areas will be stripped using common earth-moving equipment.

After the soil has been removed, verification sampling will be conducted in accordance with the plans detailed in the SAP. Additional soil will be removed as necessary to achieve compliance with the soil action levels. It is anticipated that most of the areas excavated for the lead removal will not be backfilled because of the shallow depth of excavation. Instead, these areas will be graded to blend with the surrounding grade and prevent ponding of precipitation.

SECTION 8

CONFIRMATION SAMPLING PLAN

A confirmation sampling plan has been developed to demonstrate compliance with the soil cleanup levels, water discharge limitations, and air quality thresholds. An overview of the sampling plan for soil, water, and air is presented in this section. A more detailed discussion, including sampling protocol and analytical methods, is presented in the SAP, which is included as Appendix B.

In all areas where impacted soil is removed, confirmation sampling will be conducted to demonstrate compliance with soil action levels established in the Consent Order and proposed in this RAWP. Confirmation sampling will be conducted after soil removal has been completed and prior to backfilling. Sampling will only be performed in those areas where soil removal has taken place.

The objectives of the soil confirmation sampling plan are to 1) provide adequate data to document that accessible soil containing concentrations above the specified soil action levels has been removed, 2) determine whether additional removal is required, and 3) document residual concentrations if the maximum extent of excavation has been achieved. The maximum extent of excavation may be defined by risk-based criteria or by physical or legal boundaries.

Confirmation sampling will also extend to sampling and analysis of accumulated water that is collected from the excavations and equipment/personal decontamination activities. This sampling will be conducted to determine acceptability and document compliance with water disposal requirements. Confirmation sampling of the water will be conducted on an as-needed basis for batch disposal.

Confirmation sampling for air quality is intended to document air quality in the work zone and at the defined perimeters of the site. Air monitoring and confirmation sampling will include real-time fixed station measurements, samples collected for off-site analysis, and hand-held instruments. Air monitoring will be conducted throughout the removal action activities.

Confirmation sampling for any other constituents of potential concern (COPCs) will be addressed in this RAWP. Identification, labeling, handling, chain-of-custody documentation, and QA/QC procedures for all samples are discussed in the SAP, which is included as Appendix B.

SECTION 9

AIR MONITORING PLAN

This section provides an overview of the ambient air monitoring plan that will be implemented during remedial activities at the site. The monitoring plan has been established to protect both on-site workers and the general public located outside the site boundaries.

9.1 RATIONALE FOR AIR SAMPLING

A perimeter air monitoring plan has been developed to monitor ambient air near the site boundaries of the FMGP, both upwind and downwind, during soil excavation and handling activities. The analytical results will be used to evaluate potential impacts to personnel located on or adjacent to the site as a result of on-site activities.

During excavation activities, dust and offensive odors will be monitored. By controlling airborne particulates; lead and PAH concentrations at the site perimeter will be minimized. Therefore, to the extent possible, airborne particulates at the site will be kept to a minimum during all field activities. If it is determined that a perimeter ambient air action level is exceeded or dusty conditions are observed, work areas will be wetted down with water; soil piles that are not actively being used will be covered; and, if necessary under windy conditions, activities will be curtailed until winds subside.

Reinforced polyethylene sheeting may be spread over the side slopes and/or floor of the excavation in an effort to reduce volatilization and odors. All stockpiled soil will be covered overnight with polyethylene sheeting to control odors and prevent infiltration of precipitation. To control odors from the excavation, odor-suppressant foam may be applied to the open face of the excavation, if site conditions require.

The truckloads of soil leaving the site will be covered with tarpaulins to further reduce offensive odors and dust emissions while transporting the loads to the thermal treatment staging area or other disposal facilities. In addition, odor-suppressant foam may be added, as necessary, to truckloads of soil leaving the site.

9.2 AIR MONITORING PROGRAM SUMMARY

The air monitoring program consists of three levels of monitoring: 1) hand-held, direct-read instruments primarily for screening and worker breathing zone evaluation; 2) continuous real-time perimeter air monitoring using individual gas chromatograph/mass spectrometer (GC/MS) instruments; and 3) discrete periodic perimeter sampling for off-site laboratory analysis. Air monitoring data will be recorded on the Air Monitoring Data Sheets contained in Appendix F.

9.2.1 Direct-Read Instruments

Direct-read instruments (DRIs) will be used to conduct ambient air sampling at the perimeter of the FMGP site. At the beginning of the work day, and periodically throughout the day during site activities, DRI measurements will be taken at various designated locations around the site perimeter. DRIs will also be used to frequently monitor site conditions in the exclusion zone. The sampling instruments will be used to determine concentrations of particulates, total VOCs, benzene, and hydrogen cyanide. If these readings exceed levels established for upgrades in the level of PPE, perimeter sampling frequency and selection of analytes may be increased.

DRIs for air monitoring during site activities will consist of a PID, colorimetric tubes (benzene), and a hydrogen cyanide meter (i.e., Monitox or equivalent). Airborne particulates will be both visually and electronically monitored using an aerosol/dust monitor (i.e., MINIRAM or equivalent).

9.2.2 Continuous Real-Time Air Monitoring Stations

Continuous real-time air monitoring instruments (i.e., AirLogics or similar system) will be set up surrounding each primary area of excavation (Site 1 and Site 2) as shown in Figure 9-1. Each instrument contains a dedicated gas chromatograph (GC) to measure VOCs and a respirable particulate meter to measure dust levels. The instruments will be networked to a central computer to be located in the field office trailer. The output of the real-time instruments will be monitored to allow proactive measures to be taken to control odors or emissions from the excavation areas.

9.2.3 Discrete Sample Air Monitoring Stations

During soil excavation and handling activities, ambient air sampling will be conducted at the perimeter of the FMGP site using discrete sample air monitoring stations. The purpose of utilizing these sampling stations in addition to the real-time monitoring instruments is to provide defensible confirmation data to support the real-time results.

Selection of the discrete sample air monitoring station locations will be based on the current wind direction, as indicated by a windsock at the site. At the beginning of each work day, during designated sampling events, one discrete sample air monitoring station will be placed at a location most downwind from the work area. A second discrete sample air monitoring station will be set up on the upwind side of the work area to determine background levels throughout the duration of each sampling event. The discrete sample air monitoring stations will be set up adjacent to the appropriate continuous real-time monitors to allow comparison of the results.

Both upwind and downwind discrete air samples will be analyzed for particulates, PAHs, and VOCs. Key parameters are identified in Table 9-1. Details pertaining to sample collection and analytical methods are presented in the SAP.

SECTION 10

TRAFFIC CONTROL

This section discusses the impacts the removal action will have on local vehicular and pedestrian traffic in the vicinity of the site.

10.1 TRANSPORTATION ROUTES

Oversize loads may occur during mobilization of the excavation and soil handling equipment. All necessary permits for transportation of these loads will be the responsibility of the excavation contractor. Oversize or overweight loads are not anticipated for the material being excavated and transported from the site. Therefore, no inspection, pre-approval, or designation of routes is required by the Iowa DOT.

Truck traffic will enter the Site 1 via 3rd Avenue North or 4th Avenue North. Traffic leaving Site 1 will loop through Site 2 via 4th Avenue North. Following final vehicle decontamination, traffic will proceed to 2nd Avenue South, then access South 2nd Street (U.S. Highway 67) using the existing traffic lights.

Traffic entering Site 2 will access the site via gates along the north and south ends of the property along 4th Avenue North and 2nd Avenue South, respectively. Truck traffic exiting Site 2 will access 2nd Street (U.S. Highway 67) only from 2nd Avenue South. Figure 10-1 indicates the above-mentioned routes for truck traffic during remediation activities.

The recommended route for material being transported from the site to the thermal treatment site is as follows:

1. Proceed south on S 2nd Street/U.S. Highway 67 to US Highway 30
2. Proceed west on U.S. Highway 30 to Cedar Rapids, Iowa.
3. Merge onto Interstate 380 northbound from U.S. Highway 30.
4. Continue to 1st Avenue W (exit number 19B).
5. Proceed south three blocks on L Street SW to Diagonal Drive SW.
6. Turn left on Diagonal Drive SW and proceed three blocks to 1st Street SW.
7. Turn right on 1st Street SW and proceed four blocks to C Street SW.
8. Turn left on C Street SW and proceed five blocks to 15th Avenue SW.
9. Turn left on 15th Avenue SW and proceed 2 blocks to A Street SW.
10. Turn right on A Street SW and proceed eight blocks directly to the landfill.

Truck traffic routes to and from the site are shown in Figure 10-2.

10.2 TRAFFIC CONTROLS

Due to the possibility of street or lane closures and increased truck traffic in the vicinity of the FMGP site, traffic control measures will be implemented with the cooperation of the and the

Iowa DOT. Barricades and signs alerting drivers of truck traffic will be erected south of 2nd Avenue South and north of 4th Avenue North, as warranted by site activities and in accordance with Iowa DOT guidelines. The signage will be inspected and maintained throughout the project. Vehicle parking or staging will not be allowed on North 2nd Street.

10.3 PEDESTRIAN TRAFFIC

Pedestrian traffic may need to be restricted during excavation and restoration activities on the western edge of Site 1, which is along the east side of North 2nd Street. If it becomes necessary to close the sidewalk along the east side of North 2nd Street, closure and signage will be conducted in accordance with requirements of the City and the Iowa DOT. Signage and fencing will prohibit site access to unauthorized personnel.

SECTION 11

SITE SAFETY AND SECURITY

This section describes measures to be taken to ensure the safety of all site workers and restrict access to the site by unauthorized personnel.

11.1 SITE SAFETY

11.1.1 Site-Specific SSP Addendum

A Site-Specific SSP Addendum has been prepared for this site and the proposed activities in compliance with 29 CFR §1910.120; a copy of the SSP Addendum is contained in Appendix C. The SSP Addendum contains emergency procedures and contacts, monitoring protocols for environmental and physical hazards, and PPE requirements and upgrade criteria. The SSP Addendum will apply to all MWH personnel within any site exclusion zone requiring EPA Level D PPE or upgraded levels. Contractors are required to provide their own site-specific safety plan. If they choose, contractors may adopt MWH's Site-Specific SSP Addendum for this project. The adoption is an independent action on the part of the contractor.

MWH personnel will be on site to act as the health and safety officer(s) for the site work. Work will generally begin in Level D PPE. A detailed discussion of PPE levels to be used at the site is included in the SSP Addendum. A decision to upgrade the level of protection will rest with MWH and be based on on-site observations and field screening.

A tailgate safety meeting will be conducted prior to the start of each day's activities. During the tailgate safety meeting, on-site workers will review the major components of the SSP Addendum as well as discuss the activities planned for that day. A copy of a blank Tailgate Safety Meeting Form is contained in the SSP Addendum.

Only persons with the required appropriate health and safety training and an active role in the remedial activities will be allowed in the exclusion zones.

11.1.2 Excavation Requirements

Excavation activities will be performed in accordance with the applicable requirements of 29 CFR §1926.650 for slope stability and worker safety. Reasonable precautions will also be taken to prevent particulate matter and dust from becoming airborne in quantities sufficient to become a nuisance.

11.1.3 Air Monitoring

Air monitoring will be performed at the breathing zone of workers in the excavation as well as at the perimeter of the site, as described in the Site-Specific SSP Addendum and Section 9. The air monitoring information will be used to determine when respiratory protection is needed or when

existing respiratory protection needs to be upgraded; and will also provide an indication as to whether the exclusion zone is sufficient to protect the general public.

All monitoring instruments will be calibrated according to the manufacturers' recommended procedures.

11.2 FENCING

Site security will be maintained by restricting site access to unauthorized personnel by the presence of the existing chain-link fencing. Additional temporary chain link fencing will be constructed on Site 1 for the excavation of gas holder No. 1. On Site 2, the condition of some portions of fencing has deteriorated to a point where replacement and/or repair is necessary. Hence, where necessary, fencing shall either be replaced or repaired such that the site shall be satisfactorily enclosed by a chain-link fence a minimum of 6 feet high. Existing and temporary site fencing will be maintained throughout the duration of the project to restrict unauthorized access to the site. Warning signs shall be used to advise the public that the area is restricted; the signs will read: "Danger - Unauthorized Personnel Keep Out." Such signage will be legible from a minimum distance of 25 feet and be posted at each entrance and approach to the site. Gates will be closed and locked at all times when the site is unattended.

Visual barriers will be affixed to the fencing along the north and west sides of the Site 1 and sections surrounding Site 2 to limit visibility of the site activities to traffic. Additional visual barriers may be installed at the discretion of the Field Supervisor or PM.

11.3 SITE ACCESS CONTROL

Access to Site 1 will be limited to vehicle and man gates pre-existing and installed in the fencing on North 2nd Street, 3rd Avenue North, and 4th Avenue North. Site 2 will be accessed through gates pre-existing and installed in the fencing on 2nd Avenue South, and 4th Avenue North. Persons entering the site will be required to sign in and sign out at the field office. All visitors will be directed to the field office trailer and are required to check in with the Field Supervisor. Each visitor will be required to review the SSP Addendum and sign a Personal Acknowledgement Form, which is included in the SSP Addendum. Access will be restricted to properly trained personnel. IPL employees will not be allowed in the exclusion zone, but will have free access to the IPL district office building and the warehouse on the northern portion of the site. Doors and windows adjacent to the areas of excavation will be inaccessible to IPL employees during the excavation activities. At times when the site is unattended, locked gates will restrict access to the exclusion zone.

11.4 EXCAVATION AND MATERIAL HANDLING EQUIPMENT

Excavation and material handling equipment will be parked within fenced areas when the site is unattended. Equipment may be stored outside the fenced areas only if it has been fully decontaminated and is no longer needed for site use.

11.5 EQUIPMENT AND SUPPLIES STORAGE

General construction equipment and supplies will also be stored within the fenced areas of the FMGP site. Small equipment and supplies will likely be stored inside one of the on-site office trailers or in a supply trailer furnished by the excavation contractor. The field office, decontamination trailers, and any supply trailers will be locked at all times when the site is unattended.

11.6 SECURITY LIGHTING

To increase illumination of the site, security lights may be installed to supplement the existing street lighting. The lights would be installed on existing or temporary poles. However, excavation activities will only be conducted during daylight hours.

11.7 SITE PATROL

The Clinton Police Department will be contacted to arrange surveillance of the site as part of routine patrols. A private security company may be contracted to provide additional on-site security during times when activities have been temporarily suspended due to weather or unforeseen delays.

SECTION 12

SITE RESTORATION

This section describes the requirements and activities that will be performed after the excavated material has been removed from the site and treatment activities are complete.

12.1. BACKFILL MATERIAL AND COMPACTION

Backfill material will consist of locally mined fill, pit-run grade sand, gravel, or clay based on the area of application and availability. Clean rubble removed during the excavation will also be used as backfill material. No steel, general trash, or debris will be allowed for use as backfill. In locations where a concrete or paved surface is not planned, the upper four to six inches will consist of topsoil or gravel. The topsoil shall be seeded for growing grass.

Backfill material will be placed in the excavation in lifts not to exceed 2 feet in thickness. Each lift will be compacted by tamping with the excavator bucket or repeated tracking with heavy equipment. A hand-pulled or small self-propelled vibrating compactor may also be used around the edges of the excavation and remnant foundations. Unless excavations extend beyond Site 1 and Site 2 boundaries, density tests of the compacted soil are not anticipated. The MWH Field Supervisor and IPL representatives will determine the degree of compaction acceptable on the site.

In areas where the original backfill material was removed from under a utility line, sand or flowable fill slurry will be pumped under the utility line to the approximate midline of the pipe to provide a solid foundation and uniform support for the line. Above the midline of the utility line, backfill will consist of clean fill sand or pit-run grade sand and gravel.

12.2 FINAL GRADE AND COVER MATERIAL

Prior to final grading and placement of cover material, areas impacted by excavation activities, such as haul routes and equipment operation and storage areas, will be sampled to ensure concentrations of the compounds of concern are not in excess of the action levels. Sampling and analysis will be conducted in the same manner as the stockpile staging confirmation sampling described in Section 8.2.1.3.

The final grade of the site will be restored to the same approximate elevations and contours that are currently present at the site. The final grade will be contoured to promote drainage and limit ponding of precipitation.

The final cover material will consist of clean topsoil and/or gravel. The areas to be graveled have not been determined and will be dependent upon the proposed future uses of the site. Areas covered with topsoil will be seeded with grass. Additional landscaping may be performed by IPL at their discretion.

12.3 REPLACEMENT OF MONITORING WELLS

Monitoring wells removed or abandoned during removal action activities will not be replaced until the final site grading has been completed. Only those wells designated for long-term groundwater monitoring will be replaced. Replacement wells will be located within approximately 5 feet of the original location. This will ensure that the new well will produce comparable results without a reduction in its yield as a result of the abandoned borehole.

12.4 REPLACEMENT OF STREETS, SIDEWALKS, AND STRUCTURES

Portions of streets, sidewalks, and adjoining structures that are removed as part of the remedial activities will be replaced. Plans and specifications prepared for replacement of the streets and adjoining structures will be submitted to the City Engineering Department for review and approval prior to construction.

12.5 DEMOBILIZATION

12.5.1 Equipment Demobilization

Excavation and material handling equipment will be decontaminated prior to being demobilized. Wash water and sediment will be recovered and disposed of, as previously discussed.

12.5.2 Decontamination Pad and Building

The decontamination pad at the site will be power-washed to remove residual sediment. Wash water will be collected, treated, and transported to the DCI treatment facility for disposal. Sediment will be collected and thermally treated. Curbing from the pads will be broken up and disposed of at a local sanitary or construction and demolition debris landfill. Residual soil and aggregate from any soil storage areas will be thermally treated.

After the decontamination activities have been completed, the decontamination building will be disassembled and removed from the site. Prior to disassembly, the water treatment system and storage tanks will be removed and any utility supplies (i.e., electricity and water) will be shut off. If needed, the walls of the building will be power washed to remove dust and splash residue from the vehicle and equipment decontamination activities.

12.5.3 Fencing

Once all of the removal action has been completed and any street or sidewalk repairs completed, temporary fencing will be removed and the post holes repaired. At that time, any closed sidewalks will be reopened for use by the general public.

12.5.4 Shoring and Bracing

If sheet piling or shoring is installed, it will be removed and decontaminated by power washing. Any bracing affixed for stabilization will be removed once the adjacent areas have been backfilled and compacted.

12.5.5 PPE Disposal

PPE generated from the removal activities, as well as that accumulated on site from the remedial investigations, will be disposed of as solid waste at the local sanitary landfill.

12.6 ENGINEERING CONTROLS

12.6.1 Site 1

Engineering controls for Site 1 will consist of additional pavement in the service center area between the existing concrete aprons on the north side of the district office building and the south side of the warehouse at the northern end of Site 1. Paving the service center area will require an extension of the City storm sewer line in 3rd Street North to provide proper drainage. The finished grade and pavement specifications will be determined by a civil engineer as deemed appropriate for the type of vehicular traffic and intended use of the area.

12.6.2 Site 2

Engineering controls for Site 2 will be dependent on the final proposed use of the site. The engineering controls will be incorporated in the overall design and be subject to EPA approval prior to implementation. Until the site is redeveloped, temporary engineering controls consisting of perimeter fencing will be maintained to control unauthorized access.

12.7 INSTITUTIONAL CONTROLS

Institutional controls for Site 1 and Site 2 will consist of measures to 1) limit site uses beyond the current and assumed future use scenarios, and 2) prevent, at a minimum, establishment of water supply wells, basements or other subgrade structures, residential developments, or school/daycare facilities without appropriate design, review, and regulatory agency approval. The institutional controls will also place restrictions and guidelines on excavations and other subsurface work in the impacted areas.

The mechanisms for imposing institutional controls would consist primarily of governmental and proprietary controls, and, to a lesser extent, informational devices and enforcement actions. This would ensure that institutional controls can be made to "run with the land."

Local governmental controls available to restrict activities on and around the site include additional zoning restrictions applied through a Special Overlay Zone. The Special Overlay Zone can be applied to a specified area within an existing zoning designation to place specific restrictions on land use and development within that area. A petition for a Special Overlay Zone will be submitted by IPL that is intended to restrict residential and school/daycare facility development on the site (both are currently allowed under the existing C-2: General Commercial zoning. The Special Overlay Zone petition will also include restrictions on subgrade structures within the designated area.

Proprietary controls, such as restrictive covenants and easements, are binding to subsequent purchasers, and can be used to ensure that access is available to inspect and monitor implementation of institutional controls and also to restrict property use. To provide a layering of institutional controls, a restrictive covenant will be placed on the site to limit the development of wells; subgrade structures; and aboveground residences, schools, or daycare facilities.

While deed notices have no legal force to limit land use or activities, a deed notice will be put in place to inform future owners about impacts and use restrictions currently imposed on the property. In order to require and ensure long-term compliance with institutional controls, an environmental protection easement or other similar type enforcement document will be established that will require EPA notification prior to a property transfer and development of a new consent order with a subsequent purchaser.

It is likely that construction or repair of underground utilities; excavations for footings, power poles, etc.; and other short-term intrusive work will be required periodically. Therefore, the institutional controls will include a Utility/Subgrade Construction Contingency Plan that will specify the requirements for worker health, safety, and training; handling and disposal of excavated material; and restoration of the site surface. Notification of the affected areas and copies of the Utility/Subgrade Construction Contingency Plan will be supplied to the local utility providers, along with information regarding who to contact prior to initiating construction or repair in the affected areas.

To maintain the effectiveness of institutional controls, annual inspections of the site will be performed and the results of the inspections submitted to IPL, the IDNR, and the EPA. If it becomes apparent that an institutional control may be relaxed and still provide protection of human health and environment, consideration will be given to revising the limitations and restrictions imposed on the site. Conversely, if a change in site conditions results in one or more of the institutional controls becoming ineffective for the intended purpose, consideration will be given to revising the restrictions and limitations, or implementing other more protective alternatives. In either event, a description of the change in site status or proposed site use, supporting data, applicable risk calculations, and recommended revisions to the institutional controls will be submitted, at a minimum, to the EPA and IDNR for review and concurrence. If the recommended changes are approved, steps will be undertaken to implement the revisions.

The proposed institutional controls will be submitted to the EPA for review and concurrence prior to being proposed to the City or legally applied to the site.

12.8 FINAL INSPECTIONS

After the site restoration activities have been completed, representatives of the EPA, IPL, and MWH will inspect the FMGP site to ensure that 1) structures and facilities have been replaced in accordance with the plans and specifications, and 2) previously existing structures have not been compromised. Any repair or replacement of streets, sidewalks, or adjoining structures owned by the City will also be inspected by City representatives. The appropriate contractor will address any deficiencies noted.

SECTION 13

DOCUMENTATION AND REPORTING

This section outlines documentation requirements for the removal action and summarizes the minimum contents of the Removal Action Report.

13.1 FIELD DOCUMENTATION AND RECORDS

13.1.1 Field Logbooks

Daily activities will be documented in a field logbook retained by MWH. The information to be entered in the logbook each day includes the arrival and departure times of personnel, descriptions of sampling activities, general area(s) of excavation, volume of soil excavated, volume of soil treated, volume of groundwater pumped, problems or difficulties that arise during the day and the solution(s) achieved, general weather conditions, and notes regarding any site visitors.

13.1.2 Field Screening and Laboratory Results

All field screening, air monitoring, and laboratory results will be maintained on site in a dedicated file for the duration of the project. Copies of the laboratory results will also be retained at the MWH office in Des Moines, Iowa.

13.1.3 Daily Activity Reports

A Daily Activity Report (DAR) will be completed at the end of each work day. Each report will summarize the day's activities, including the amount of material transported off site, fill transported to the site, and water discharged or transported off site; and note any difficulties encountered and their resolution(s). The reports will also identify the general weather conditions for each day and any site visitors. Copies of the DARs will be maintained in the Field Office with duplicate copies retained at the MWH office in Des Moines, Iowa. A copy of a blank DAR form is contained in Appendix G.

13.1.4 Excavation and Treatment Records

Copies of contractors' measurement documents and records will be obtained daily by the Field Supervisor and maintained in the field office. These records will include all weight tickets, tipping receipts, and supplemental backfill receipts.

13.1.5 Field Change Requests

Deviations from the activities proposed in this RAWP will be documented on a Field Change Request (FCR) form. This form requires a description of the originally intended task, the reason that task cannot be completed as planned, and the proposed solution. The FCR is to be

completed by the Field Supervisor and approved by the PM or, when appropriate the Health and Safety Coordinator (HSC) prior to implementation of the change. A copy of a blank FCR is also included in Appendix G.

13.1.6 Chain-of-Custody Documentation

A completed chain-of-custody form will accompany all samples sent off site for analysis. Sample information contained on the form includes sample identity, type of container, preservatives used, date collected, and the type of analysis required. The sample collector and the person relinquishing the sample will sign the chain-of-custody form. Additional information includes the date and time custody of the sample or samples was transferred. A copy of a blank chain-of-custody form is contained in Appendix G.

Original copies of the daily field logbook entries, DARs, FCRs, and sample chain-of-custody forms will be retained in the field office. Duplicate copies of these documents will be sent to the PM at least weekly.

13.2 PROGRESS REPORTS

Monthly progress reports will be prepared and submitted to the EPA by the tenth day of each month. Submittal of the progress reports will begin one month following the effective date of the Consent Order and will continue until termination of the Consent Order. At a minimum, the reports will include the following:

- A description of the activities completed during the reporting period.
- A description of planned activities that were not completed during the reporting period, the reason the activities were not completed, and an anticipated schedule of implementation.
- Copies of laboratory data received and validated during the reporting period and the results of the validation.
- Any proposed revisions to the project schedule.
- A description of the activities planned for the next reporting period.

13.3 REMOVAL ACTION REPORT

A Removal Action Report will be prepared and submitted to the EPA within 90 days of completion of the activities outlined in this RAWP. The Removal Action Report will conform to the requirements of Subpart B of the NCP (40 CFR §300.165) and, at a minimum, include the following items:

- A detailed description of all work performed.
- A list of the quantities and types of materials removed.

- The locations of impacted soil not accessible for excavation because of structural requirements, and their residual concentrations.
- Any areas excavated to bedrock.
- A list of the final treatment methods employed and the materials disposed by each method.
- A summary of all analytical results and data validation activities.
- A good faith estimate of the total costs involved in the removal action.
- Copies of all manifests and permits generated during the removal action.
- Certification of the completion of all activities provided for under the Consent Order.

13.4 PROJECT RECORDS

In accordance with the Consent Order, IPL and their contractors will retain all documents and records related to the removal action for at least six years following completion of the activities outlined in this RAWP.

SECTION 14

COMMUNITY RELATIONS

This section presents the general community relations protocol to be implemented prior to and throughout the removal action. In addition to interaction with the general public, this section also discusses communications with local law enforcement and emergency response agencies.

14.1 INFORMATION REPOSITORY

Copies of the investigative reports, risk assessment feasibility study, and the Administrative Record for the site are on file at the Clinton Public Library and are available to the general public. Additional documents, including and subsequent to this RAWP, will also be placed in the Clinton Public Library by the EPA. Additional copies of all major deliverable documents and the Administrative Record are also on file at the EPA Region VII offices in Kansas City, Kansas. The Administrative Record is updated and maintained by the EPA.

This RAWP and supporting documents, as needed, will also be retained in the field office for use during the removal action; however, in order to restrict public access to the area of the remedial activities, these copies will not be available to the general public. Interested parties will be provided with a fact sheet, as described later in this section, and directed to the documents at the library for further information.

14.2 LOCAL NOTIFICATION

Prior to the start of the removal activities, a public relations program will be initiated to provide a method of informing the general public and—in particular—residents and businesses immediately adjacent to the site of the proposed site activities, the anticipated duration, and potential impacts.

14.2.1 News Release

Approximately three weeks prior to preparation of site activities and pedestrian/vehicular traffic modifications, a news release will be published in the Clinton Herald newspaper. The news release will describe the general plans for site work, identify the location of the RAWP documents and Administrative Record, and identify contacts for additional information.

14.2.2 Fact Sheet

A fact sheet will be prepared and made available to the general public. The fact sheet will provide a summary of the site history, remedial investigations, and administrative action; description of the selected remedial alternative; names, addresses, and telephone numbers of the

IPL and EPA contacts; and the locations of the information repositories. The fact sheet will be available at the field office and the following locations in Clinton:

- Interstate Power and Light Company
201 North 2nd Street
Clinton, Iowa 52732
- Clinton City Hall
611 South 3rd Street
Clinton, Iowa 52732
- Clinton Public Library
306 8th Avenue South
Clinton, Iowa 52732

14.2.3 Door-to-Door Canvassing

Prior to implementation of the removal activities, IPL representatives will conduct a door-to-door canvass of the businesses in the immediate vicinity of the site to meet business owners and provide a summary of the activities that will take place. Each contact will be provided with a copy of the fact sheet and an opportunity for questions and concerns to be discussed individually.

In addition to the door-to-door business canvassing, a fact sheet will be sent to all permanent residences located within approximately 1/8 mile of the site. Distribution of the fact sheet and the door-to-door canvassing will be conducted within one week of the publication of the news release.

14.2.4 Law Enforcement and Emergency Response

Pre-implementation notifications will also include the Clinton Police and Fire Departments, Clinton County Sheriff's Department, Clinton County Local Emergency Planning Committee, and Mercy Medical Center - Clinton. Each of these groups will be notified so that in the event of an emergency or injury, the response teams will be aware of the site activities, chemicals of concern, and potential exposures. Copies of the fact sheet will be provided and individual discussions of the activities and site conditions will be conducted. Emergency contact information and the locations of chemical storage and utility shut off valves and switches will also be provided.

Each of these groups will again be notified when the removal activities have been completed.

14.2.5 Additional Notifications

The Mayor of Clinton, City Manager, Clinton County Health Department, and City Health Inspector will be contacted to inform them of the planned activities and prepare them for potential contacts from concerned individuals. They will be provided with a copy of the fact sheet and an opportunity to discuss the project prior to implementation.

14.3 DESIGNATED CONTACTS

Inquiries and concerns regarding the site or the removal action initially directed to the Field Supervisor, City officials, or contractors should be directed to the IPL contact listed below:

Mr. Dean Hargens
Environmental Engineer
Interstate Power and Light Company
200 First Street
P.O. Box 351
Cedar Rapids, IA 52406-0351
(319) 786-4658

Inquiries or information requests to the EPA can be directed to either of the contacts listed below:

Mr. Kevin Larson
On-Scene Coordinator
U.S. EPA Region 7
Superfund Division
901 N. 5th Street
Kansas City, KS 66101
(913) 551-7808
(800) 223-0425

Ms. Becky Himes
Community Involvement Coordinator
U.S. EPA Region 7
Office of External Programs
901 N. 5th Street
Kansas City, KS 66101
(913) 551-7003
(800) 223-0425

SECTION 15

SCHEDULE OF IMPLEMENTATION

This section discusses the proposed schedule for implementation of the activities outlined in this RAWP.

15.1 REMOVAL ACTION

Upon IPL's receipt of EPA's comments on this RAWP, necessary revisions will be prepared and submitted to the EPA. Preparations for the removal action will be ongoing prior to the EPA's final approval of the RAWP. Excavation and sampling of on-site soils is expected to begin in late fall or early winter 2004. The preliminary schedule for implementation of the activities described in this RAWP is presented in Table 15-1. The preliminary schedule does not allow for significant weather-related delays or other unforeseen occurrences.

15.2 PROGRESS REPORTS

Progress reports will be submitted to the EPA on a monthly basis until the termination of the Consent Order, unless otherwise directed by the EPA. The monthly progress reports will be submitted to the EPA on or before the tenth day of each month. The required content of the monthly progress reports is outlined in Section 13.2 of this RAWP.

15.3 REMOVAL ACTION REPORT

Within 90 days after the conclusion of the removal activities described in this RAWP, a Removal Action Report will be submitted to the EPA for review and approval.

TABLE 1-1
SOIL ACTION LEVELS

Compound	Surface Soil (0-2 feet bgs) (mg/kg)	2 Feet bgs to Water Table (mg/kg)
Benzo(a)anthracene	28	310
Benzo(a)pyrene	2.8	31
Benzo(b)fluoranthene	28	310
Benzo(k)fluoranthene	280	3,100
Chrysene	2,800	31,000
Dibenz(ah)anthracene	2.8	31
Indeno(1,2,3-cd)pyrene	28	310
PCBs (total)	25	25
Lead	800	1,200

Notes:

bgs = below ground surface

mg/kg = milligrams per kilogram.

PCB = polychlorinated biphenyl

TABLE 2-1

POTENTIAL CHEMICAL-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Standard, Requirement, Criteria, or Limitation	Citation	Description	Comment
FEDERAL			
<u>Safe Drinking Water Act</u>	40 USC Section 300	N/A	N/A
National Primary Drinking Water Standards	40 CFR Part 141	Establishes maximum contaminant levels (MCLs), which are health-based standards for public water systems.	The MCLs for organic and inorganic contaminants are relevant and appropriate to the groundwater contaminants.
National Secondary Drinking Water Standards	40 CFR Part 143	Establishes secondary maximum contaminant levels (SMCLs), which are non-enforceable guidelines for public water systems to ensure the aesthetic quality of the water.	SMCLs may be relevant and appropriate if treated groundwater is used as a source of water.
Maximum Contaminant Level Goals (MCLGs)	PL No. 99-339 100 Statute 642 (1986)	Establishes drinking water quality goals set at levels of no known or anticipated adverse health effects with an adequate margin of safety.	MCLGs for organic and inorganic contaminants may be relevant and appropriate if a more stringent standard is required to protect human health or the environment.
<u>Clean Water Act</u>	33 USC Section 1251-1376	N/A	N/A
Ambient Water Quality Criteria	40 CFR Part 131	Requires the states to set ambient water quality criteria (AWQC) for water quality based on use classifications and the criteria developed under Section 304(a) of the Clean Water Act.	AWQC for some of the organic and inorganic contaminants in the groundwater at the site have been developed. AWQC may be relevant and appropriate if contaminated or treated groundwater is discharged to surface water during a remedial action.

TABLE 2-1 (CONTINUED)

POTENTIAL CHEMICAL-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Standard, Requirement, Criteria, or Limitation	Citation	Description	Comment
FEDERAL (CONTINUED)			
National Pollutant Discharge Elimination System Permit Regulations	40 CFR Parts 122 and 125	Requires permits for the discharge of pollutants from any point source into waters of the United States (U.S.).	A permit is not required for on-site Comprehensive Environmental Response, Compensation Liability Act response actions, but a permit would be required if the discharge is to the Mississippi River or surface water located off site.
National Pretreatment Standards	40 CFR Part 403 and 414	Sets standards to control pollutants that pass through or interfere with treatment processes in publicly owned treatment works or that may contaminate sewage sludge.	If an alternative involves discharge to publicly owned treatment works, these standards would be applicable.
<u>Clean Air Act</u>	42 USC Sections 7401 through 7642	N/A	N/A
National Primary and Secondary Ambient Air Quality Standards	40 CFR Part 50	Establishes standards for ambient air quality to protect public health and welfare.	This is applicable if contaminants are discharged to the air during groundwater treatment process.
STATE			
Iowa Air Pollution Control Regulations	IAC 567 Chapter 28	Ambient Air Quality Standards (Adopts 40 CFR Part 40).	See National Primary and Secondary Ambient Air Quality Standards.
Iowa Air Pollution Control Regulations (Continued)	IAC 567 Chapter 30	This chapter governs emissions from an on-site treatment process. Development of a permit will be on a case-by-case basis under the general authority of the IDNR to protect human health and the environment.	Applicable to on-site emission sources.

TABLE 2-1 (CONTINUED)

POTENTIAL CHEMICAL-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Standard, Requirement, Criteria, or Limitation	Citation	Description	Comment
STATE (CONTINUED)			
Iowa Water Pollution Control Regulation	IAC 567 Chapters 60 through 64	Chapter 60 provides general definitions applicable in this title and rules of practice. Chapter 61 contains the water quality standards of the State including classification of surface waters. Chapter 62 contains the standards relevant to the discharge of pollutants to the waters of the state. Chapter 634 identifies monitoring, analytical and reporting requirements pertaining to specific permits for the operation of water disposal systems.	Applicable if the alternative would discharge into the Mississippi River.
Iowa Responsible Parties Cleanup Regulations	IAC 567 Chapter 133	These rules establish the procedures and criteria the IDNR will use to determine the parties responsible and cleanup actions necessary to meet the goals of the State pertaining to the protection of groundwater. These rules pertain to the cleanup of groundwater, soils and surface waters where groundwater may be impacted.	Applicable to soil or groundwater contaminated above State of Iowa Action Levels.

Notes:

- CFR = Code of Federal Regulations
- IAC = Iowa Administrative Code
- IDNR = Iowa Department of Natural Resources
- N/A = Not applicable
- USC = United States Code

TABLE 2-2

POTENTIAL LOCATION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Standard, Requirement, Criteria, or Limitation	Citation	Description	Comment
FEDERAL			
<u>Clean Water Act</u>	33 USC Section 300	N/A	N/A
Corps of Engineers Permit	40 CFR Part 230 33 USC Section 404	Establishes a permit program administered by the United States Army Corps of Engineers to regulate the nonpoint source discharges of dredged or fill material into waters of the United States.	Affects location and construction of remedial alternatives within the floodplain of the Mississippi River.
State Certification	33 USC Section 401	Section 401 states water quality certification is mandatory for all projects, requiring Federal Section 404 permit. Section 401 certification is State's concurrence that a project is consistent with state's water quality standards. Also establishes criteria for wetlands.	Affects location and construction of remedial alternatives within the floodplain of the Mississippi River.
Resource Conservation and Recovery Act	40 CFR §270.14(b)(11) (iii) and (iv)	Establishes building criteria for TSDFs located in a floodplain.	Potentially affects location and construction of remedial alternatives within the floodplain of the Mississippi River.

TABLE 2-2 (CONTINUED)

POTENTIAL LOCATION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Standard, Requirement, Criteria, or Limitation	Citation	Description	Comment
STATE			
Floodplain Development	Iowa Code Chapter 455B, 567—Chapters 70-76	The State has authority to regulate construction on all floodplains and floodways in the State. Chapters 70-76 explain how and when a permit must be obtained for various types of development.	Potentially affects location and construction of remedial alternatives within the floodplain of the Mississippi River.
Protected Water Sources	IAC 567 Chapter 53	The State has authorization to designate protected groundwater sources to prevent or minimize the movement of groundwater contaminants.	Applicable to groundwater contaminated above State of Iowa Action Levels.

Notes:

- CFR = Code of Federal Regulations
- IAC = Iowa Administrative Code
- TSDf = Treatment, storage, and disposal facility
- USC = United States Code

TABLE 2-3

POTENTIAL ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Standard, Requirement, Criteria, or Limitation	Citation	Description	Comment
FEDERAL			
<u>Solid Waste Disposal Act</u>	42 USC Sections 6901 through 6987	N/A	N/A
Hazardous Waste Management Systems General	40 CFR Part 260	Establishes procedures and criteria for modification or revocation of any provision in 40 CFR Parts 260 through 265.	May be applicable if a substance at the site was to be excluded from the list of hazardous wastes.
Identification and Listing of Hazardous Wastes	40 CFR Part 261	Defines those solid wastes which are subject to regulation as hazardous wastes under 40 CFR Parts 263 through 265 and Parts 124, 270, and 271.	Identifies those wastes considered to be hazardous wastes at the site. Any wastes considered hazardous are required to be handled as such.
Standards Applicable to Transporters of Hazardous Waste	40 CFR Part 263	Establishes standards which apply to persons transporting hazardous waste within the United States if the transportation requires a manifest under 40 CFR Part 262.	If an alternative would involve off-site transportation of hazardous wastes, these standards would be applicable.
Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities	40 CFR Part 264	Establishes minimum national standards that define the acceptable management of hazardous waste for owners and operators of TSDFs for hazardous waste.	Subparts B through X may be applicable or relevant and appropriate to on-site and off-site remedial actions.
Hazardous Waste Permit Program	40 CFR Part 270	Establishes provisions covering basic EPA permitting requirements.	A permit is not required for on-site CERCLA response actions; however, a permit is required for off-site actions. Substantive requirements are addressed in 40 CFR Part 264. Under 40 CFR Section 300.38, requirements of the Solid Waste Disposal Act apply to all response activities under the NCP.

TABLE 2-3 (CONTINUED)

POTENTIAL ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Standard, Requirement, Criteria or Limitation	Citation	Description	Comment
FEDERAL (CONTINUED)			
Occupational Safety and Health Act	20 USC Sections 651 through 678	Regulates worker health and safety.	Applicable for personnel involved in implementation of removal action.
<u>Clear Air Act</u>	42 USC Section 7401 through 7642	N/A	N/A
National Ambient Air Quality Standards	40 CFR Part 50	Treatment technology standards for emissions to air: <ul style="list-style-type: none"> • incinerators • surface impoundments • waste piles • landfills • fugitive emissions 	If an alternative would involve emissions governed by these standards, then the requirements are applicable.
STATE			
<u>Iowa Environmental Quality Act</u>	Iowa Code Chapter 455B	Defines the jurisdiction of the IDNR, powers and duties of the commission and the director, and civil or criminal proceedings to be undertaken by the State Attorney General.	N/A
Iowa Solid Waste Disposal Regulations	IAC 567 Chapters 100, 101, 102, 103, 110	Establishes standards for sanitary disposal projects by regulating the dumping of solid waste through a system of general rules and specific permits. Deals with excavation of closed landfills or dumps and operation, cover, and monitoring of landfills.	Required when processing and/or disposal is planned at currently unpermitted sites.

TABLE 2-3 (CONTINUED)

POTENTIAL ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Standard, Requirement, Criteria, or Limitation	Citation	Description	Comment
STATE (CONTINUED)			
Iowa Air Pollution Control Regulation	IAC 567 Chapter 23	Governs the release of fugitive dust in quantities creating a nuisance during site activities and emissions from a treatment system.	Requires reasonable precautions be taken to prevent nuisance levels of particulate matter.
	IAC 567 Chapter 24	Applies to emissions from a permitted emission point. Could be applied to excess emissions of fugitive dust.	Requires reasonable precautions be taken to prevent nuisance levels of particulate matter.
	IAC 567 Chapter 25	State could require measurement of emissions from an air stripper.	Applicable for operation of air stripping treatment system.
	IAC 567 Chapter 28	Ambient Air Quality Standards (Adopts 40 CFR Part 50).	N/A
Iowa Water Pollution Control Regulations	IAC 567 Chapter 37	Registration of water well contractors.	Applicable for potential well drilling activities (see Chapter 82).
	IAC 567 Chapter 38	Private water well construction permits.	N/A
	IAC 567 Chapter 39	Well abandonment requirements.	Applicable if wells are abandoned.
	IAC 567 Chapter 40	Provides water supply definitions. Defines MCLs, to which IAC 567 Chapter 133 refers.	N/A
	IAC 567 Chapter 49	These rules refer to nonpublic water wells and contain well construction standards, materials standards, and abandonment guidelines.	N/A

TABLE 2-3 (CONTINUED)

POTENTIAL ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Standard, Requirement, Criteria, or Limitation	Citation	Description	Comment
LOCAL			
Well Contractor Certification	IAC 567 Chapter 82	Establishes certification and requirements for well contractors	Extraction and monitoring well construction must be completed by a certified well driller.
Water Withdrawals	IAC 567 Chapters 50 through 54	These rules address water withdrawal permits. Permits are required for withdrawals greater than 25,000 gallons per day.	Applicable for alternatives involving extraction rates greater than 25,000 gallons of water per day.
Iowa Responsible Parties Cleanup Regulations	IAC 567 Chapter 133	These rules establish the procedures and criteria the IDNR will use to determine the parties responsible and cleanup actions necessary to meet the goals of the State pertaining to the protection of groundwater. These rules pertain to the cleanup of groundwater itself and soils and surface water where groundwater may be impacted.	Applicable to groundwater contaminated in excess of State of Iowa Action Levels.

Notes:

- CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
- CFR = Code of Federal Regulations
- EPA = United States Environmental Protection Agency
- IAC = Iowa Administrative Code
- IDNR = Iowa Department of Natural Resources
- N/A = Not applicable
- TSDF = Treatment, storage, and disposal facility
- USC = United States Code

TABLE 9-1
FMGP AIR MONITORING PLAN
KEY PARAMETERS TO BE MONITORED

PAHs	VOCs ^a	Particulates	Other Parameters
<u>Carcinogenic PAHs</u> Benzo(a)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Dibenzo(a,h)anthracene Ideno(1,2,3-cd)pyrene Chrysene	Benzene Ethylbenzene Toluene Xylenes, total	PM ₁₀	Lead
<u>Noncarcinogenic PAHs</u> Acenaphthene Acenaphthylene Anthracene Benzo(g,h,i)perylene Fluoranthene Fluorene Naphthalene Phenanthrene Pyrene			

Notes:

- ^a = The volatile organics analysis will detect the full spectrum of volatile compounds. All results will be reported.
- FMGP = Former manufactured gas plant.
- PAHs = Polynuclear aromatic hydrocarbons.
- PM₁₀ = Particulate matter less than 10 microns in diameter
- VOCs = Volatile organic compounds.

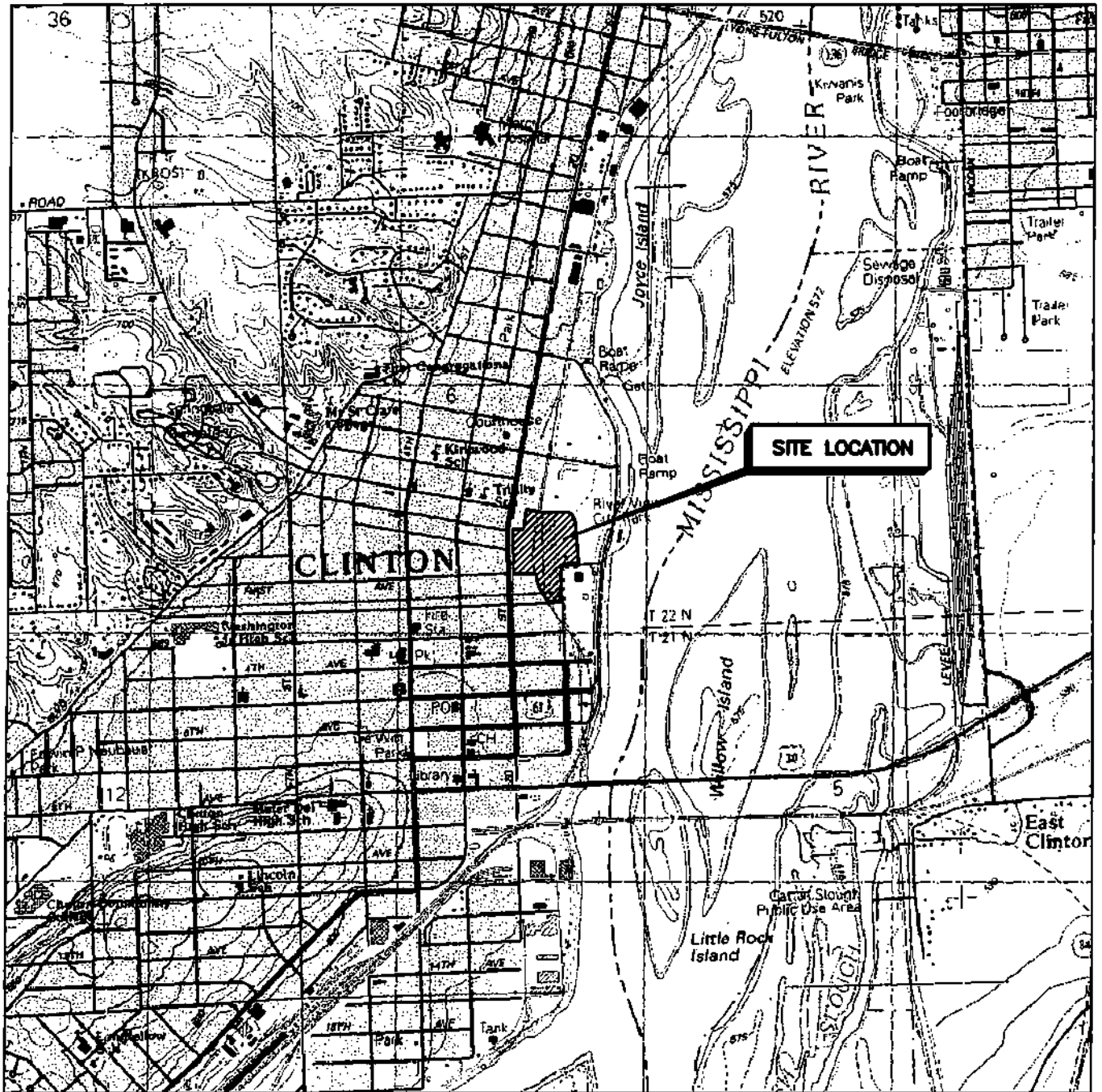
TABLE 15-1

CHRONOLOGICAL SCHEDULE OF EVENTS FOR THE REMOVAL ACTION

Stage	Activity
Prior to Soil Removal Activities	<ul style="list-style-type: none"> • Publish a news release in newspaper. • Prepare and make available the site fact sheets. • Conduct door-to-door canvassing. • Update law enforcement/emergency response personnel. • Conduct utility locate joint meet. • Remove on-site storage building. • Install security fencing and signage. • Mobilize excavation and water treatment equipment to the site. • Mobilize field office and decontamination trailers to the site. • Construct decontamination pad on Site 2. • Conduct PCB assessment. • Conduct pre-excavation air sampling. • Excavate PCB-impacted soils. • Remove and stockpile lead-impacted soils from Site 2 where lead impacts coincide with FMGP impacts. • Abandon on-site wells.
Soil Removal Activities	<ul style="list-style-type: none"> • Begin excavation and treatment of soil on Site 1. • Begin discharge of wastewater. • Begin backfill activities on Site 1. • Mobilize excavation equipment to Site 2. • Begin excavation and treatment of soil on Site 2. • Complete backfill activities on Site 1. • Begin backfill activities as excavation areas progress on Site 2. • Complete backfill activities on Site 2.
Following Soil Removal Activities	<ul style="list-style-type: none"> • Begin demobilization of water treatment and excavation equipment. • Demobilize field office and decontamination trailers. • Install and develop replacement wells • Update law enforcement/emergency response personnel regarding status of site work. • Conduct post-excavation groundwater monitoring (round 1, within one month of excavation of contaminated material). • Submit Removal Action Report to the IDNR (45 days following completion of site activities).

Note:

- IDNR = Iowa Department of Natural Resources
- PCB = polychlorinated byphenyl

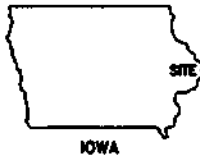
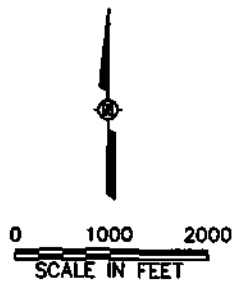


SITE LOCATION

CLINTON

MAP SOURCE:
 USGS TOPOGRAPHIC QUADRANGLE
 CLINTON, IOWA-ILLINOIS
 (1953, PHOTOREVISED 1976)

SITE LOCATION:
 SECTION 6 T81N R7E
 CLINTON COUNTY, IOWA



10/08/04

PC/CAO/AL/AMT/CO
 EPA/EGCA/SLM



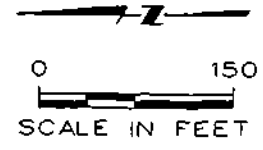
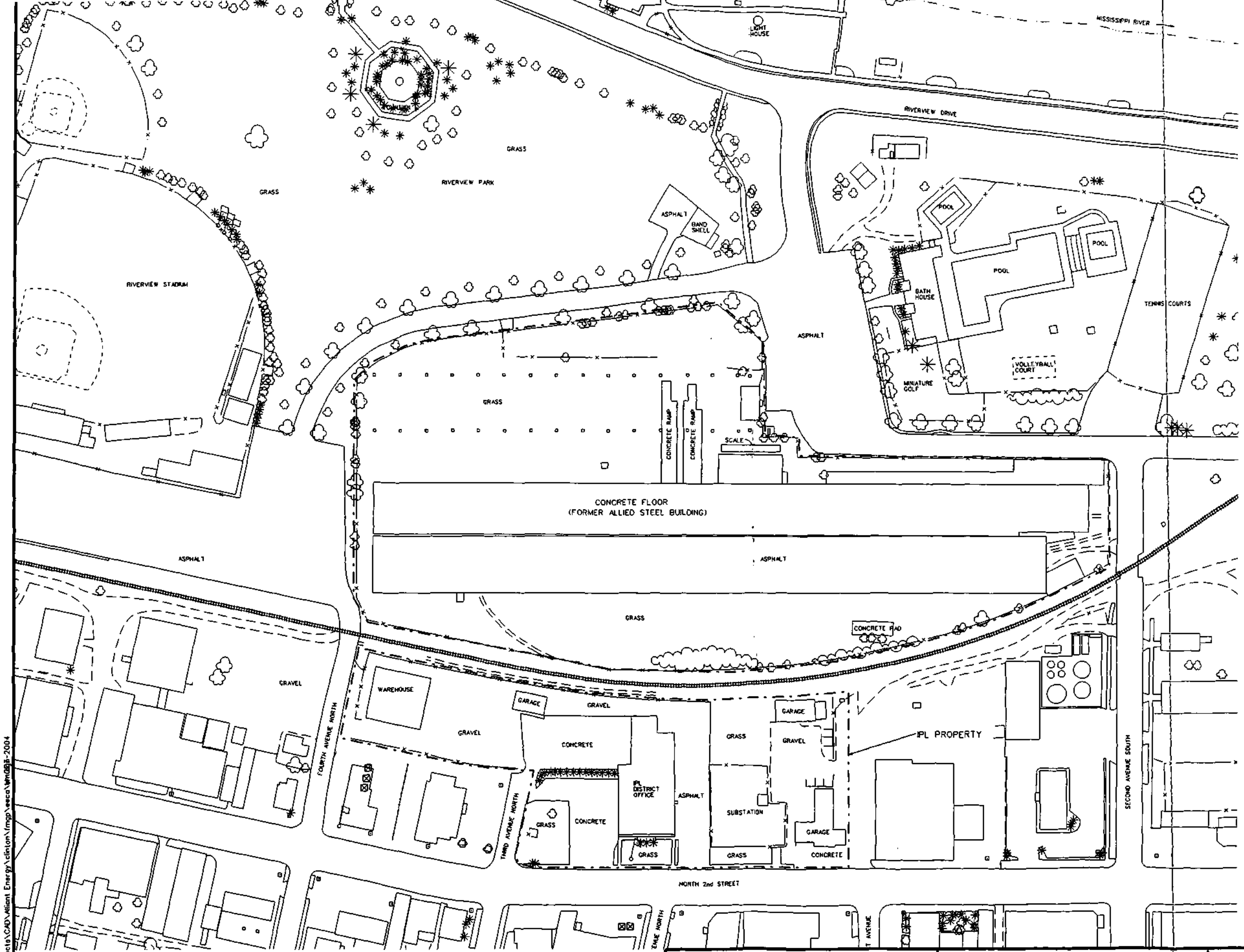
DES MOINES
 IOWA

INTERSTATE POWER AND
 LIGHT COMPANY
 CLINTON FMGP SITE
 CLINTON, IOWA

SITE LOCATION MAP

FIGURE

1-1



- LEGEND:
- - - FENCE LINE
 - - - PROPERTY LINE
 - * SHRUBS AND TREES
 - EXISTING FEATURES

\\usw01p01\project\19\CAD\Clinton\fmgp\seca\mtdg05-2004

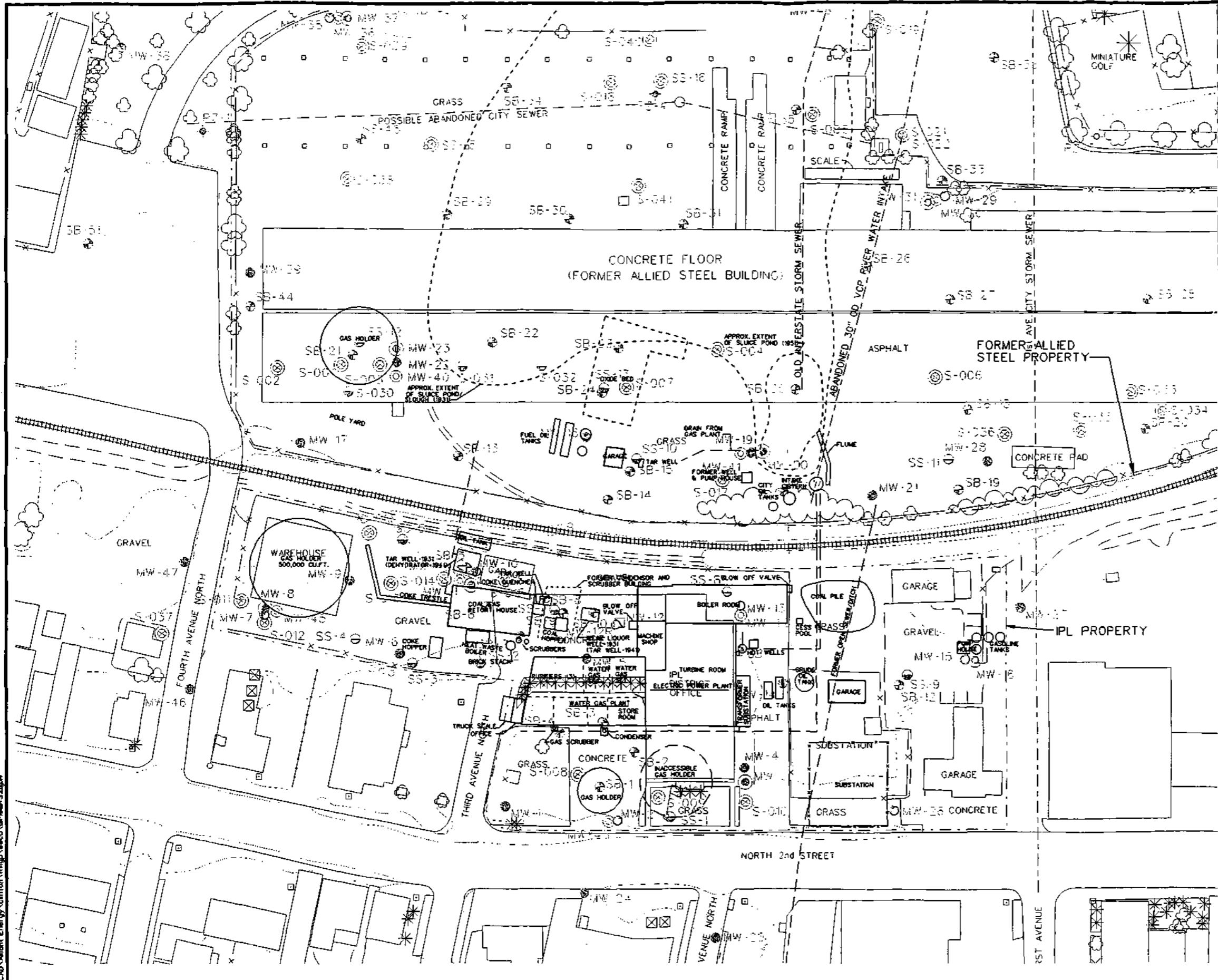


Des Moines
Iowa

INTERSTATE POWER
AND LIGHT COMPANY
CLINTON FMGP SITE
CLINTON, IOWA

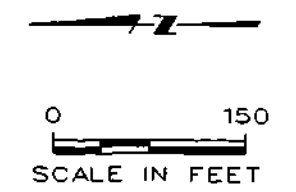
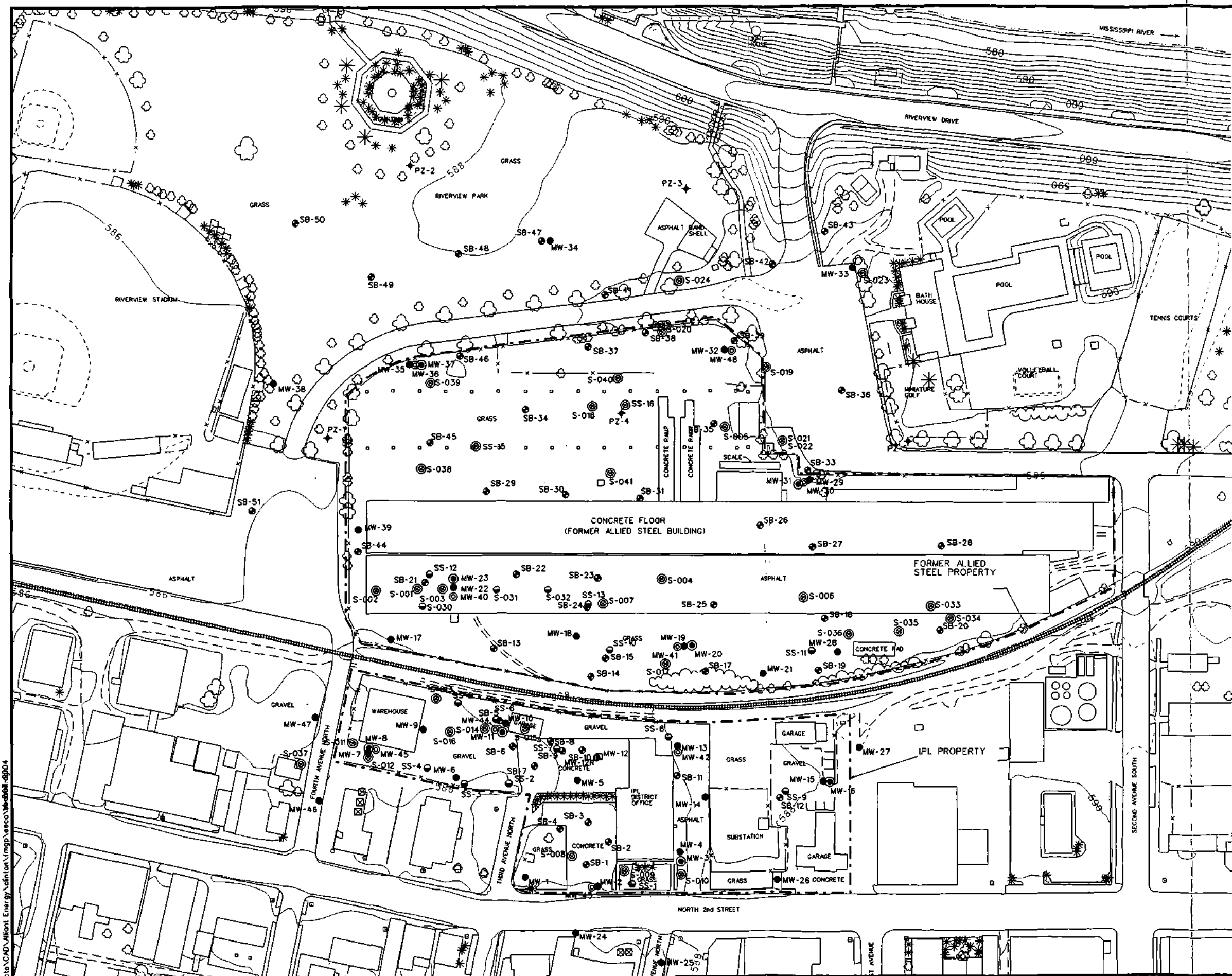
SITE LAYOUT MAP

FIGURE
1-2



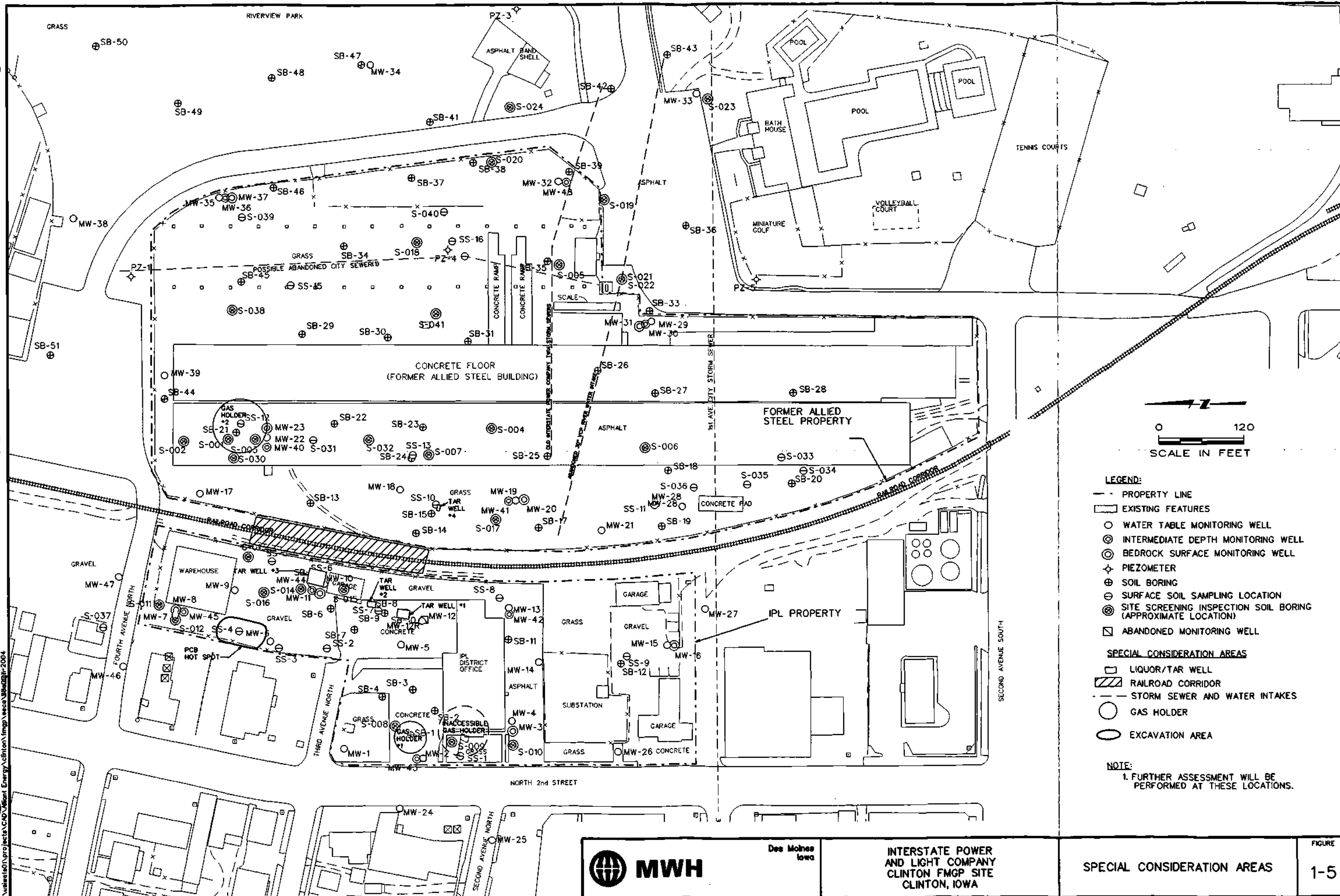
- LEGEND:**
- EXISTING FEATURES
 - ▭ HISTORIC FEATURES
 - WATER TABLE MONITORING WELL
 - ⊙ INTERMEDIATE DEPTH MONITORING WELL
 - ⊕ BEDROCK SURFACE MONITORING WELL
 - ⊖ PIEZOMETER
 - ⊙ SOIL BORING
 - ⊕ SITE SCREENING INSPECTION SOIL BORING
 - ⊙ SURFACE SOIL SAMPLING LOCATION

\\univob01\proj\jeckie\CAD\Alliant_Energy\clinton\imgp\seco\BF16025.2004



- LEGEND:**
- WATER TABLE MONITORING WELL
 - ⊙ INTERMEDIATE MONITORING WELL
 - ⊕ BEDROCK SURFACE MONITORING WELL
 - ◆ PIEZOMETER
 - ⊙ SOIL BORING
 - ⊕ SITE SCREENING INSPECTION SOIL BORING
 - ⊙ SURFACE SOIL SAMPLING LOCATION
 - ⊠ ABANDONED WELL
- FENCE LINE
- - - PROPERTY LINE
- ▭ EXISTING FEATURES

\\labwin\bdn\projects\CDP\alliant_Energy\Clinton\imgp\escco\mehedell_0824



LEGEND:

- - - PROPERTY LINE
 - ▭ EXISTING FEATURES
 - WATER TABLE MONITORING WELL
 - ⊙ INTERMEDIATE DEPTH MONITORING WELL
 - ⊕ BEDROCK SURFACE MONITORING WELL
 - ⊕ PIEZOMETER
 - ⊕ SOIL BORING
 - ⊕ SURFACE SOIL SAMPLING LOCATION
 - ⊕ SITE SCREENING INSPECTION SOIL BORING (APPROXIMATE LOCATION)
 - ⊕ ABANDONED MONITORING WELL
- SPECIAL CONSIDERATION AREAS**
- ▭ LIQUOR/TAR WELL
 - ▨ RAILROAD CORRIDOR
 - - - STORM SEWER AND WATER INTAKES
 - GAS HOLDER
 - EXCAVATION AREA

NOTE:
1. FURTHER ASSESSMENT WILL BE PERFORMED AT THESE LOCATIONS.

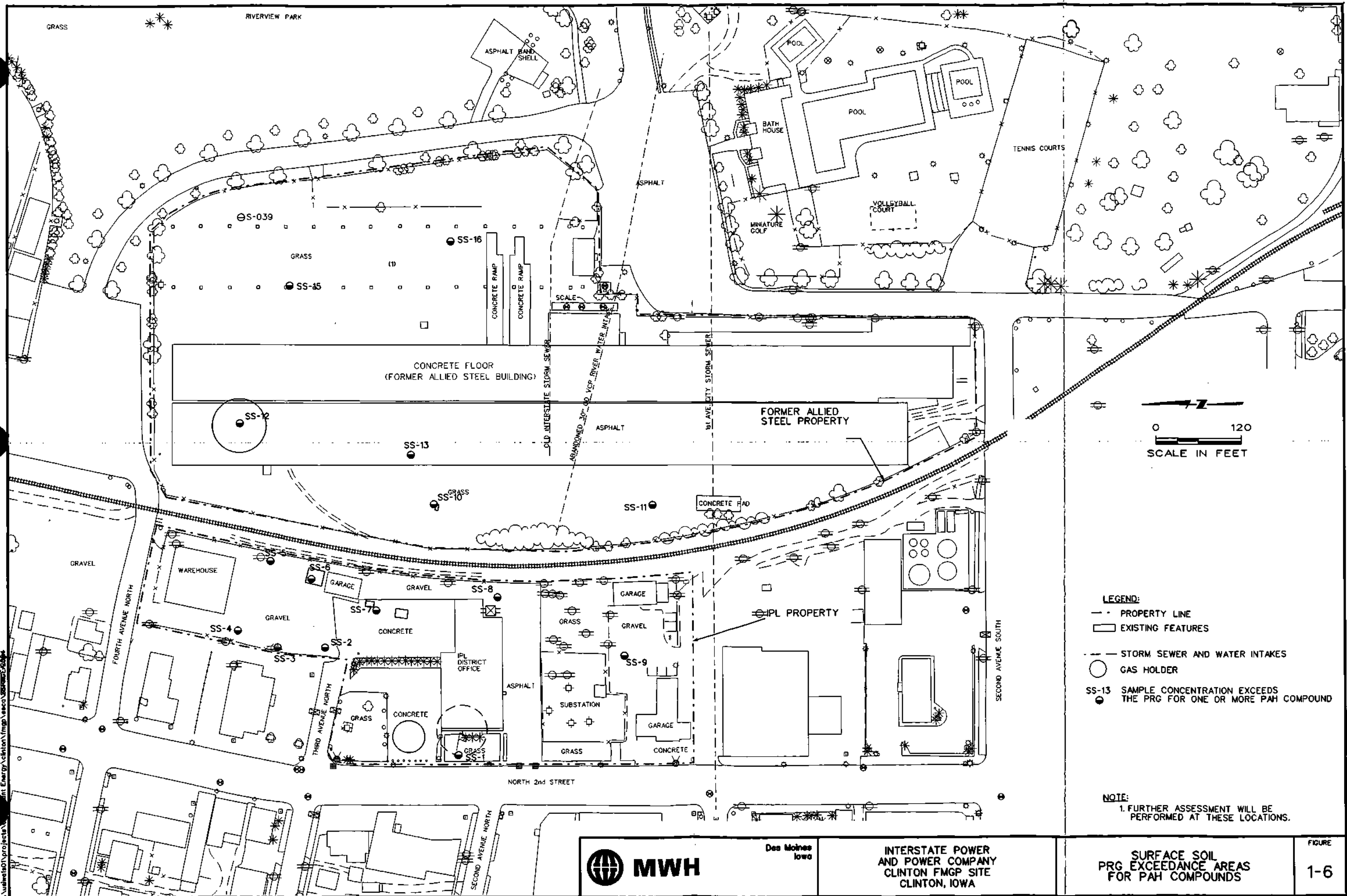


Des Moines Iowa

INTERSTATE POWER AND LIGHT COMPANY
CLINTON FMGP SITE
CLINTON, IOWA

SPECIAL CONSIDERATION AREAS

FIGURE
1-5



LEGEND:

- - - PROPERTY LINE
- ▭ EXISTING FEATURES
- - - STORM SEWER AND WATER INTAKES
- GAS HOLDER
- SS-13 SAMPLE CONCENTRATION EXCEEDS THE PRG FOR ONE OR MORE PAH COMPOUND

NOTE:
1. FURTHER ASSESSMENT WILL BE PERFORMED AT THESE LOCATIONS.

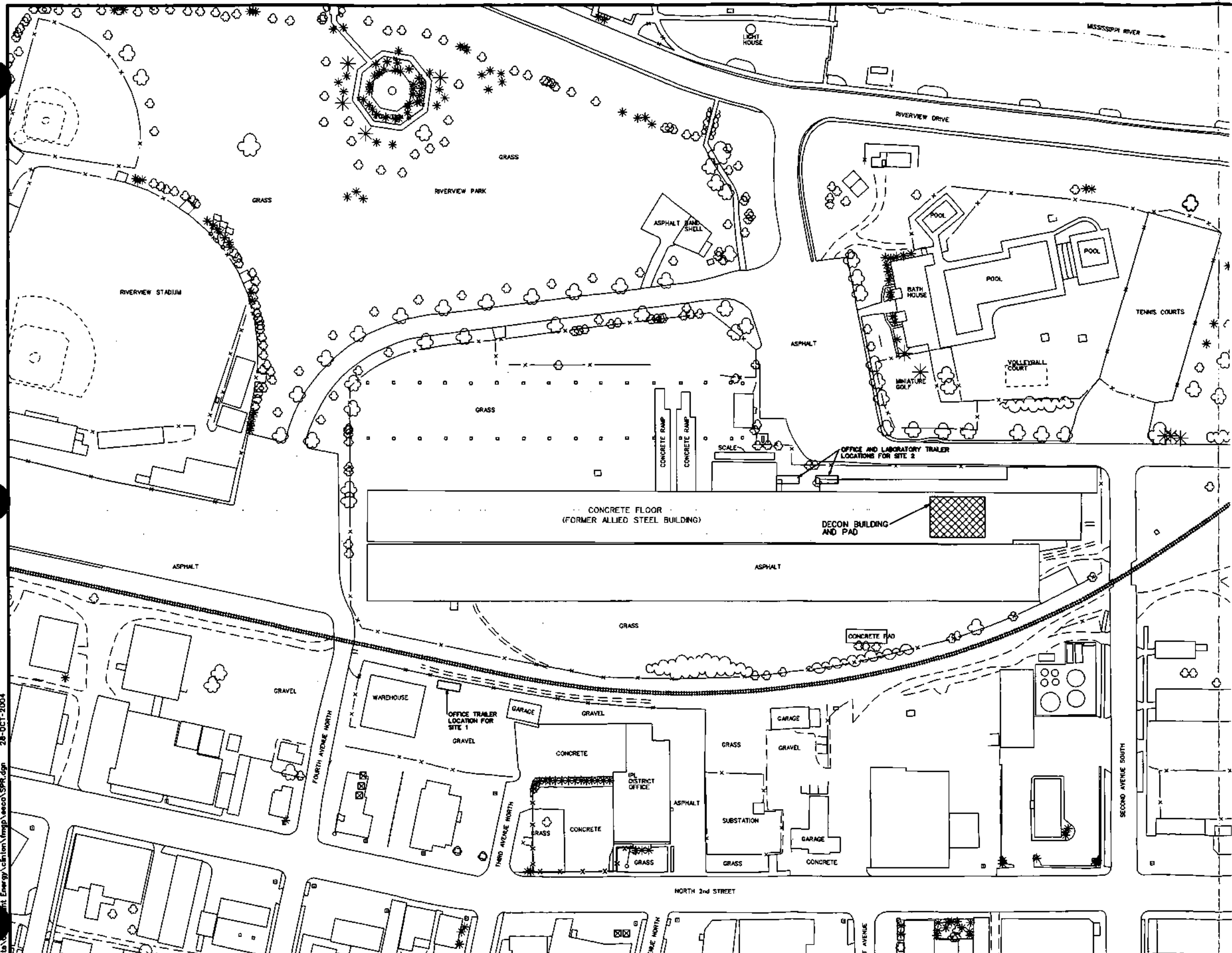


Des Moines Iowa

INTERSTATE POWER AND POWER COMPANY
CLINTON FMGP SITE
CLINTON, IOWA

SURFACE SOIL
PRG EXCEEDANCE AREAS
FOR PAH COMPOUNDS

FIGURE
1-6



- LEGEND:**
- x--- FENCE LINE
 - * SHRUBS AND TREES
 - EXISTING FEATURES

\\ms01\projects\Clinton\mmp\mmp\mmp\SPR.dgn 28-OCT-2004

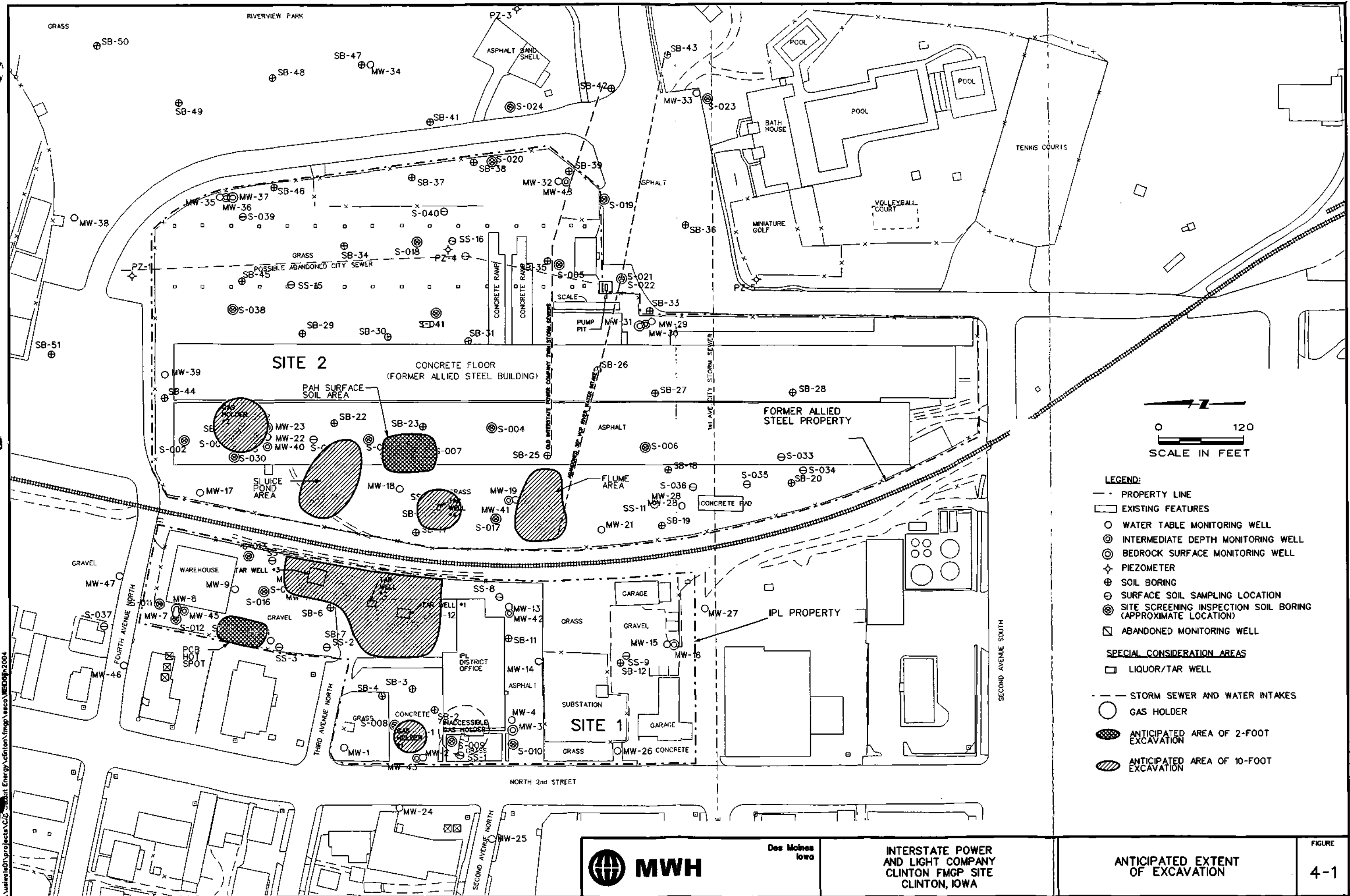


Des Moines
Iowa

INTERSTATE POWER
AND LIGHT COMPANY
CLINTON FMGP SITE
CLINTON, IOWA

SITE PREPARATIONS

FIGURE
3-1



- LEGEND:**
- - - PROPERTY LINE
 - ▭ EXISTING FEATURES
 - WATER TABLE MONITORING WELL
 - ⊙ INTERMEDIATE DEPTH MONITORING WELL
 - ⊕ BEDROCK SURFACE MONITORING WELL
 - ⊕ PIEZOMETER
 - ⊕ SOIL BORING
 - ⊕ SURFACE SOIL SAMPLING LOCATION
 - ⊕ SITE SCREENING INSPECTION SOIL BORING (APPROXIMATE LOCATION)
 - ⊕ ABANDONED MONITORING WELL
- SPECIAL CONSIDERATION AREAS**
- ▭ LIQUOR/TAR WELL
 - - - STORM SEWER AND WATER INTAKES
 - GAS HOLDER
 - ▨ ANTICIPATED AREA OF 2-FOOT EXCAVATION
 - ▨ ANTICIPATED AREA OF 10-FOOT EXCAVATION



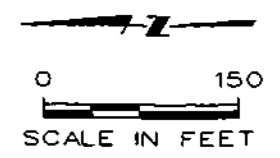
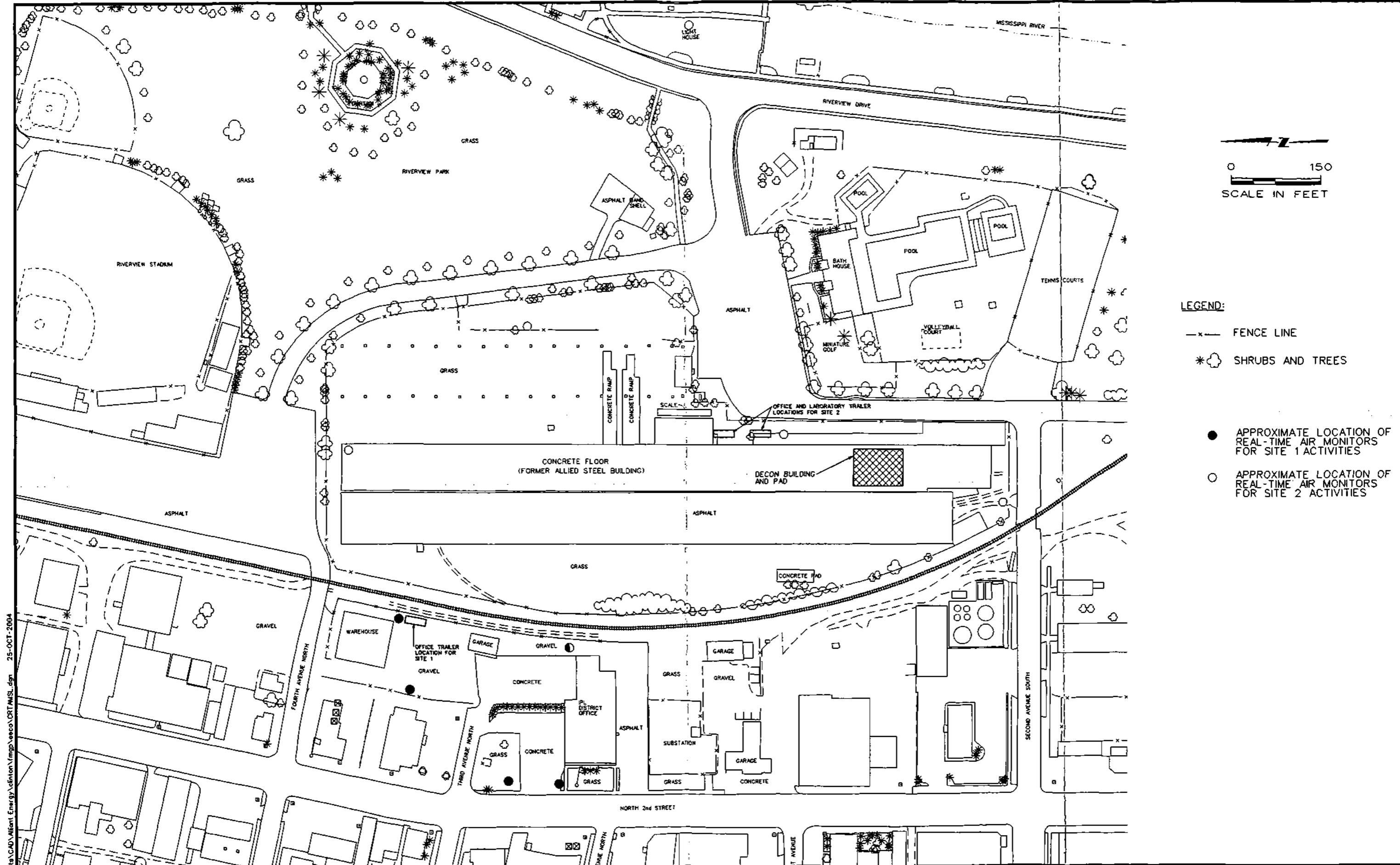
Des Moines Iowa

INTERSTATE POWER AND LIGHT COMPANY
CLINTON FMGP SITE
CLINTON, IOWA

ANTICIPATED EXTENT OF EXCAVATION

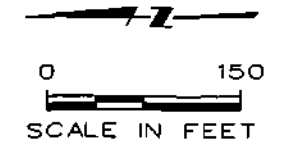
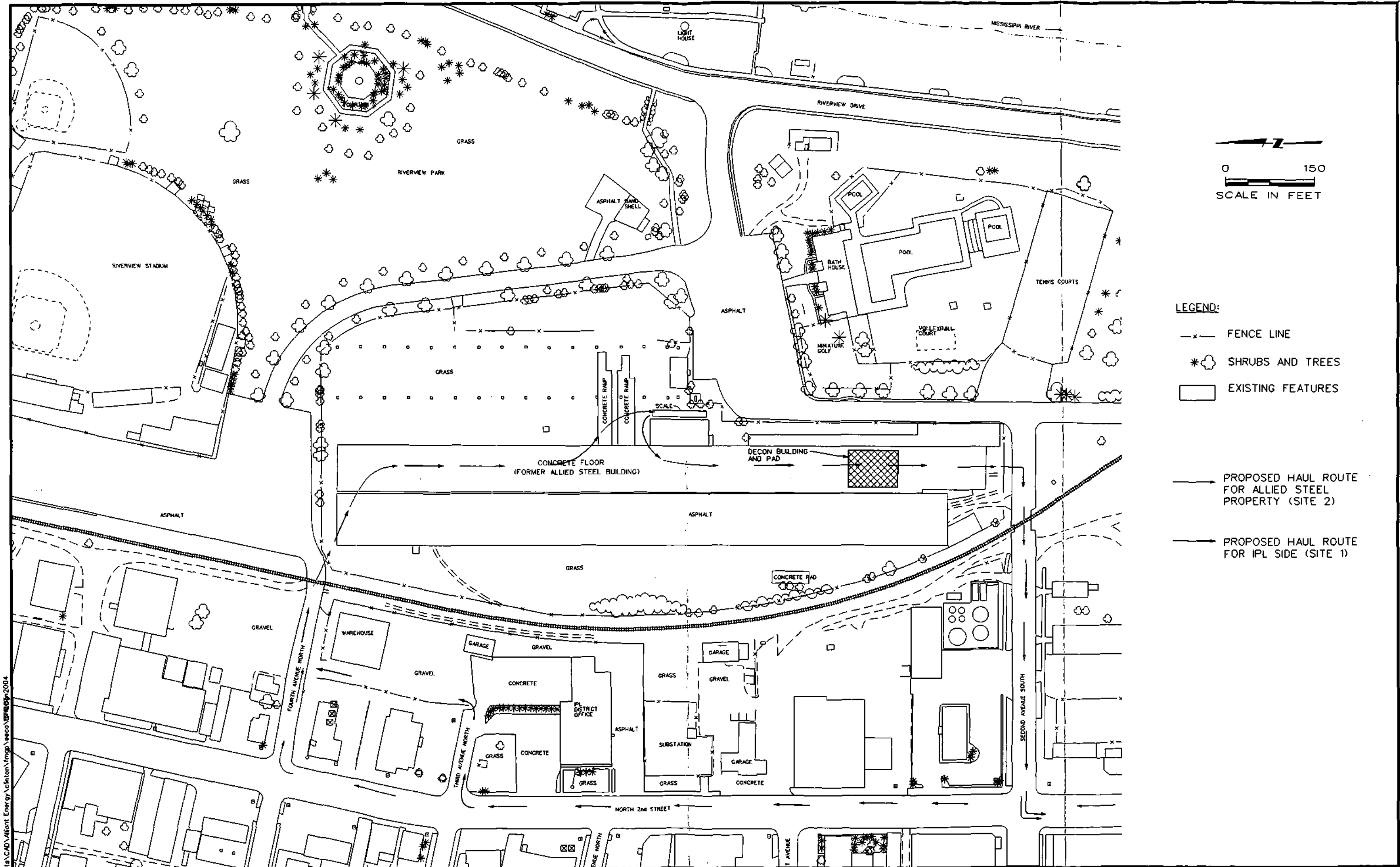
FIGURE
4-1

\\dwat01\projects\CLC\Clinton Energy\Clinton\img\verso\VERD01p2004



- LEGEND:**
- x- FENCE LINE
 - * SHRUBS AND TREES
 - APPROXIMATE LOCATION OF REAL-TIME AIR MONITORS FOR SITE 1 ACTIVITIES
 - APPROXIMATE LOCATION OF REAL-TIME AIR MONITORS FOR SITE 2 ACTIVITIES

\\nuhicis01\projects\CAD\Alliant_Energy\Clinton\Temp\seco\CRTPANSI.dwg 25-OCT-2004



- LEGEND:**
- x- FENCE LINE
 - * SHRUBS AND TREES
 - EXISTING FEATURES
 - PROPOSED HAUL ROUTE FOR ALLIED STEEL PROPERTY (SITE 2)
 - PROPOSED HAUL ROUTE FOR IPL SIDE (SITE 1)

\\uaweb01\projects\CAD\Alliant_Energy\clinton\img\seco\BFR\01-2004

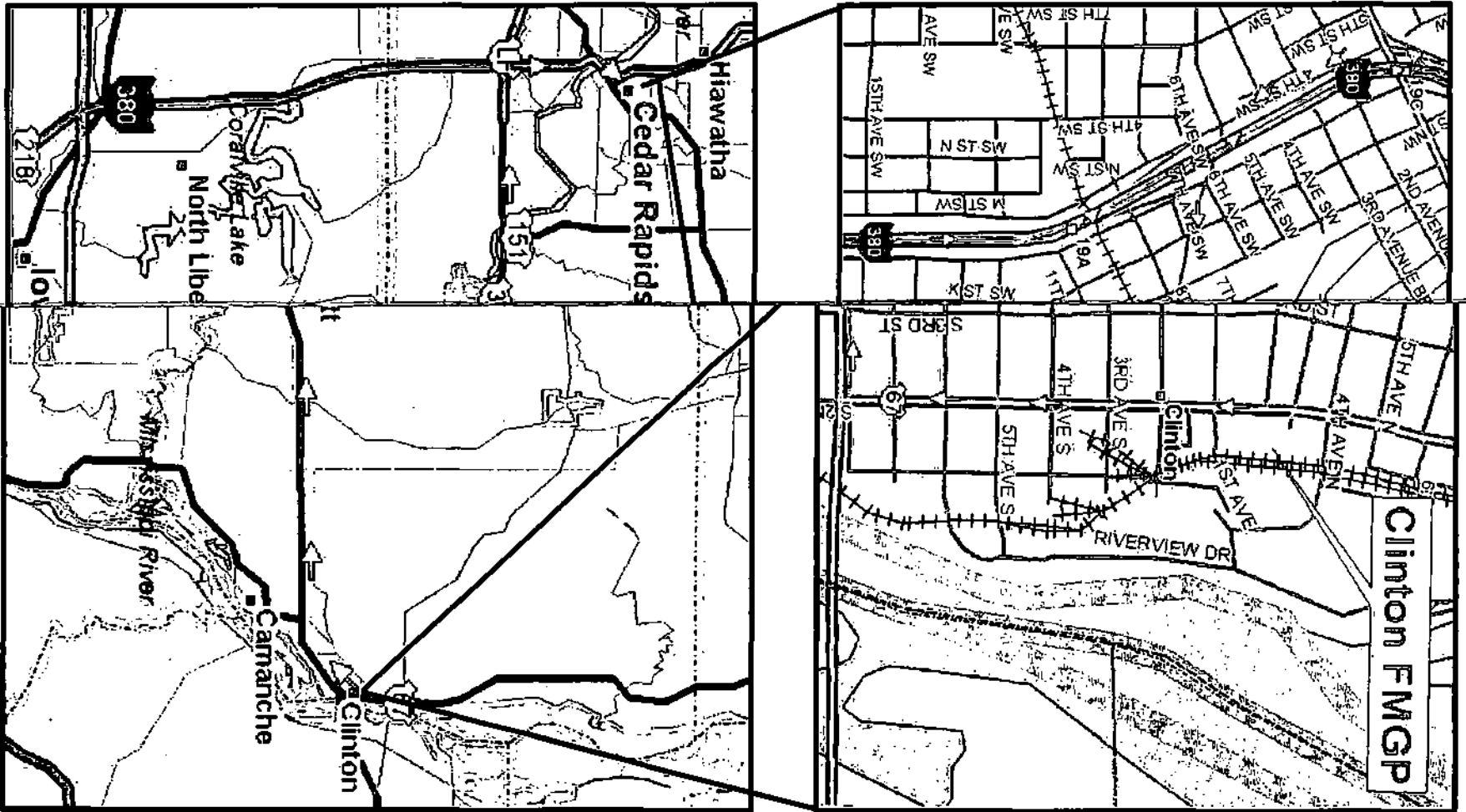


Des Moines
Iowa

INTERSTATE POWER
AND LIGHT COMPANY
CLINTON FMGP SITE
CLINTON, IOWA

SITE TRAFFIC ROUTE

FIGURE
10-1



TRANSPORTATION ROUTE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VII
901 NORTH 5th STREET
KANSAS CITY, KANSAS 66101

IN THE MATTER OF:

CLINTON COAL GAS SUPERFUND SITE
Clinton, Iowa

INTERSTATE POWER AND LIGHT COMPANY

Respondent.

Proceeding under Sections 104, 106(a), 107,
and 122 of the Comprehensive Environmental
Response, Compensation and Liability Act,
as amended, 42 U.S.C. §§ 9604, 9606(a),
9607, and 9622.

Docket No. CERCLA-07-2004-0307

**ADMINISTRATIVE ORDER
ON CONSENT**

ADMINISTRATIVE ORDER ON CONSENT

TABLE OF CONTENTS

I. JURISDICTION AND GENERAL PROVISIONS	1
II. PARTIES BOUND	1
III. DEFINITIONS	2
IV. FINDINGS OF FACT	4
V. CONCLUSIONS OF LAW AND DETERMINATIONS	6
VI. ORDER ON CONSENT	7
VII. SUBMISSIONS REQUIRING EPA APPROVAL	16
VIII. SITE ACCESS	17
IX. ACCESS TO INFORMATION	17
X. RECORD RETENTION	18
XI. OFF-SITE SHIPMENTS	19
XII. COMPLIANCE WITH OTHER LAWS	19
XIII. EMERGENCY RESPONSE AND NOTIFICATION OF RELEASES	19
XIV. AUTHORITY OF ON-SCENE COORDINATOR	20
XV. PAYMENT OF RESPONSE COSTS	20
XVI. DISPUTE RESOLUTION	21
XVII. FORCE MAJEURE	21
XVIII. STIPULATED PENALTIES	22
XIX. RESERVATIONS OF RIGHTS BY EPA	24
XX. COVENANTS NOT TO SUE	25
XXI. OTHER CLAIMS	26
XXII. CONTRIBUTION PROTECTION	27
XXIII. INDEMNIFICATION	27
XXIV. INSURANCE	28

TABLE OF CONTENTS

XXV. FINANCIAL ASSURANCE 28

XXVI. MODIFICATIONS 29

XXVII. ADDITIONAL REMOVAL ACTION OR RI/FS WORK 30

XXVIII. NOTICE OF COMPLETION OF WORK 30

XXIX. SEVERABILITY/INTEGRATION 30

XXX. EFFECTIVE DATE 31

I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Order on Consent ("Order") is entered into voluntarily by the United States Environmental Protection Agency ("EPA") and the Interstate Power and Light Co. ("Respondent" or "IPL"). This Order provides for the performance of a removal action by Respondent, the development of a remedial investigation and feasibility study ("RI/FS"), and the reimbursement of certain response costs incurred by the United States, at or in connection with, property at the Clinton Coal Gas Site (the "Site") which is located in the City of Clinton, Clinton County, Iowa.
2. This Order is issued under the authority vested in the President of the United States by Sections 104, 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9604, 9606(a), 9607 and 9622, as amended ("CERCLA").
3. EPA has notified the State of Iowa (the "State") of this action pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).
4. The objectives of EPA and the Respondent, in entering into this Consent Order, are: (a) to conduct a removal action to excavate and treat or dispose of the coal tar contaminated soils and wastes at the accessible gas holders and tar wells and to excavate and treat or dispose of the PCB hot spot surface soils identified in the Engineering Evaluation and Cost Analysis (EE/CA) previously performed for this site and to abandon the former sewer and water intake lines as described in the EE/CA; (b) to determine the nature and extent of off-site migration of hazardous substances, pollutants or contaminants from the site or facility and any threat to the public health, welfare, or the environment caused by such migration, by conducting a focused remedial investigation; (c) to determine and evaluate alternatives for remedial action to prevent, mitigate or otherwise respond to or remedy any release or threatened release of hazardous substances, pollutants, or contaminants at or from the site or facility, by conducting a focused feasibility study which would include a treatability study of monitored natural attenuation and an evaluation of institutional controls; and (d) to recover response and oversight costs incurred by EPA with respect to this Consent Order.
5. The activities conducted under this Consent Order are subject to approval by EPA and shall provide all appropriate necessary information for the RI/FS and for a record of decision that is consistent with CERCLA and the National Contingency Plan ("NCP"), 40 C.F.R. Part 300. The activities conducted under this Consent Order shall be conducted in compliance with all applicable EPA guidances, policies, and procedures.
6. EPA and Respondent recognize that this Order has been negotiated in good faith and that the actions undertaken by Respondent in accordance with this Order do not constitute an admission of liability. Respondent does not admit, and retains the right to controvert in any subsequent proceedings other than proceedings to implement or enforce this Order, the validity of the findings of facts, conclusions of law, and determinations in Sections IV and V of this Order. Respondent agrees to comply with and be bound by the terms of this Order and further agrees that it will not contest the basis or validity of this Order or its terms.

II. PARTIES BOUND

7. The terms of this Consent Order shall apply to and be binding upon the Respondent, its successors and assigns, and upon all agents, persons, contractors, and consultants acting under

or for Respondent in carrying out the actions required by this Consent Order. The signatories to this Consent Order certify that they are authorized to execute and legally bind the parties they represent to this Consent Order.

8. No change in the ownership, corporate or partnership status of Respondent or of the site shall alter the responsibilities of the Respondent under this Consent Order. Respondent shall provide a copy of this Consent Order to any successors in interest before ownership rights, partnership shares, or stock or assets in a corporate acquisition or merger are transferred and shall provide EPA written notification of such transfer at least (30) days prior to such transfer. Respondent shall provide a copy of this Consent Order to each of its contractors, principal subcontractors, laboratories, consultants, and representatives retained or employed to conduct any Work performed under this Consent Order prior to their initiation of work. Respondent shall condition any contracts for Work to be performed under this Consent Order upon satisfactory compliance with this Consent Order. Respondent shall be responsible for ensuring that its contractors, subcontractors, laboratories, consultants, and employees comply with all provisions of this Consent Order.

III. DEFINITIONS

9. Unless otherwise expressly provided herein, terms used in this Order which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Order or in any Appendix attached hereto and incorporated hereunder, the following definitions shall apply:

a. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. § 9601, *et seq.*

b. "Coal tar" shall mean, for the purposes of this Order, coal tar, water gas tar or light oil, drip oils or tar-oil-water emulsions resulting from the carbureted water-gas process or the coal carbonization process.

c. "Consent Order" shall mean this Administrative Order on Consent for performance of a removal action and an RI/FS and for reimbursement of certain response costs incurred by the United States, at or in connection with the Clinton Coal Gas Site. In the event of conflict between this Consent Order and any provision of any other agreement, order or writing, the terms and conditions of this Consent Order shall control.

d. "Day" shall mean a calendar day unless expressly stated to be a working day. "Working day" shall mean any day other than a Saturday, Sunday or Federal holiday. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.

e. "Effective Date" shall be the effective date of this Order as provided in Section XXX!

f. "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

g. "Future Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States incurs in reviewing or developing plans, reports, and other items pursuant to this Order, verifying the Work, or otherwise implementing, overseeing,

or enforcing this Order, including but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to Section VIII (Site Access), Section XIII (Emergency Response and Notification of Releases), and the work takeover provision of Section XIX (Reservations of Rights by EPA)(including, but not limited to, the cost of attorney time and any monies paid to secure access and /or to secure or implement institutional controls including, but limited to, the amount of just compensation). Future Response Costs shall also include all Interim Response Costs and all Interest on those Past Response Costs that Respondents have agreed to reimburse under this Order that has accrued pursuant to 42 U.S.C. § 9607(a) during the period from June 30, 2004 to the Effective Date of this Order.

h. "Institutional Controls" shall mean non-engineered remedies or remedy components, such as administrative and/or legal controls, that help to minimize the potential for human exposure to contamination and/or protect the integrity of a remedy by limiting land and/or resource use. Examples of institutional controls include easements and covenants, zoning restrictions, special building permit requirements, and well drilling prohibitions.

i. "Interest" shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.

j. "Interim Response Costs" shall mean all unreimbursed costs, including direct and indirect costs, (i.) paid by the United States in connection with the Site between June 30, 2004 and the Effective Date of this Consent Order, or (ii.) incurred prior to the effective date of this Consent Order but paid after that date.

k. "National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

l. "Paragraph" shall mean a portion of this Order identified by an Arabic numeral, a letter of the alphabet or a lower case Roman numeral.

m. "Parties" shall mean EPA and Respondent.

n. "Past Response Costs" shall mean all unreimbursed costs, including, but not limited to, direct and indirect costs, that the United States paid at or in connection with the site through June 30, 2004, plus Interest on all such costs which has accrued pursuant to 42 U.S.C. § 9607(a) through such date.

o. "RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. § 6901, *et seq.* (also known as the Resource Conservation and Recovery Act).

p. "Respondent" shall mean the Interstate Power and Light Co. (IPL) which is named in the caption of this Order and identified further in the Findings of Fact.

q. "Section" shall mean a portion of this Order identified by a Roman numeral and includes one or more paragraphs, unless used to refer to a statutory or regulatory section.

r. "Site" shall mean the Clinton Coal Gas Site (the "Site"), which is approximately bounded by Fourth Avenue North, North Second Street, First Avenue, the railroad

tracks, Second Avenue South, and Riverview Park located in the City of Clinton, Clinton County, Iowa. The site includes the former manufactured gas plant and the former Allied Structural Steel Co. plant and other nearby property as indicated generally on the attached map.

s. "State" shall mean the State of Iowa.

t. "Statement of Work" or "SOW" shall mean the statements describing the Work to be implemented at or for the Site, as set forth in Attachment I and Attachment II to this Consent Order, and any and all substitutions, modifications or revisions made to such document, in accordance with this Consent Order.

u. "United States" shall mean the United States of America, and any other and all agencies and instrumentalities thereof.

v. "Waste Material" shall mean 1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); 2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); and 3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27).

w. "Work" shall mean all activities Respondent are required to perform under this Consent Order.

IV. FINDINGS OF FACT

10. The Clinton Coal Gas Site is located in downtown Clinton, Clinton County, Iowa, and is bounded approximately by Fourth Avenue North, North Second Street, First Avenue, the railroad tracks, Second Avenue South and the Riverview Park road. The site is located in an area legally described as the SW¼, SE¼, Section 6, Township 81 North, Range 7 East, Clinton, Iowa. The Site consists of two main parts divided by a railroad right-of-way. The portion of the site located east of the railroad tracks is referred to as the Allied Steel portion of the site and is depicted on the attached map as Parcels A, B and 1E. The portion of the site located west of the railroad tracks is referred to as the Interstate Power portion of the site and is depicted on the attached map as Parcel C and the eastern part of Parcel 6.

11. The Site is located between a commercial area of the City of Clinton and the Riverfront Park. The Allied Steel portion of the site is fenced. The whole Site is currently zoned "commercial". The closest residence is located less than 100 feet from the site. Eight thousand people live within one mile of the Site and a school is within 900 feet of the Site.

12. The Site is located approximately 500 feet from the Mississippi River. The shallow ground water in the vicinity of the site is hydraulically connected to the Mississippi River and generally flows in the same direction as the river.

13. Manufactured gas plant operations were conducted on the Site from the late 1800s until about 1952. Interstate Power Company, a predecessor of the Respondent Interstate Power and Light, Co., operated the manufactured gas plant on the site from approximately 1925 to 1952. During this time wastes resulting from the operations of the manufactured gas plant, including coal tar, were disposed of at the facility. Interstate Power Company decommissioned the manufactured gas plant and demolished the associated facilities after operations ceased. Interstate Power Company sold the part of the site located east of the railroad tracks to Clinton Bridge Company and retained ownership of the portion of the site located west of the railroad tracks. The Clinton Bridge Company portion of the site eventually became known as the Allied Structural Steel plant.

14. On the Allied Steel portion of the site were previously located a 160,000 square foot vacant manufacturing building, a smaller office building and storage yards. Bridge and structural steel fabrication operations were conducted on the southern part of the property for several decades and on the northern part from about 1956 to 1984. The buildings and certain of the lead contaminated soils were removed pursuant to a previous Administrative Order on Consent, Docket No. VII-96-F-0015, with another party.

15. On the Interstate Power portion of the site, Respondent IPL currently owns and operates a district office, service center and a storage yard.

16. Respondent Interstate Power and Light Company (IPL) is a corporation organized under the laws of the State of Iowa. Alliant Energy Corp. is a holding company and is the parent corporation for IPL. Interstate Power Company was a predecessor company to IPL. IPL is the current owner of the portion of the site located west of the railroad tracks and corporate successor of former owners and operators of the northern part of the portion of the site located east of the railroad tracks. IPL currently owns both the Interstate Power and the Allied Steel portions of the Site.

17. The City of Clinton also operated a municipal incinerator at the far north end of the Allied Steel portion of the Site for a period of time starting in about 1931.

18. On July 1, 1997, EPA and Respondent's predecessor, Interstate Power Co., entered into an Administrative Order on Consent, Docket Number VII-97-F-0020, for the performance by Respondent of an engineering evaluation/cost analysis ("EE/CA") at the Site. The EE/CA was carried out in three stages:

a. The Site Characterization report was submitted to EPA in June 2000. This investigation of the nature and extent of the contamination at the site indicated that subsurface soil impacts to the Site are generally in locations of gas manufacturing facilities and the limits of the former sluice pond.

b. The Baseline Risk Assessment report was submitted to EPA in August 2001. It assessed the potential risks to human health and the environment resulting from exposures to chemicals detected at and in the area of the former manufactured gas plant site.

c. The Removal Alternatives Evaluation report was submitted to EPA in July 2002. The report discussed the applicability, effectiveness, implementability, and cost of various strategies for addressing impacted media at the site.

19. The potential exists for migration of polynuclear aromatic hydrocarbons (PAH) and other hazardous substances into the ground water and into the Mississippi River through sewers and abandoned wells. The nearest downgradient drinking well is located approximately 2000 feet from the site.

20. Acenaphthene, acenaphthylene, anthracene, benzanthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[ghi]perylene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, fluoranthene, fluorene, ideno[1,2,3-cd]pyrene, naphthalene, phenanthrene, and pyrene are all PAH compounds which have been found at the site pursuant to sampling and analysis. All of these PAHs are hazardous substances. PAHs may be toxic to humans and animals via oral, dermal, or respiratory routes of exposure. As environmental pollutants, PAHs are slightly to moderately soluble in water and are soluble in other organic compounds such as

benzene. Some PAHs are animal carcinogens. Some PAHs are probable human carcinogens.

21. Cyanide is a non-metal inorganic substance that is found in combination with other chemicals in the environment. It has been found in the soil at a relatively small area on the site pursuant to sampling and analysis. Cyanide combines with organic compounds to form compounds and with metals to form compounds. Many cyanide compounds may be toxic to humans and animals via oral or respiratory routes of exposure. Some cyanides are also toxic via dermal exposure. Many cyanides are soluble in water.

22. Benzene, toluene, ethyl benzene, and xylene are light aromatic compounds that have been detected at the site pursuant to sampling and analysis. Benzene is a human carcinogen. These compounds may be toxic to humans and animals via oral, respiratory, or dermal routes of exposure. They are slightly soluble in water and volatile in the environment.

23. Lead is a metal which occurs naturally in the environment and as a result of industrial activity. Lead continues to be found at the site in levels above background. Lead is a hazardous substance. The primary route of absorption of lead is gastrointestinal, particularly in children. Adverse neurological effects in children are a primary concern with respect to exposure to lead. Lead encephalopathy in adults is considered an acute toxic response to high levels of lead exposure. Lead has been classified as a probable human carcinogen.

24. Polychlorinated biphenyls (PCBs) are toxic chemicals which are extremely stable and persistent in the environment. PCBs have been found in the soil in a relatively small area at the site. PCBs are toxic to humans, causing liver damage, adverse skin effects, and changes in other biological functions, and are regarded by the Environmental Protection Agency (EPA) as probable human carcinogens. PCBs bioaccumulate in humans and other organisms, which means that PCBs accumulate over time in living tissues in concentrations much higher than the concentrations to which the organisms are exposed in the environment. Routes of human exposure for PCBs include inhalation of PCB-contaminated dust, direct contact with and ingestion of PCB-contaminated dust, direct contact with and ingestion of PCB-contaminated soil, and ingestion of fruits, vegetables, or animals contaminated by exposure to PCB-contaminated soil. In addition, PCBs may be volatilized into the air and subsequently inhaled by humans.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

25. Based on the Findings of Fact set forth above, and the Administrative Record supporting this removal action, EPA has determined that:

a. The Clinton Coal Gas Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

b. Each of the following substances found at the Site and identified in the Findings of Fact above, including lead, organocyanide, and metal-cyanide compounds, polynuclear aromatic hydrocarbon (PAH) compounds including acenaphthene, acenaphthylene, anthracene, benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[ghi]perylene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, fluoranthene, fluorene, ideno[1,2,3-cd]pyrene; naphthalene, phenanthrene, and pyrene, and light aromatic compounds including benzene, toluene, ethyl benzene, xylene and polychlorinated biphenyls (PCBs) are "hazardous substances" as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

c. Respondent is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

d. Respondent is a responsible party under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and is liable for performance of response action and response costs incurred and to be incurred at the Site. The Respondent is a person who is the current owner and/or operator of a portion of the Site, a person who at the time of disposal of any hazardous substances owned or operated any facility at which such hazardous substances were disposed of, and a person who generated hazardous substances disposed of at the Site.

e. The conditions described in the Findings of Fact above constitute an actual or threatened "release" of a hazardous substance from the facility as defined by Sections 101(8) and (22) of CERCLA, 42 U.S.C. §§ 9601(8) and (22).

f. The conditions present at the Site constitute a threat to the public health, welfare, or the environment based upon the factors set forth in Section 300.415(b)(2) of the NCP, 40 C.F.R. Part 300. These factors include the following:

- i. actual or potential exposure to hazardous substances by nearby human populations, animals or the food chain from hazardous substances, pollutants or contaminants;
- ii. actual or potential contamination of drinking water supplies;
- iii. high levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;
- iv. weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

g. The removal action required by this Order is necessary to protect the public health, welfare, or the environment and, if carried out in compliance with this Order, will be considered consistent with the NCP, as provided in Section 300.700(c)(3)(ii) of the NCP.

h. The actual or threatened release of hazardous substances from the Site may present an imminent and substantial endangerment to the public health, welfare, or the environment within the meaning of Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

VI. ORDER ON CONSENT

26. Based upon the foregoing Findings of Fact, Conclusions of Law and Determinations it is hereby ordered and agreed that Respondent shall conduct a coal tar and contaminated soil removal action in accordance with the Removal Action Memorandum and the Removal Statement of Work attached to this Order and conduct a focused Groundwater Remedial Investigation and Feasibility Study (RI/FS) in accordance with the RI/FS Statement of Work attached to this Order, comply with all provisions of this Order, and all documents incorporated by reference into this Order, and perform the following actions:

A. GENERAL PROVISIONS FOR THE REMOVAL AND RI/FS WORK.

27. Designation of Contractor, Project Coordinator, and On-Scene Coordinator. All work performed under this Consent Order shall be under the direction and supervision of qualified personnel. Within 30 days of the effective date of this Order, and before the work outlined below

begins, the Respondent shall notify EPA in writing of the names, titles, and qualifications of the personnel, including contractors, subcontractors, consultants and laboratories to be used in carrying out such work. With respect to any proposed contractor, the Respondent shall demonstrate that the proposed contractor has a quality system which complies with ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," (American National Standard, January 5, 1995), by submitting a copy of the proposed contractor's Quality Management Plan (QMP). The QMP should be prepared in accordance with "EPA Requirements for Quality Management Plans (QA/R-2)," (EPA/240/B-01/002, March 2001) or equivalent documentation as determined by EPA. The qualifications of the persons undertaking the work for Respondent shall be subject to EPA's review, for verification that such persons meet minimum technical background and experience requirements. This Order is contingent on Respondent's demonstration to EPA's satisfaction that Respondent is qualified to perform properly and promptly the actions set forth in this Consent Order. If EPA disapproves in writing of any person(s)' technical qualifications, Respondent shall notify EPA of the identity and qualifications of the replacement(s) within 30 days of the written notice. If EPA subsequently disapproves of the replacement(s), EPA reserves the right to terminate this Order and to conduct a complete removal or RI/FS, and to seek reimbursement for costs and penalties from Respondent. During the course of the removal and RI/FS, Respondent shall notify EPA in writing of any changes or additions in the personnel used to carry out such work, providing their names, titles, and qualifications. EPA shall have the same right to approve changes and additions to personnel as it has hereunder regarding the initial notification.

a. Within 30 days after the Effective Date, Respondent shall designate a Project Coordinator for the removal action who shall be responsible for the administration of all of the removal actions by Respondent required by this Order and shall submit to EPA the designated Project Coordinator's name, address, telephone number, and qualifications. To the greatest extent possible, the Project Coordinator shall be present on Site or readily available during Site work. EPA retains the right to disapprove of the designated Project Coordinator. If EPA disapproves of the designated Project Coordinator, Respondent shall retain a different Project Coordinator and shall notify EPA of that person's name, address, telephone number, and qualifications within 10 days following receipt of EPA's disapproval. Receipt by Respondent's Project Coordinator of any notice or communication from EPA relating to this Order shall constitute receipt by Respondent.

b. EPA has designated Kevin Larson of EPA Region VII's Superfund Division as its On-Scene Coordinator ("OSC"). Respondent shall direct 3 copies of all submissions required by this Order to Mr. Larson at the following address:

Kevin Larson
Superfund Division
US Environmental Protection Agency, Region VII
901 North 5th Street
Kansas City, KS 66101
Telephone (913) 551-7808
Fax (913) 551-7948

and one copy to the Iowa Department of Natural Resources (IDNR) at the following address:

Mick Leat
Iowa Department of Natural Resources
Environmental Protection Division
Wallace Building
502 East 9th Street
Des Moines, IA 50319
Telephone (515) 281-8045

c. EPA, the IDNR, and Respondent shall have the right, subject to subparagraph a. above, to change their designated OSC, IDNR Project Coordinator, or Project Coordinator, respectively. To the extent practicable, Respondent shall notify EPA at least 14 business days before such a change is made. The initial notification may be orally made, but it shall be promptly followed by a written notice.

28. Health and Safety Plan. Within 45 days after the Effective Date, Respondent shall submit for EPA review and comment a Health and Safety Plan ("HSP") that ensures the protection of the public health and safety during performance of on-Site work under this Order. The HSP shall be prepared in accordance with EPA's Standard Operating Safety Guide (PUB 9285.1-03, PB 92-963414, June 1992). In addition, the plan shall comply with all currently applicable Occupational Safety and Health Administration ("OSHA") regulations found at 29 C.F.R. Part 1910 and shall include, at a minimum, the following:

- a. Assessment of chemical and physical hazards at all relevant locations;
- b. Identification of Site control measures and required levels of protection and safety equipment;
- c. Field monitoring requirements;
- d. Equipment and personnel decontamination and residual management;
- e. Training and medical monitoring requirements; and
- f. Emergency planning and emergency contacts.

If EPA determines that it is appropriate, the HSP shall also include contingency planning. Respondent shall incorporate all changes to the HSP recommended by EPA and shall implement the HSP during the pendency of the removal action.

29. Quality Assurance and Sampling.

a. Sampling and Analysis Plan. Within 45 days of the effective date of this Order, Respondent shall submit the sampling and analysis plan to EPA for review and approval. A previously approved QAPP may be modified with EPA approval. The plan shall consist of a field sampling plan (FSP) and a quality assurance project plan (QAPP), as described in the Statement of Work and guidances, including, without limitation, "Sampling and Analysis Guidance and Template: (Version 2, R9QA/002, March 2000)" "EPA Guidance for Quality Assurance Project Plans (QA/G-5)" (EP A/600/R-9810 18, February 1998), "EPA Requirements for Quality

Assurance Project Plans (QA/R-5)" (EPA 240/B-0 1/003, March 2001), and, as appropriate, "Quality Assurance/Quality Control Guidance for Removal Activities: Sampling QA/QC Plan and Data Validation Procedures" (OSWER Directive No. 9360.4-01, April 1, 1990).

b. Respondent shall ensure that the laboratory used to perform the analyses participates in a QA/QC program that complies with the appropriate EPA guidance. Respondent shall only use laboratories that have a documented Quality System that complies with ANSI/ASQC E-4 1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (American National Standard, January 5, 1995), and "EPA Requirements for Quality Management Plans (QA/R-2) (EPA/240/B-01/002, March 2001)," or equivalent documentation as determined by EPA. EPA may consider laboratories accredited under the National Environmental Laboratory Accreditation Program ("NELAP") as meeting the Quality System requirements.

c. Upon request by EPA, Respondent shall have such a laboratory analyze samples submitted by EPA for QA monitoring. Respondent shall provide to EPA the QA/QC procedures followed by all sampling teams and laboratories performing data collection and/or analysis.

d. Upon request by EPA, Respondent shall allow EPA or its authorized representatives to take split and/or duplicate samples. Respondent shall notify EPA not less than 30 days prior to any sample collection activity, unless shorter notice is agreed to by EPA. EPA shall have the right to take any additional samples that EPA deems necessary. Upon request, EPA shall allow Respondent to take split or duplicate samples of any samples it takes as part of its oversight of Respondent's implementation of the Work.

B. WORK TO BE PERFORMED FOR THE COAL TAR AND CONTAMINATED SOIL REMOVAL ACTION:

30. **Removal Action Work Plan.** Respondent shall conduct a removal action at the Site by performing the Work as described in the EPA Action Memorandum for the site and in an EPA-approved Removal Action Work Plan ("RAWP"). Within 45 days after the effective date of this Order, Respondent shall submit to EPA and the IDNR, for review and approval by EPA, a RAWP prepared in accordance with this Order. Upon approval by EPA the draft RAWP shall become the approved RAWP and the approved RAWP shall be incorporated in its entirety herein and shall be enforceable as a part of this Order.

a. **For the IPL portion of the site,** the RAWP shall include a detailed description of the following removal work:

i. Excavation and off-site treatment or disposal of PCB-impacted "hot spot surface soil" as identified in the EE/CA and located generally in the IPL storage yard as indicated on the attached map, to eliminate the direct contact exposure pathway in surface soil (the cleanup concentration will be 25 ppm as bulk PCB remediation waste for low occupancy areas per 40 CFR 761.61 (a)(4) unless another risk based cleanup level is approved by EPA);

ii. Excavation and off-site treatment or disposal of the contents and surrounding contaminated soils from the accessible gas holder and tar wells as described in the EE/CA and located generally as indicated on the attached map, to remove potential source material to reduce the potential for continued releases or leaching of impacts to soil and groundwater (the cleanup concentrations will be those set out in Attachment I, Scope of Work for the Removal Action, unless another risk based cleanup level is approved by EPA);

iii. Institutional controls for the inaccessible gas holder to prevent possible future exposure risks;

iv. Engineering controls, in the form of additional pavement in the service center area, to restrict infiltration and eliminate the direct exposure pathway (unauthorized access) to impacted vadose zone soil;

v. Interim institutional controls to limit intrusive site work and to restrict utilization of impacted groundwater until the institutional controls selected as a result of the groundwater RI/FS have been implemented.

b. For the former Allied Steel portion of the site, the RAWP shall include a detailed description of the following removal work:

i. Excavation and off-site treatment or disposal of the contents and surrounding contaminated soils from the accessible gas holder and tar wells as described in the EE/CA and located generally as indicated on the attached map, to remove potential source material to reduce the potential for continued releases or leaching of impacts to soil and groundwater (the cleanup concentrations will be those set out in Attachment I, Scope of Work for the Removal Action, unless another risk based cleanup level is approved by EPA);

ii. Engineering controls, designed and implemented in conjunction with future site development to prevent exposure to impacted soil;

iii. Interim institutional controls to limit intrusive site work and to restrict future utilization of impacted groundwater until the institutional controls selected as a result of the groundwater RI/FS have been implemented.

iv. Abandonment of the former storm sewer lines and the water intake line to minimize potential conduits for migration of impacted groundwater.

c. Removal Action Work Plan Requirements. The RAWP shall include a detailed description of the tasks and submissions that Respondent will complete during the removal action and shall include a schedule for completing such tasks and submissions. The RAWP shall include a detailed description of the removal work to be performed including, but not limited to, the following:

- i. A schedule for all removal activities to be performed;
- ii. A design plan for the excavation of soils and structural materials at the Site, in general agreement with the conceptual excavation plan described in the EE/CA;
- iii. Plans for conducting air monitoring for emissions during removal activities, including contingency plans in the event that emissions exceed health-based standards; and,
- iv. Plans for procedures that will be followed when transporting any materials off-Site, including contingency plans to address any release of such materials during transport.

31. **Removal Action Work Plan Approval.** EPA may approve, disapprove, require revisions to, or modify the draft RAWP in whole or in part in accordance with Section VII of this Order. Respondent shall implement the RAWP as approved in writing by EPA in accordance with the schedule approved by EPA. Once approved, or approved with modifications, the RAWP, the schedule, and any subsequent modifications shall be incorporated into and become fully enforceable under this Order.

32. **Removal Action Implementation.** Respondent shall conduct a removal action at the Site by performing the Work in accordance with the requirements, including the schedule, set forth in the approved RAWP. Respondent shall not commence any Work except in conformance with the terms of this Order. Respondent shall not commence implementation of the RAWP developed hereunder until receiving written EPA approval of the RAWP.

33. **Post-Removal Site Control.** In accordance with the schedule in the RAWP, or as otherwise directed by EPA, Respondent shall submit a proposal for post-removal Site control consistent with Section 300.415(I) of the NCP and OSWER Directive No. 9360.2-02. "Policy on Management of Post-Removal Site Control." Upon EPA approval, Respondent shall implement such controls and shall provide EPA with documentation of all post-removal Site control arrangements.

34. **Periodic Reporting.** Unless a longer time period is approved in writing by the OSC, Respondent shall submit a monthly written progress report to EPA and the IDNR concerning actions undertaken pursuant to this Order starting from the receipt of EPA's approval of the RAWP until termination of this Order. These reports shall describe all significant developments during the preceding period, including the actions performed and any problems encountered, analytical data received during the reporting period, and the developments anticipated during the next reporting period, including a schedule of actions to be performed, anticipated problems, and planned resolutions of past or anticipated problems. Upon request by EPA, and in lieu of submitting physical copies, Respondent shall submit all plans, reports or other submissions in electronic form.

35. **Removal Final Report.** Within 90 days after completion of all Removal Work required by this Order, Respondent shall submit for EPA review and approval a Removal Final

Report summarizing the actions taken to comply with this Order. The Removal Final Report shall conform, at a minimum, with the requirements set forth in Section 300.165 of the NCP entitled "OSC Reports." The Removal Final Report shall include a good faith estimate of total costs or a statement of actual costs incurred in complying with the Order, a listing of quantities and types of materials removed off-Site or handled on-Site, a discussion of removal and disposal options considered for those materials, a listing of the ultimate destination(s) of those materials, a presentation of the analytical results of all sampling and analyses performed, and accompanying appendices containing all relevant documentation generated during the removal action (e.g., manifests, invoices, bills, contracts, and permits). The Removal Final Report shall also include the following certification signed by a person who supervised or directed the preparation of that report:

"Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

C. WORK TO BE PERFORMED FOR THE GROUNDWATER RI/FS.

36. Respondent shall conduct activities and submit deliverables as provided by the attached RI/FS Statement of Work, which is incorporated by reference, for the development of the RI/FS. All such work shall be conducted in accordance with CERCLA, the NCP, and EPA guidance including, but not limited to, the "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (OSWER Directive # 9355.3-01), "Guidance for Data Useability in Risk Assessment" (OSWER Directive #9285.7-05) and guidances referenced therein, and guidances referenced in the Statement of Work, as may be amended or modified by EPA. The general activities that Respondent is required to perform are identified below. The tasks that Respondent must perform are described more fully in the Statement of Work and guidances. The activities and deliverables identified below shall be developed as provisions in the RI/FS work plan and shall be submitted to EPA as provided. All work performed under this Consent Order shall be in accordance with the schedules herein, and in full accordance with the standards, specifications, and other requirements of the work plan and sampling and analysis plan, as initially approved or modified by EPA, and as may be amended or modified by EPA from time to time.

37. RI/FS Work Plan. Within 60 days after the effective date of this Order, Respondent shall submit to EPA and the IDNR, for review and approval by EPA in accordance with Section VII of this Order, a RI/FS work plan prepared in accordance with this Order. The RI/FS Work Plan will include but not be limited to plans and schedule for a focused remedial investigation and a focused feasibility study which will include a treatability study and an evaluation of institutional controls to determine and evaluate alternatives for remedial action to prevent, mitigate or otherwise respond to or remedy any release or threatened release of hazardous substances, pollutants, or contaminants at or from the site or facility. Upon approval by EPA the draft work plan shall become the approved RI/FS work plan and the approved work plan shall be incorporated in its entirety herein and shall be enforceable as a part of this Order.

38. Focused Remedial Investigation. The Respondent shall conduct a focused remedial

investigation to determine the nature and extent of off-site migration of hazardous substances, pollutants or contaminants from the site or facility and any threat to the public health, welfare, or the environment caused by such migration. The Respondent shall amend or supplement the human health risk assessment in accordance with the results of the off-site migration investigation. The submittal time will be included in the schedule in the RI/FS Work Plan.

39. Treatability Study. Respondent shall conduct a treatability study to address the groundwater and the coal tar and contaminated soil which is expected to remain at the site after the removal action. One of the purposes of the treatability study will be to determine the appropriateness and potential effectiveness of monitored natural attenuation for remediation of the groundwater. Major components of the treatability study include the scope of the study, the design of the study and the completion of the study as described in the Statement of Work. During the treatability study, Respondent shall provide EPA with the following deliverables:

a. Identification of Candidate Technologies Memorandum. This memorandum shall be submitted within 30 days of the Effective Date of this Order for EPA review and approval.

b. Treatability Testing Work Plan. Within 60 days of the Effective Date of this Order, Respondent shall submit a treatability testing work plan, including a schedule for EPA review and approval.

c. Treatability Study Sampling and Analysis Plan. Within 60 days of the Effective Date of this Order, if the original Quality Assurance Project Plan (QAPP) or Field Sampling Plan (FSP) is not adequate for defining the activities to be performed during the treatability test, Respondent shall submit a treatability study sampling and analysis plan for EPA review and approval.

d. Treatability Study Site Health and Safety Plan. Within 60 days of the Effective Date of this Order, if the original Health and Safety Plan is not adequate for defining the activities to be performed during the treatment tests, Respondent shall submit a treatability study site health and safety plan.

e. Treatability Study Evaluation Report. Within 60 days of completion of any treatability testing, Respondent shall submit a treatability study evaluation report as provided in the statement of work and work plan for EPA review and approval.

40. Memorandum on Institutional Controls and Screening. Respondent shall submit a memorandum for EPA review and approval on the institutional controls considered as potential parts of the remedial action. The Memorandum on Institutional Controls and Screening shall (1) define the performance goals for the institutional control and how long the institutional control needs to remain in place; (2) identify the geographic area to be covered by institutional controls including the railroad corridor and provide a map of such area; (3) include a Reuse Assessment prepared in accordance with "Reuse Assessments: A Tool to Implement the Superfund Land Use Directive," OSWER 9355.7-06P, June 4, 2001," which details the current and reasonably anticipated future use of the area to be covered by institutional controls and the basis for those determinations; (4) identify any legal or administrative restrictions already in place for the Site that may serve as effective institutional controls; (5) identify Respondent's proposed institutional

control options (i.e., proprietary controls, governmental controls, or informational devices) that are available to meet the performance goals; (6) identify any parties (e.g., state, local governmental entities, local landowners, conservation organizations) whose cooperation, assistance or participation will be needed to implement, monitor or enforce Respondent's proposed institutional controls; (7) describe the known or anticipated willingness of parties identified in (6) above to cooperate, assist or participate in the implementation, monitoring or enforcement of institutional controls and under what conditions; (8) state whether any of the institutional controls will require the acquisition of an interest in real property; and (9) assess the cost of implementing, monitoring and enforcing institutional controls for the full time that the institutional control(s) must remain in effect. The Memorandum on Institutional Controls and Screening shall be submitted as an appendix to the Draft Feasibility Study Report and submitted at or before the time of submission of the Draft Feasibility Study Report.

41. Draft Feasibility Study Report. Respondent shall conduct a detailed analysis of remedial alternatives using the nine criteria as described in the statement of work and the work plan. Within 45 days of the submission of the Treatability Study Evaluation Report to EPA, Respondent shall submit a draft feasibility study report to EPA and the State for EPA review and approval. Respondent shall refer to Table 6-5 of the RI/FS Guidance for report content and format. The report, as amended, and the administrative record shall provide the basis for the proposed plan under CERCLA §§ 113(k) and 117(a) by EPA and shall document the development and analysis of remedial alternatives.

42. EPA reserves the right to comment on, modify and direct changes for all deliverables. Respondent must correct all deficiencies and incorporate and integrate all information and comments supplied by EPA either in subsequent or resubmitted deliverables.

43. In the event that Respondent amends or revises a report, plan, or other submittal upon receipt of EPA comments, if EPA subsequently disapproves of the revised submittal, or if subsequent submittals do not fully reflect EPA's directions for changes, EPA retains the right to seek stipulated or statutory penalties, perform its own studies, complete the RI/FS (or any portion of the RI/FS) under CERCLA and the NCP, and seek reimbursement from the Respondent for its costs and/or seek any other appropriate relief.

44. In the event that EPA takes over some of the tasks but not the preparation of the RI/FS, Respondent shall incorporate and integrate information supplied by EPA into the final RI/FS report.

45. EPA retains the responsibility for the release to the public of the RI/FS report. EPA retains responsibility for the preparation and release to the public of the proposed plan and record of decision in accordance with CERCLA and the NCP.

46. EPA will provide Respondent with the final RI/FS report, proposed plan and record of decision.

47. EPA will determine the contents of the administrative record file for selection of the remedial action. Respondent must submit to EPA documents developed during the course of the RI/FS upon which selection of the response action may be based. Respondent shall provide copies of plans, task memoranda including documentation of field modifications, recommendations

for further action, quality assurance memoranda and audits, raw data, field notes, laboratory analytical reports and other reports. Respondent must additionally submit any previous studies within its possession conducted under state, local, or other federal authorities relating to selection of the response action, and all communications between Respondent and state, local, or other federal authorities concerning selection of the response action. At EPA's discretion, Respondent may establish a community information repository at, or near, the site to house one copy of the administrative record.

VII. SUBMISSIONS REQUIRING EPA APPROVAL

48. After review of any plan, report or other item which is required to be submitted for approval pursuant to this Consent Order, EPA shall: (a) approve, in whole or in part, the submission; (b) approve the submission with modifications; (c) disapprove, in whole or in part, the submission, directing the Respondent to resubmit the document after incorporating EPA's comments; (d) disapprove the submission and assume responsibility for performing all or any part of the response activities; or (e) any combination of the above.

49. In the event of approval or approval with modifications by EPA, pursuant to Paragraph 48, Respondent shall proceed to take any action required by the plan, report, or other item, as approved or modified by EPA.

50. Upon receipt of a notice of disapproval pursuant to Paragraph 48, Respondent shall, within fourteen (14) calendar days or such other time as specified by EPA in such notice, correct the deficiencies and resubmit the plan, report, or other item for approval.

51. Notwithstanding the receipt of a notice of disapproval pursuant to Paragraph 48, Respondent shall proceed, at the direction of EPA, to take any action required by any non-deficient portion of the submission. Implementation of any non-deficient portion of a submission shall not relieve Respondent of any liability for stipulated penalties under Section XVIII (Stipulated Penalties).

52. In the event that a plan, report or other item, or portion thereof, which is resubmitted to EPA is disapproved or modified by EPA, Respondent shall be deemed to have failed to submit such plan, report, or other item in a timely and adequate manner, unless Respondent invokes the procedures of Section XVI (Dispute Resolution), and EPA's action is overturned pursuant to the Section.

53. The provisions of Section XVI (Dispute Resolution) and Section XVII (Stipulated Penalties) shall govern the implementation of the Work, and accrual and payment of any stipulated penalties during dispute resolution. If EPA's disapproval is upheld, stipulated penalties shall accrue for such violation from the date on which the initial submission was required, as provided in Section XVIII (Stipulated Penalties).

54. All plans, reports and other items required to be submitted to EPA under this Consent Order shall, upon approval by EPA, be enforceable under this Consent Order. In the event EPA approves a portion of a plan, report or other item required to be submitted to EPA under this Consent Order, the approved portion shall be enforceable under this Consent Order.

VIII. SITE ACCESS

55. If the Site, or any other property where access is needed to implement this Order, is owned or controlled by the Respondent, the Respondent shall, commencing on the Effective Date, provide EPA, the State, and its representatives, including contractors, with access at all reasonable times to the Site, or such other property, for the purpose of conducting any activity related to this Order.

56. Where any action under this Order is to be performed in areas owned by or in possession of someone other than Respondent, Respondent shall use its best efforts to obtain all necessary access agreements within 30 days after the Effective Date, or as otherwise specified in writing by the OSC. Respondent shall immediately notify EPA if after using its best efforts it is unable to obtain such agreements. For purposes of this Paragraph, "best efforts" includes the payment of reasonable compensation in consideration of access. Respondent shall describe in writing its efforts to obtain access. EPA may then assist Respondent in gaining access, to the extent necessary to effectuate the response actions described herein, using such means as EPA deems appropriate. Respondent shall reimburse EPA for all costs and attorney's fees incurred by the United States in obtaining such access, in accordance with the procedures in Section XV (Payment of Response Costs).

57. Notwithstanding any provision of this Order, EPA retains all of its access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

IX. ACCESS TO INFORMATION

58. Respondent shall provide to EPA, upon request, copies of all documents and information within its possession or control or that of its contractors or agents relating to activities at the Site or to the implementation of this Order, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Respondent shall also make available to EPA, for purposes of investigation, information gathering, or testimony, its employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

59. Respondent may assert business confidentiality claims covering part or all of the documents or information submitted to EPA under this Order to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when they are submitted to EPA, or if EPA has notified Respondent that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such documents or information without further notice to Respondent.

60. Respondent may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If

the Respondent asserts such a privilege in lieu of providing documents, it shall provide EPA with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the contents of the document, record, or information; and 6) the privilege asserted by Respondent. However, no documents, reports or other information created or generated pursuant to the requirements of this Order shall be withheld on the grounds that they are privileged.

61. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the Site.

X. RECORD RETENTION

62. Until 6 years after Respondent's receipt of EPA's notification pursuant to Section XXVIII (Notice of Completion of Work), Respondent shall preserve and retain all non-identical copies of records and documents (including records or documents in electronic form) now in its possession or control or which come into its possession or control that relate in any manner to the performance of the Work or the liability of any person under CERCLA with respect to the Site, regardless of any corporate retention policy to the contrary. Until 6 years after Respondent's receipt of EPA's notification pursuant to Section XXVIII (Notice of Completion of Work), Respondent shall also instruct its contractors and agents to preserve all documents, records, and information of whatever kind, nature or description relating to performance of the Work.

63. At the conclusion of this document retention period, Respondent shall notify EPA at least 90 days prior to the destruction of any such records or documents, and, upon request by EPA, Respondent shall deliver any such records or documents to EPA. Respondent may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Respondent asserts such a privilege, it shall provide EPA with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the subject of the document, record, or information; and 6) the privilege asserted by Respondent. However, no documents, reports or other information created or generated pursuant to the requirements of this Order shall be withheld on the grounds that they are privileged.

64. Respondent hereby certifies that to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by EPA or the State or the filing of suit against it regarding the Site and that it has fully complied with any and all EPA requests for information pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927.

XI. OFF-SITE SHIPMENTS

65. All hazardous substances, pollutants or contaminants removed pursuant to this Order for off-site treatment, storage or disposal shall be treated, stored or disposed of at a facility in compliance, as determined by EPA, with Section 121 (d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3) and the Off-Site Rule at 40 C.F.R. § 300.440.

XII. COMPLIANCE WITH OTHER LAWS

66. Respondent shall perform all actions required pursuant to this Order in accordance with all applicable local, state, and federal laws and regulations except as provided in Section 121(e) of CERCLA, 42 U.S.C. § 6921(e), and 40 C.F.R. §§ 300.400(e) and 300.415(j). In accordance with 40 C.F.R. § 300.415(j), all on-Site actions required pursuant to this Order shall, to the extent practicable, as determined by EPA, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements ("ARARs") under federal environmental or state environmental or facility siting laws. Respondent shall identify ARARs in the Work Plans subject to EPA approval.

XIII. EMERGENCY RESPONSE AND NOTIFICATION OF RELEASES

67. In the event of any action or occurrence during performance of the Work which causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Respondent shall immediately take all appropriate action. Respondent shall take these actions in accordance with all applicable provisions of this Order, including, but not limited to, the HSP, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. Respondent shall also immediately notify the OSC or, in the event of his/her unavailability, the Regional Duty Officer at 913-281-0991 of the incident or Site conditions. In the event that Respondent fails to take appropriate response action as required by this Paragraph, and EPA takes such action instead, Respondent shall reimburse EPA all costs of the response action not inconsistent with the NCP pursuant to Section XV (Payment of Response Costs). This provision does not otherwise limit EPA authority to take all appropriate response actions.

68. In addition, in the event of any release of a hazardous substance from the Site, Respondent shall immediately notify the OSC at 913-281-0991 and the National Response Center at 800-424-8802. Respondent shall submit a written report to EPA within 7 days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, *et seq.*

XIV. AUTHORITY OF ON-SCENE COORDINATOR

69. The OSC shall be responsible for overseeing Respondent's implementation of this Order. The OSC shall have the authority vested in an OSC by the NCP, including the authority to halt, conduct, or direct any Work required by this Order, or to direct any other removal action undertaken at the Site. Absence of the OSC from the Site shall not be cause for stoppage of work unless specifically directed by the OSC.

XV. PAYMENT OF RESPONSE COSTS

70. Payment of Past Response Costs. Within 45 days after the Effective Date, Respondent shall pay to EPA \$132,083.53 for Past Response Costs. Payment shall be made in accordance with the Electronic Funds Transfer ("EFT") procedures referred to in this Section.

71. Payments for Future Response Costs. Respondent shall pay EPA all Future Response Costs not inconsistent with the NCP. Payment shall be made in accordance with the EFT procedures referred to in this Section. On a periodic basis, EPA will send Respondent a bill requiring payment that includes a Regional cost summary which includes direct and indirect costs incurred by EPA and its contractors. Respondent shall make all payments within 30 days of receipt of each bill requiring payment, except as otherwise provided in Paragraph 75 below.

72. Payment shall be made to EPA by EFT by payment to U.S. EPA, Riggs Bank, ABA #051036706, Account #310006, unless otherwise directed by EPA Region VII, and shall be accompanied by a statement identifying the name and address of the party making payment, the Site name, the EPA Region and Site/Spill ID Number 07NY Operable Unit 02, and the EPA docket number for this action. At the time of payment, Respondent shall send notice that such payment has been made to EPA's OSC.

73. The total amount of Response Costs to be paid by Respondent shall be deposited in the Clinton Coal Gas Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

74. In the event that the payment for Past Response Costs is not made within 45 days of the Effective Date, or the payments for Future Response Costs are not made within 45 days of Respondent's receipt of a bill, Respondent shall pay Interest on the unpaid balance. The Interest on Past Response Costs shall begin to accrue on the Effective Date and shall continue to accrue until the date of payment. The Interest on Future Response Costs shall begin to accrue on the date of the bill and shall continue to accrue until the date of payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondent's failure to make timely payments under this Section, including but not limited to, payment of stipulated penalties pursuant to Section XVIII.

75. Respondent may dispute all or part of a bill for Future Response Costs submitted under this Order, if Respondent alleges that EPA has made an accounting error, or if Respondent alleges that a cost item is inconsistent with the NCP. If any dispute over costs is resolved before payment is due, the amount due will be adjusted as necessary. If the dispute is not resolved before

payment is due, Respondent shall pay the full amount of the uncontested costs to EPA as specified in Paragraphs 71 and 72 above on or before the due date. Within the same time period, Respondent shall pay the full amount of the contested costs into an interest-bearing escrow account. Respondent shall simultaneously transmit a copy of both checks to EPA's OSC. Respondent shall ensure that the prevailing party or parties in the dispute shall receive the amount upon which they prevailed from the escrow funds plus interest within 10 days after the dispute is resolved.

XVI. DISPUTE RESOLUTION

76. Unless otherwise expressly provided for in this Order, the dispute resolution procedures of this Section shall be the exclusive mechanism for resolving disputes arising under this Order. The Parties shall attempt to resolve any disagreements concerning this Order expeditiously and informally.

77. If Respondent objects to any EPA action taken pursuant to this Order, including billings for Future Response Costs, it shall notify EPA in writing of its objection(s) within 10 days of such action, unless the objection(s) has/have been resolved informally. EPA and Respondent shall have 30 days from EPA's receipt of Respondent's written objection(s) to resolve the dispute through formal negotiations (the "Negotiation Period"). The Negotiation Period may be extended at the sole discretion of EPA.

78. Any agreement reached by the parties pursuant to this Section shall be in writing and shall, upon signature by both parties, be incorporated into and become an enforceable part of this Order. If the Parties are unable to reach an agreement within the Negotiation Period, the Director of EPA Region VII's Superfund Division will issue a written decision on the dispute. The Director's decision shall be incorporated into and become an enforceable part of this Order. Respondent's obligations under this Order shall not be tolled by submission of any objection for dispute resolution under this Section. Following resolution of the dispute, as provided by this Section, Respondent shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with the Director's decision, whichever occurs.

XVII. FORCE MAJEURE

79. Respondent agrees to perform all requirements of this Order within the time limits established under this Order, unless the performance is delayed by a *force majeure*. For purposes of this Order, a *force majeure* is defined as any event arising from causes beyond the control of Respondent, or of any entity controlled by Respondent, including but not limited to its contractors and subcontractors, which delays or prevents performance of any obligation under this Order despite Respondent's best efforts to fulfill the obligation. *Force majeure* does not include financial inability to complete the Work or increased cost of performance.

80. If any event occurs or has occurred that may delay the performance of any obligation under this Order, whether or not caused by a *force majeure* event, Respondent shall notify EPA orally within 3 days of when Respondent first knew that the event might cause a delay. Within 7 days thereafter, Respondent shall provide to EPA in writing an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be

taken to prevent or mitigate the delay or the effect of the delay; Respondent's rationale for attributing such delay to a *force majeure* event if it intends to assert such a claim; and a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health, welfare or the environment. Failure to comply with the above requirements shall preclude Respondent from asserting any claim of *force majeure* for that event for the period of time of such failure to comply and for any additional delay caused by such failure.

81. If EPA agrees that the delay or anticipated delay is attributable to a *force majeure* event, the time for performance of the obligations under this Order that are affected by the *force majeure* event will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the *force majeure* event shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a *force majeure* event, EPA will notify Respondent in writing of its decision. If EPA agrees that the delay is attributable to a *force majeure* event, EPA will notify Respondent in writing of the length of the extension, if any, for performance of the obligations affected by the *force majeure* event.

XVIII. STIPULATED PENALTIES

82. Respondent shall be liable to EPA for stipulated penalties in the amounts set forth below for failure to comply with the requirements of this Order specified below, unless excused under Section XVII (Force Majeure). "Compliance" by Respondent shall include completion of the activities under this Order or any work plan or other plan approved under this Order identified below in accordance with all applicable requirements of law, this Order, and any plans or other documents approved by EPA pursuant to this Order and within the specified time schedules established by and approved under this Order.

83. Coal Tar and Contaminated Soil Removal Action.

a. For failure to: (1) submit a periodic progress report provided for in paragraph 34 of this Order; (2) submit the Final Report; (3) notify EPA of the names and qualifications of contractors; or (4) designate a Project Coordinator as prescribed in this Order: \$250 per day for the first through seventh days of noncompliance and \$500 per day for the eighth day and each succeeding day of noncompliance thereafter.

b. For failure to submit: (1) the RAWP; (2) the HSP; or (3) the QAPP as prescribed in this Order: \$500 per day for the first through seventh days of noncompliance and \$1,000 per day for the eighth day and each succeeding day of noncompliance thereafter.

c. For failure to complete the removal action in accordance with the requirements of the approved RAWP, including the project schedule: \$750 per day for the first through seventh days of noncompliance and \$1,500 per day for the eighth day and each succeeding day of noncompliance thereafter.

84. Groundwater RI/FS.

a. For failure to submit: (1) a treatability testing statement of work; (2) a treatability study evaluation report; (3) Memorandum on Institutional Controls and Screening; (4)

notify EPA of the names and qualifications of contractors; (5) designate a Project Coordinator as prescribed in this Order: \$250 per day for the first through seventh days of noncompliance and \$500 per day for the eighth day and each succeeding day of noncompliance thereafter.

b. For failure to submit: (1) an original and any revised RI/FS work plan; (2) an original and any revised treatability testing work plan; (3) any required original and any revised treatability study sampling and analysis plan; (4) an original and any revised Memorandum on Institutional Controls and Screening; (5) an original and any revised feasibility study report: \$500 per day for the first through seventh days of noncompliance and \$1,000 per day for the eighth day and each succeeding day of noncompliance thereafter.

c. For failure to complete the RI/FS in accordance with the requirements of the approved Work Plan, including the project schedule: \$750 per day for the first through seventh days of noncompliance and \$1,500 per day for the eighth day and each succeeding day of noncompliance thereafter.

85. In the event that EPA assumes performance of a portion or all of the Work pursuant to Paragraph 94, after written notice by EPA, Respondent shall be liable for a stipulated penalty in the amount of:

a. \$6,000,000 if Respondent has not completed the soil removal, treatment and backfill work;

b. \$4,000,000 if Respondent has already completed the soil removal, treatment and backfill work;

c. \$3,000,000 if Respondent has already completed the work identified in Paragraph 85.b., and the site restoration/engineering controls including grading, seeding, paving, and fence replacement;

d. \$2,000,000 if Respondent has already completed the work identified in Paragraph 85.b. and c., and the groundwater treatability study;

e. \$1,000,000 if Respondent has already completed the work identified in Paragraph 85.b - d., and implemented the final (permanent) institutional controls.

86. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. However, stipulated penalties shall not accrue: 1) with respect to a deficient submission under Section VI (Order on Consent), during the period, if any, beginning on the 31st day after EPA's receipt of such submission until the date that EPA notifies Respondent of any deficiency; and 2) with respect to a decision by the Director of EPA Region VII's Superfund Division, pursuant to Section XVI (Dispute Resolution), during the period, if any, beginning on the 30th day after the Negotiation Period begins until the date that the Director of EPA Region VII's Superfund Division issues a final decision regarding such dispute. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Order.

87. Following EPA's determination that Respondent has failed to comply with a

requirement of this Order, EPA may give Respondent written notification of the failure and describe the noncompliance. EPA may send Respondent a written demand for payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether EPA has notified Respondent of a violation.

88. All penalties accruing under this Section shall be due and payable to EPA within 30 days of Respondent's receipt from EPA of a demand for payment of the penalties, unless Respondent invokes the dispute resolution procedures under Section XVI (Dispute Resolution). All payments to EPA under this Section shall be paid by certified or cashier's check(s) made payable to "EPA Hazardous Substances Superfund," shall be mailed to:

Mellon Bank
EPA Region VII
(Comptroller Branch)
P.O. Box 371099M
Pittsburgh, Pennsylvania 15251

and shall indicate that the payment is for stipulated penalties, and shall reference the EPA Region and Site/Spill ID Number 07NY Operable Unit 02, the EPA Docket Number which appears on the face of this Order, and the name and address of the party making payment. Copies of check(s) paid pursuant to this Section, and any accompanying transmittal letter(s), shall be sent to EPA's OSC.

89. The payment of penalties shall not alter in any way Respondent's obligation to complete performance of the Work required under this Order.

90. Penalties shall continue to accrue during any dispute resolution period, but need not be paid until 15 days after the dispute is resolved by agreement or by receipt of EPA's decision.

91. If Respondent fails to pay stipulated penalties when due, EPA may institute proceedings to collect the penalties, as well as Interest. Respondent shall pay Interest on the unpaid balance, which shall begin to accrue on the date of demand made pursuant to Paragraph 87 above. Nothing in this Order shall be construed as prohibiting, altering, or in any way limiting the ability of EPA to seek any other remedies or sanctions available by virtue of Respondent's violation of this Order or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Sections 106(b) and 122(f) of CERCLA, 42 U.S.C. §§ 9606(b) and 9622(f), and punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Provided, however, that EPA shall not seek civil penalties pursuant to Section 106(b) or 122(f) of CERCLA or punitive damages pursuant to Section 107(c)(3) of CERCLA for any violation for which a stipulated penalty is provided herein, except in the case of a willful violation of this Order or in the event that EPA assumes performance of a portion or all of the Work pursuant to Paragraph 94. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Order.

XIX. RESERVATIONS OF RIGHTS BY EPA

92. Except as specifically provided in this Order, nothing herein shall limit the power and authority of EPA or the United States to take, direct, or order all actions necessary to protect

public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing herein shall prevent EPA from seeking legal or equitable relief to enforce the terms of this Order, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring Respondent in the future to perform additional activities pursuant to CERCLA or any other applicable law.

93. EPA reserves, and this Order is without prejudice to, all rights against Respondent with respect to all other matters, including, but not limited to:

- a. claims based on a failure by Respondent to meet a requirement of this Order;
- b. liability for all response costs incurred by the United States that are not reimbursed by Respondent, any costs incurred in the event that EPA performs the Soil Removal Action or the RI/FS or any part thereof, and any costs incurred by the United States in connection with response activities conducted under CERCLA at this site but not pursuant to this Order;
- c. liability for performance of response action other than the Work;
- d. criminal liability;
- e. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;
- f. liability arising from the past, present, or future disposal, release or threat of release of Waste Materials outside of the Site; and
- g. liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Site.

94. Work Takeover. In the event that EPA determines that Respondent has ceased implementation of any portion of the Work, is seriously or repeatedly deficient or late in its performance of the Work, or is implementing the Work in a manner which may cause an endangerment to human health or the environment, EPA may assume the performance of all or any portion of the Work as EPA determines necessary. Respondent may invoke the procedures set forth in Section XVI (Dispute Resolution) to dispute EPA's determination that takeover of the Work is warranted under this Paragraph. Costs incurred by the United States in performing the Work pursuant to this Paragraph shall be reimbursed by Respondent pursuant to Section XV (Payment of Response Costs). Notwithstanding any other provision of this Order, EPA retains all authority and reserves all rights to take any and all response actions authorized by law.

XX. COVENANTS NOT TO SUE

95. Respondent covenants not to sue and agrees not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to the Work, Past Response Costs, Future Response Costs, or this Order, including, but not limited to:

- a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund established by 26 U.S.C. § 9507, based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;
- b. any claim arising out of response actions at or in connection with the Site, including any claim under the United States Constitution, the Iowa Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law; or
- c. any claim against the United States pursuant to Sections 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, relating to the Site.

These covenants not to sue by Respondent shall not apply in the event the United States brings a cause of action or issues an order pursuant to the reservations set forth in Paragraph 93(b), (c), and (e) - (g), but only to the extent that Respondent's claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

96. In consideration of the action that will be performed and the payments that will be made by Respondent under the terms of this Order, and except as otherwise specifically provided in this Order, EPA covenants not to sue or to take administrative action against Respondent pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), for the Work performed under this Order and for recovery of Past Response Costs and Future Response Costs paid pursuant to this Order. This covenant not to sue shall take effect upon receipt by EPA of the Past Response Costs due under Section XV of this Order and any Interest or Stipulated Penalties due for failure to pay Past Response Costs as required by Sections XVIII and XV of this Order. This covenant not to sue is conditioned upon the complete and satisfactory performance by Respondent of its obligations under this Order, including, but not limited to payment of Future Response Costs pursuant to Section XV. This covenant not to sue extends only to Respondents and does not extend to any other person.

97. Nothing in this Order shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

XXI. OTHER CLAIMS

98. By issuance of this Order, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondent. The United States or EPA shall not be deemed a party to any contract entered into by Respondent or its agents, successors, representatives, heirs, assigns, contractors, or consultants in carrying out actions pursuant to this Order.

99. Nothing in this Order constitutes a satisfaction of or release from any claim or cause of action against any person not a party to this Order, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

100. No action or decision by EPA pursuant to this Order shall give rise to any right to judicial review, except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XXII. CONTRIBUTION PROTECTION

101. The Parties agree that Respondent is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), for "matters addressed" in this Order. The "matters addressed" in this Order are the Work, Past Response Costs, and Future Response Costs as defined in this Order. Except as otherwise expressly provided in this Order, nothing in this Order precludes the United States or Respondent from asserting any claims, causes of action, or demands against any persons not parties to this Order for indemnification, contribution, or cost recovery.

102. In any subsequent administrative or judicial proceeding initiated by the United States for injunctive relief, recovery of response costs, or other appropriate relief relating to the Site, Respondent shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States in the subsequent proceeding were or should have been brought in the instant case.

XXIII. INDEMNIFICATION

103. Respondent shall indemnify, save and hold harmless the United States, its officials, agents, contractors, subcontractors, employees and representatives from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, or subcontractors, in carrying out actions pursuant to this Order. In addition, Respondent agrees to pay the United States all costs incurred by the United States, including but not limited to attorneys fees and other expenses of litigation and settlement, arising from or on account of claims made against the United States based on negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, subcontractors and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Order. The United States shall not be held out as a party to any contract entered into by or on behalf of Respondent in carrying out activities pursuant to this Order. Neither Respondent nor any such contractor shall be considered an agent of the United States.

104. The United States shall give Respondent notice of any claim for which the United States plans to seek indemnification pursuant to this Section and will consult with Respondent prior to settling such claim.

105. Respondent waives all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between Respondent and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Respondent shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Respondent and any person for performance of Work

on or relating to the Site, including, but not limited to, claims on account of construction delays.

XXIV. INSURANCE

106. At least 7 days prior to commencing any on-Site work under this Order, Respondent shall secure, and shall maintain for the duration of this Order, comprehensive general liability insurance and automobile insurance with limits of 3 million dollars, combined single limit. Within the same time period, Respondent shall provide EPA with certificates of such insurance. In addition, for the duration of the Order, Respondent shall satisfy, or shall ensure that its contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Respondent in furtherance of this Order. If Respondent demonstrates by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described in this Section, or insurance covering some or all of the same risks but in an equal or lesser amount, then Respondent need provide only that portion of the insurance described above which is not maintained by such contractor or subcontractor.

107. Respondent or its contractors and subcontractors shall also secure and maintain in force for the duration of this Order and for two years after the completion of all activities required by this Consent Order, the following:

- a. Professional Errors and Omissions Insurance in the amount of \$1,000,000.00 per occurrence.
- b. Pollution Liability Insurance in the amount of \$1,000,000.00 per occurrence, covering as appropriate both general liability and professional liability arising from pollution conditions.

108. Respondent shall be allowed to self-insure any or all of the coverages required in the foregoing Paragraphs 106 and 107.

XXV. FINANCIAL ASSURANCE

109. Within 60 days of the Effective Date, Respondent shall establish and maintain financial security in the amount of \$6,000,000 in one or more of the following forms:

- a. A surety bond guaranteeing performance of the Work;
- b. One or more irrevocable letters of credit equaling the total estimated cost of the Work;
- c. A trust fund;
- d. A guarantee to perform the Work by one or more parent corporations or subsidiaries, or by one or more unrelated corporations that have a substantial business relationship with the Respondent; or
- e. A demonstration that the Respondent satisfies the requirements of 40 C.F.R.

§ 264.143(f).

110. If Respondent seeks to demonstrate the ability to complete the Work through a guarantee by a third party pursuant to Paragraph 109(a), Respondent shall demonstrate that the guarantor satisfies the requirements of 40 C.F.R. § 264.143(f). If Respondent seeks to demonstrate its ability to complete the Work by means of the financial test or the corporate guarantee pursuant to Paragraph 109(d) or (e), it shall resubmit sworn statements conveying the information required by 40 C.F.R. § 264.143(f) annually, on the anniversary of the Effective Date. In the event that EPA determines at any time that the financial assurances provided pursuant to this Section are inadequate, Respondent shall, within 30 days of receipt of notice of EPA's determination, obtain and present to EPA for approval one of the other forms of financial assurance listed in Paragraph 109. Respondent's inability to demonstrate financial ability to complete the Work shall not excuse performance of any activities required under this Order.

111. If, after the Effective Date, Respondent can show that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph 109, Respondent may, on any anniversary date of the Effective Date, or at any other time agreed to by the Parties, reduce the amount of the financial security provided under this Section to the estimated cost of the remaining Work to be performed. Respondent shall submit a proposal for such reduction to EPA, in accordance with the requirements of this Section, and may reduce the amount of the security upon approval by EPA. In the event of a dispute, Respondent may reduce the amount of the security in accordance with the written decision resolving the dispute.

112. Respondent may change the form of financial assurance provided under this Section at any time, upon notice to and approval by EPA, provided that the new form of assurance meets the requirements of this Section. In the event of a dispute, Respondent may change the form of the financial assurance only in accordance with the written decision resolving the dispute.

XXVI. MODIFICATIONS

113. This Order may be modified by mutual agreement between Respondent and EPA. Any such amendment shall be in writing and shall be signed by authorized representatives of Respondent and EPA. Unless otherwise provided for in the amendment, the effective date of any such modification shall be the date on which the written agreement or modification is signed by EPA after signature by respondents. All such modifications shall be incorporated into and become a part of this order.

114. The OSC may make modifications to any Removal Action plan or schedule in writing or by oral direction. Any oral modification will be memorialized in writing by EPA promptly, but shall have as its effective date the date of the OSC's oral direction. Any other requirements of this Order may be modified in writing by mutual agreement of the parties.

115. If Respondent seeks permission to deviate from any approved Removal Action Work Plan or schedule or from any approved RI/FS Work Plan or schedule, Respondent's Project Coordinator shall submit a written request to EPA for approval outlining the proposed modification and its basis. Respondent may not proceed with the requested deviation until receiving oral or written approval from the OSC pursuant to the preceding Paragraph.

116. No informal advice, guidance, suggestion, or comment by the OSC or other EPA representatives regarding reports, plans, specifications, schedules, or any other writing submitted by Respondent shall relieve Respondent of its obligation to obtain any formal approval required by this Order, or to comply with all requirements of this Order, unless it is formally modified.

XXVII. ADDITIONAL REMOVAL ACTION OR RI/FS WORK

117. If EPA determines that additional removal actions not included in an approved plan are necessary to protect public health, welfare, or the environment, EPA will notify Respondent of that determination. Unless otherwise stated by EPA, within 30 days of receipt of notice from EPA that additional removal actions are necessary to protect public health, welfare, or the environment, Respondent shall submit for approval by EPA a Work Plan for the additional removal actions. The plan shall conform to the applicable requirements of Section VI (Order on Consent) of this Order. Upon EPA's approval of the plan pursuant to Section VII, Respondent shall implement the plan for additional removal actions in accordance with the provisions and schedule contained therein. This Section does not alter or diminish the OSC's authority to make oral modifications to any plan or schedule pursuant to Section XXVI (Modifications).

118. If EPA determines that in addition to tasks defined in the initially approved work plan, other additional work may be necessary to accomplish the objectives of the RI/FS as set forth in the statement of work for this RI/FS, EPA may require that the Respondent perform these response actions in addition to those required by the initially approved work plan including any approved modifications if it determines that such actions are necessary for a complete RI/FS. Respondent shall confirm its willingness to perform the additional work in writing to EPA within seven (7) days of receipt of the EPA request or Respondent shall invoke dispute resolution. Subject to EPA resolution of any dispute, Respondent shall implement the additional tasks which EPA determines are necessary. The additional work shall be completed according to the standards, specifications, and schedule set forth or approved by EPA in a written modification to the work plan or written work plan supplement. EPA reserves the right to conduct the work itself at any point, to seek reimbursement from Respondent and/or to seek any other appropriate relief.

XXVIII. NOTICE OF COMPLETION OF WORK

119. When EPA determines, after EPA's review of the Removal Final Report and the RI/FS Final Report, that all Work has been fully performed in accordance with this Order, with the exception of any continuing obligations required by this Order, including post-removal site controls, payment of Future Response Costs, and record retention, EPA will provide written notice to Respondent. If EPA determines that any such Work has not been completed in accordance with this Order, EPA will notify Respondent, provide a list of the deficiencies, and require that Respondent modify the work plans, as appropriate, in order to correct such deficiencies. Respondent shall implement the relevant modified and approved work plan and shall submit a modified Final Report in accordance with EPA's notice. Failure by Respondent to implement the approved modified work plans shall be a violation of this Order.

XXIX. SEVERABILITY/INTEGRATION

120. If a court issues an order that invalidates any provision of this Order or finds that Respondent has sufficient cause not to comply with one or more provisions of this Order,

Respondent shall remain bound to comply with all provisions of this Order not invalidated or determined to be subject to a sufficient cause defense by the court's order.

121. This Order constitutes the final, complete and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Order. The parties acknowledge that there are no representations, agreements or understandings relating to the settlement other than those expressly contained in this Order.

XXX. EFFECTIVE DATE

122. This Order shall become effective on the date that it is signed by the Director of Region VII's Superfund Division.

FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY

Date

CECILIA TAPIA
Director, Superfund Division
U.S. Environmental Protection
Agency, Region VII 901 North 5th Street
Kansas City, Kansas 66101

Date

GERHARDT BRAECKEL
Attorney
U.S. Environmental Protection
Agency, Region VII 901 North 5th Street
Kansas City, Kansas 66101

For INTERSTATE POWER AND LIGHT COMPANY:

9-16-2004
Date

BY: Thomas L. Aller
Name: Thomas L. Aller
Title: President of Interstate
Power and Light Company

ATTACHMENT I

SCOPE OF WORK FOR THE REMOVAL ACTION AT THE CLINTON COAL GAS SITE CLINTON, IOWA

PURPOSE

1. The purpose of this Scope of Work (SOW) for the Clinton Coal Gas Site (Site) is to define the tasks, standards and guidelines which shall be followed by the Respondent (1) to conduct a removal action to remove and properly dispose of contaminated surface soil from the Site, including the PCB hot spot identified in the Engineering Evaluation and Cost Analysis (EE/CA) for this Site; (2) to conduct a removal action of the contents of the accessible gas holders and tar wells and contaminated soil; (3) to abandon properly the former storm sewer lines and water intake line to minimize potential conduits for migration of impacted groundwater; (4) to implement engineering controls, designed in conjunction with future site developments to prevent exposure to impacted soil; and (5) to implement interim institutional controls for the inaccessible gas holder and the railroad corridor to prevent possible future exposure risks, as well as for the restriction of future utilization of impacted groundwater. In accomplishing the above purposes, the Respondent shall comply with the provisions of the corresponding Administrative Order on Consent (CONSENT ORDER) between the United States Environmental Protection Agency (EPA) and Interstate Power and Light Company (Respondent), this SOW, CERCLA, the National Contingency Plan (NCP) and EPA guidance (including, but not limited to the guidance documents referenced in this SOW). The schedule and statement of work to be performed under the CONSENT ORDER is set forth hereinafter.

WORK TO BE PERFORMED

2. Respondent shall perform the tasks set forth below in designing and implementing the work required for the Site. Additionally, Respondent shall insure the design and implementation of EPA's chosen remedy meets or exceeds the performance standards, specifications and applicable or relevant and appropriate requirements (ARARs) set forth below. The work required shall consist of the following three tasks:

- TASK I: Preparation of Removal Action Work Plan (RAWP)
- TASK II: Performance of Removal Action
- TASK III: Reports

TASK I: Removal Action Work plan:

3. Within forty-five (45) days of the effective date of the Consent Order, Respondent shall prepare and submit to EPA for review and approval, a Removal Action Work Plan (RAWP) that shall describe the proposed tasks and schedules associated with excavation, processing and offsite disposal of soils and gas holder and tar well contents, the procedures for abandonment of the storm sewer lines and water intake line, the establishment of interim institutional controls for the inaccessible gas holder, the impacted groundwater and the railroad corridor and engineering controls, in the form of additional pavement, to restrict infiltration and eliminate direct exposure to impacted vadose zone soil. The RAWP shall be prepared to require the response action to be performed in accordance with standards set forth in Task II, below, and shall include the following information:

- A. A clear and concise description of roles, relationships and assignment of responsibilities among the Respondent, Project Coordinator, Quality Assurance Officer, Construction Supervisor and Construction Personnel;
- B. A proposed schedule for the removal action that will require commencement of coal-tar excavation by Winter 2004;
- C. A detailed description of site preparation activities, including establishment of security and control, definition of clearing and grubbing limits, establishment of work and support areas, and definition of decontamination areas; for the excavation of soils and structural materials at the Site, in general agreement with the conceptual excavation plan described in the EE/CA, a plan view which is included in the EE/CA;
- D. A proposed design of an air monitoring program to be used during site excavation and material handling activities;
- E. A description of proposed sampling and analytical procedures, including field screening and laboratory methods, to be conducted on soil samples collected during excavation activities;
- F. Description of the methods proposed to be used to control odors, fugitive dust and/or volatilization of PAHs from excavation at the Site;
- G. A description of the method of transportation for all contaminated materials, manifesting requirements in accordance with federal and state Department of Transportation (DOT) regulations, and material quantity

accounting procedures. In addition, Respondent shall provide written notice prior to any out-of-state shipment of waste material;

H. A detailed description of the sampling and quality assurance/quality control (QA/QC) measures to be taken during the sampling activities;

I. A description of Site restoration requirements after completion of removal action. This description shall include all work necessary to restore property to its original pre-removal condition, including but not limited to the placement of clean fill, trees, reseeding or sodding of grass areas, and the replacement of driveways, walkways and other structures; and

J. A plan for identifying and complying with applicable permitting requirements and environmental statutes.

5. As components of the Removal Action Workplan, Respondent shall develop and submit the following project plans to support field activities:

A. Sampling and Analysis Plan (SAP); and

B. Health and Safety Plan (HSP)

6. The Sampling and Analysis Plan (SAP) shall provide a process for obtaining data of sufficient quality and quantity to satisfy data needs to characterize the site. No field activities shall take place until EPA has reviewed and approved the SAP. The SAP shall consist of two parts:

A. **A Field Sampling Plan (FSP)** which describes the estimated number, type, and location of samples to be collected at the site to further define the extent of contamination or to confirm when certain actions have achieved the desired results, or to conduct tests on the material for treatability. Respondents shall include provisions for split samples provided to EPA, its contractors, or the State of Iowa as appropriate. No less than five (5) working days notice must be given to EPA prior to collecting samples. The plan shall also include the types of analyses to be conducted for each sample and a brief rationale for collecting the sample and performing the analysis (e.g., soil sample submitted for Multiple Extraction Procedure Analysis to confirm cleanup criteria have been met).

B. **A Quality Assurance Project Plan (QAPP)**, which describes policy, organization, and functional activities and the data quality objectives and measures necessary to achieve adequate data for use in planning and

documenting the removal action. The QAPP shall be written in accordance with a category III project as described in "Preparing Perfect Project Plans", U.S. EPA, Office of Research and Development, EPA/600/9-89/087, October 1989.

7. The FSP shall require that all sample collection and analysis be performed in compliance with EPA approved methods, including timing of analysis and documentation of sample collection, handling, and analysis. Any proposed sampling scheme shall be capable of producing representative and statistically valid samples, and generally conform to the following EPA guidance documents:

A. Compendium of ERT Field Analytical Procedures - Office of Emergency and Remedial Response, Publication 9360.4-04, May 1992.

B. Compendium of ERT Waste Sampling Procedures - Office of Solid Waste and Emergency Response, EPA/540/P-91/008, January 1991.

C. QA/QC Guidance for Removal Activities: Sampling QA/QC Plan and Data Validation Procedures - Office of Emergency and Remedial Response, EPA/540/G-90/004, April 1990.

D. Removal Program Representative Sampling Guidance, Volume 1: Soil - Office of Emergency and Remedial Response, publication 9360.4-10, November 1991.

E. Compendium of ERT Soil Sampling and Surface Geophysics Procedures - Office of Solid Waste and Emergency Response, EPA/540/P-91/006, January 1991.

8. The FSP shall require that all samples shall be analyzed by a laboratory that participates in a quality assurance/quality control program equivalent to that specified in, "USEPA Contract Laboratory Program Statement of Work for Analysis", Exhibit E, EPA SOW No. 788, July 1988.

9. The **Health and Safety Plan**, shall be prepared in accordance with 40 C.F.R. Part 300.150 and all applicable OSHA requirements at 29 C.F.R. 1910. In addition to the requirements addressed in these regulations, this plan shall generally follow the guidelines established in EPA's "Standard Operating Safety Guides", Office of Emergency and Remedial Response, publication 9285.1-03, June 1992.

Task II: Performance of Removal Action

10. The Removal Action shall be conducted in accordance the following performance standards, as set forth in the approved RAWP:

A. For the Interstate Power portion of the Site: For the IPLC portion of the site, the RAWP shall include a detailed description of the following removal work:

(1) Excavation and off-site treatment or disposal of PCB-impacted "hot spot surface soil" as identified in the EE/CA and located generally as indicated on the attached map, to eliminate the direct contact exposure pathway in surface soil (the cleanup concentration will be 25 ppm as bulk PCB remediation waste for low occupancy areas per 40 CFR 761.61(a)(4) unless another risk based cleanup level is approved by EPA);

(2) Excavation and off-site treatment or disposal of the contents and surrounding contaminated soils from the accessible gas holder and tar wells as described in the EE/CA and located generally as indicated on the attached map, to remove potential source material to reduce the potential for continued releases or leaching of impacts to soil and groundwater (the cleanup concentrations will be as set out in the attached table unless other risk based cleanup levels are approved by EPA);

(3) Institutional controls for the inaccessible gas holder to prevent possible future exposure risks;

(4) Engineering controls, in the form of additional pavement in the service center area, to restrict infiltration and eliminate the direct exposure pathway (unauthorized access) to impacted vadose zone soil;

(5) Interim institutional controls to limit intrusive site work and to restrict utilization of impacted groundwater until the institutional controls selected as a result of the groundwater RI/FS have been implemented.

B. For the Former Allied Steel portion of the Site:

(1) Excavation and off-site treatment or disposal of the contents and surrounding contaminated soils from the accessible gas holder and tar wells as described in the EE/CA and located generally as indicated on the attached map, to remove potential source material to reduce the potential for continued releases or leaching of impacts to soil and groundwater (the cleanup concentrations will

be as set out in the attached table unless other risk based cleanup levels are approved by EPA);

- (2) Engineering controls, designed and implemented in conjunction with future site development to prevent exposure to impacted soil;
- (3) Interim institutional controls to limit intrusive site work and to restrict future utilization of impacted groundwater until the institutional controls selected as a result of the groundwater RI/FS have been implemented;
- (4) Abandonment of the former storm sewer lines and the water intake line to minimize potential conduits for migration of impacted groundwater;
- (5) If on-site storage of contaminated materials is necessary at any time during the removal activity, such material must be stored in such a manner as to prevent migration of contaminants.

11. Upon EPA approval of the RAWP, Respondent shall construct and implement the Removal Action in accordance with the approved designs, schedules and plans contained therein. Respondent shall document completion of the Removal Action in accordance with the following procedures:

A. Prefinal Inspection and Report: Upon preliminary completion of the removal action, Respondent shall contact EPA for the purpose of scheduling and conducting a prefinal site inspection with EPA. The prefinal inspection shall consist of a walk-through inspection of the entire project site. The purpose of the prefinal inspection will be to determine whether the removal action has been completed consistent with the approved RAWP.

- (1) Within five (5) days of the prefinal inspection, Respondent shall submit to EPA, for review and approval, a Prefinal Inspection Report that will document all unfinished removal action work discovered during the prefinal inspection.
- (2) Within the Prefinal Inspection Report, Respondent shall outline the actions required to resolve all outstanding removal action work and shall propose a schedule to complete these items.
- (3) Within the Prefinal Inspection Report, Respondent shall also certify that all other removal work has been completed in a manner sufficient to meet the requirements of the approved RAWP.

(4) Respondent shall provide a copy of the Prefinal Inspection report to all property owners on whose property access was required to complete the Removal Action.

B. Final Inspection: Upon completion of any outstanding removal action work, Respondent shall notify EPA for the purpose of scheduling a final site inspection.

(1) The final inspection shall consist of a walk-through inspection by EPA and Respondent of the project site.

(2) The Prefinal Inspection Report will be used as a checklist with the final inspection focusing on the outstanding removal work items identified in the prefinal inspection.

C. Certification of Completion: Upon confirmation that the purpose, intent and requirements of the RAWP have been satisfied, in conformance with engineering practice, EPA shall provide Respondent a written certification of completion of the Removal Action.

TASK III: REPORTS

12. Respondent shall prepare the workplans and reports set forth in Task I through Task II to accomplish the design, construction, operation and maintenance, and monitoring of the Removal Action. In addition, the Respondent shall provide the following documentation:

A. Periodic Progress Reports: Unless a longer time period is approved in writing by the OSC, Respondent shall submit a monthly written progress report to EPA and the IDNR concerning actions undertaken pursuant to this Order starting from the receipt of EPA's approval of the RAWP until termination of this Order. The periodic progress reports shall be of similar content as a Pollution Report (POLREP) as described in "Superfund Removal Procedures, Removal Response Reporting: POLREPS and OSC Reports", U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9360.3-03, June 1994. At a minimum, the periodic progress reports shall include the following information:

(1) A summary of actions which have been taken to comply with the Consent Order during the reporting period;

- (2) Copies of results of sampling and tests and all other raw data received by Respondents;
- (3) A description of work planned for the month with scheduling related to such work and the overall project schedule for the removal;
- (4) A summary of problems encountered and any anticipated problems, any actual delays and solutions developed and implemented to address any actual or anticipated problems or delays; and
- (5) Summaries of all contacts with representatives of the local community, public interest groups, state and federal governments during the reporting period.

B. Removal Final Report. Within 90 days after completion of all Removal Work required by the Order, Respondent shall submit for EPA review and approval a Removal Final Report summarizing the actions taken to comply with the Order. The Removal Final Report shall conform, at a minimum, with the requirements set forth in Section 300.165 of the NCP entitled "OSC Reports." At a minimum, the Removal Final Report shall include the following information:

- (1) A good faith estimate of total costs or a statement of actual costs incurred in complying with the Order;
- (2) A listing of quantities and types of materials removed off-Site or handled on-Site, a discussion of removal and disposal options considered for those materials, and a listing of the ultimate destination(s) of those materials;
- (4) A presentation of the analytical results of all sampling and analyses performed and accompanying appendices containing all relevant documentation generated during the removal action (e.g., manifests, invoices, bills, contracts, and permits); and
- (5) The following certification signed by a person who supervised or directed the preparation of that report:

"Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

SCHEDULE OF SOW SUBMISSION
DUE DATES AND ACTIVITY IMPLEMENTATION DATES

TASKS I AND II - Design and Implementation of Removal Action

- Submit Removal Action Work Plan - within 45 days after the effective date of the CONSENT ORDER
- Implement Removal Action - Immediately upon written EPA approval of the Removal Action Work Plan.

TASK III - Reports

- Unless a longer time period is approved in writing by the OSC, Respondent shall submit a monthly written progress report to EPA and the IDNR concerning actions undertaken pursuant to this Order starting from the receipt of EPA's approval of the RAWP until EPA Issues the Removal Certificate of Completion.
- Submit Removal Final Report within 90 days after completion of all removal work.

TABLE
CLINTON COAL GAS SITE, CLINTON, IOWA
REMOVAL SOIL CLEANUP CONCENTRATION LEVELS FOR
CARCINOGENIC POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs)

Compound	Surface Soil (0-2 feet) (mg/kg)	2 Feet to Water Table (mg/kg)
Benzo(a)anthracene	28	310
Benzo(a)pyrene	2.8	31
Benzo(b)fluoranthene	28	310
Benzo(k)fluoranthene	280	3,100
Chrysene	2,800	31,000
Dibenz(ah)anthracene	2.8	31
Indeno(1,2,3-cd)pyrene	28	310

ATTACHMENT II

CLINTON COAL GAS SITE RI/FS SOW

STATEMENT OF WORK FOR RESPONDENT-CONDUCTED REMEDIAL INVESTIGATION AND FEASIBILITY STUDY

INTRODUCTION

The purpose of this focused remedial investigation and feasibility study (RI/FS) is to complete the investigation of the nature and extent of contamination at the site and to develop and evaluate potential remedial alternatives. The nature and extent of most of the contamination at this site as well as the baseline risk assessment have already been documented in the June 2000 Engineering Evaluation/Cost Analysis (EE/CA) Part I: Site Characterization (Site Characterization) and the August 2002 Part II: Baseline Risk Assessment. However, some off-site migration of contaminated groundwater appears to have occurred in two or three places along the edge of the site. The boundaries of those contiguous shallow groundwater plumes have not been established. Also the question of ground water flow direction needs some clarification. Therefore, the Respondent will conduct a focused remedial investigation to determine the nature and extent of off-site migration of hazardous substances, pollutants or contaminants from the site or facility and any threat to the public health, welfare, or the environment caused by such migration and provide the results in an investigation report that will serve as an amendment or supplement to the Site Characterization report. The Respondent will also amend or supplement the human health baseline risk assessment in accordance with the results of the off-site migration investigation, if needed. The amendments or supplements to the Site Characterization report and to the human health baseline risk assessment will be combined with the EE/CA Part I: Site Characterization report and the Part II: Baseline Risk Assessment report to form the Remedial Investigation report for this site.

The Respondent shall conduct a Feasibility Study which will include a treatability study, a memorandum on institutional controls and a draft feasibility study report. The range of removal alternatives for ground water in the July 2002 EE/CA Part III: Removal Alternatives Evaluation will be considered as the range of remedial alternatives in this FS. The treatability study shall address the groundwater and the coal tar and contaminated soil which is expected to remain at the site after the removal action. One of the purposes of the treatability study will be to determine the appropriateness and potential effectiveness of monitored natural attenuation for remediation of the groundwater. The memorandum on institutional controls shall review institutional controls as potential parts of the remedial action. The draft feasibility report shall include a detailed analysis of the remedial alternatives using the nine criteria. The Feasibility Study report for the site will include the EE/CA Part III: Removal Alternatives Evaluation report, the treatability study, the memorandum on institutional controls and the analysis of remedial alternatives using the nine criteria.

The Respondent will conduct this focused RI/FS and produce a draft RI/FS report that is in accordance with this statement of work, the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (U.S. EPA, Office of Emergency and Remedial Response, October 1988), and any other guidances that EPA uses in conducting a RI/FS (a list of the primary

guidance is attached), as well as any additional requirements in the administrative order. The RI/FS Guidance describes the required report content. The Respondent will furnish all necessary personnel, materials, and services needed, or incidental to, performing the RI/FS, except as otherwise specified in the administrative order.

At the completion of the FS, EPA will be responsible for the selection of a site remedy and will document this selection in a Record of Decision (ROD). The remedial action alternative selected by EPA will meet the cleanup standards specified in CERCLA Section 121. That is, the selected remedial action will be protective of human health and the environment, will be in compliance with, or include a waiver of, applicable or relevant and appropriate requirements of other laws, will be cost-effective, will utilize permanent solutions and alternative treatment technologies or resource recovery technologies, to the maximum extent practicable, and will address the statutory preference for treatment as a principal element. To the extent that institutional controls form any part of the remedial action, the selected remedial action will also address EPA's preference, as set forth in the Site Manager's Guide, that institutional controls be layered or used in a series to ensure maximum long-term reliability. The EE/CA, the final RI/FS report, as adopted by EPA will, with the administrative record, form the basis for the selection of the site's remedy and will provide the information necessary to support the development of the ROD.

As specified in CERCLA Section 104(a)(1), as amended by SARA, EPA will provide oversight of the Respondent's activities throughout the RI/FS. The Respondent will support EPA's initiation and conduct of activities related to the implementation of oversight activities.

TASK 1 - COMMUNITY INVOLVEMENT.

The development and implementation of community involvement activities are the responsibility of EPA. The critical community involvement planning steps performed by EPA include the development of a community involvement plan. Although implementation of the community involvement plan is the responsibility of EPA, the Respondent may assist by providing information regarding the site's history, participating in public meetings, or by preparing fact sheets for distribution to the general public. The extent of PRP involvement in community involvement activities is left to the discretion of EPA. The Respondent's community involvement responsibilities, if any, are specified in the community involvement plan. All PRP-conducted community involvement activities will be subject to oversight by EPA.

TASK 2 - OFF-SITE PLUME INVESTIGATION (RI/FS Manual, Chapter 3)

The Respondent will determine the perimeters of the three off-site plumes identified in the EE/CA and investigate the groundwater flow directions in these plumes. The Respondent shall identify the sources of contamination and define the nature and extent of the contamination located in the three off-site plumes. Field data will be collected and analyzed to provide the information required to accomplish the objectives of the study. The SAP and health and safety plan utilized in the EE/CA

will be updated and amended.

The Respondent will notify EPA at least two weeks in advance of the field work regarding the planned dates for field activities, including ecological field surveys, field lay out of the sampling grid, excavation, installation of wells, initiating sampling, installation and calibration of equipment, pump tests, and initiation of analysis and other field investigation activities. The Respondent will demonstrate that the laboratory and type of laboratory analyses that will be utilized during site characterization meets the specific QA/QC requirements of the site investigation as specified in the SAP. In view of the unknown site conditions, activities are often iterative and to satisfy the objectives of the RI/FS the Respondent may have to conduct work in addition that specified in the initial work plan.

The Respondent will prepare and submit an investigation report on the off-site contamination plumes for EPA review and approval. This report shall summarize results of field activities to characterize the off-site contamination plumes, sources of contamination and the fate and transport of contaminants. This investigation report and any amendment or supplement to the risk assessment combined with the EE/CA Part I: Site Characterization report and the Part II: Baseline Risk Assessment report will form the Remedial Investigation report for this site.

TASK 3 - TREATABILITY STUDIES (RI/FS Manual, Chapter 5)

Treatability testing will be performed by the Respondent to assist in the detailed analysis of alternatives. Specifically, additional treatability testing is warranted for further consideration of monitored natural attenuation of ground water in the FS, as it was identified as a removal alternative in the EE/CA. In addition, if applicable, testing results and operating conditions will be used in the detailed design of the selected remedial technology. The deliverables that are required include a work plan, a sampling and analysis plan, and a final treatability evaluation report. EPA may also require a treatability study and safety plan, where appropriate.

a. Treatability testing work plan (5.5)

The Respondent will prepare a treatability testing work plan for EPA review and approval describing the site background, remedial technology(ies) to be tested, test objectives, experimental procedures, treatability conditions to be tested, measurements of performance, analytical methods, data management and analysis, health and safety, and residual waste management. The Data Quality Objectives (DQOs) for treatability testing should be documented as well. If pilot scale treatability testing is to be performed, the pilot-scale work plan will describe pilot plant installation and start-up, pilot plant operation and maintenance procedures, operating conditions to be tested, a sampling plan to determine pilot plant performance, and a detailed health and safety plan. If testing is to be performed off-site, permitting requirements will be addressed.

b. Treatability study SAP (5.5)

If the original Quality Assurance Project Plan (QAPP) or Field Sampling Plan (FSP) is not adequate for defining the activities to be performed during the treatability test, a separate treatability study Sampling and Analysis Plan (SAP) or amendment to the original site SAP will be prepared by the Respondent for EPA review and approval.

c. Treatability study health and safety plan (5.5)

If the original health and safety plan is not adequate for defining the activities to be performed during the treatment tests, a separate or amended health and safety plan will be developed by the Respondent. EPA does not "approve" the treatability study health and safety plan.

d. Treatability study evaluation report (5.6)

Following completion of treatability testing, the Respondent will analyze and interpret the testing results in a technical report to EPA. Depending on the sequence of activities, this report may be a part of the FS report or a separate deliverable. The report will evaluate each technology's effectiveness, implementability, cost and actual results as compared with predicted results. The report will also evaluate full scale application of the technology, including a sensitivity analysis identifying the key parameters affecting full-scale operation.

TASK 4 - DEVELOPMENT AND SCREENING OF REMEDIAL ALTERNATIVES (RI/FS Manual, Chapter 4)

The development and screening of remedial alternatives is performed to develop an appropriate range of waste management options that will be evaluated. This range of alternatives should include as appropriate, options in which treatment is used to reduce the toxicity, mobility, or volume of wastes, but varying in the types of treatment, the amount treated, and the manner in which long-term residuals or untreated wastes are managed; options involving containment with little or no treatment; options involving both treatment and containment; and a no-action alternative. The following activities will be performed as a function of the development and screening of remedial alternatives.

a. Development and Screening of remedial Alternatives (4.2)

The Respondent will begin to develop and evaluate a range of appropriate waste management options that at a minimum ensure protection of human health and the environment.

i. Refine and document remedial action objectives (4.2.1)

Based on the baseline risk assessment, the Respondent will review and if necessary modify the site-specific remedial action objectives, especially the Preliminary Remediation Goals (PRGs), that were established by EPA prior to or during negotiations between EPA and the Respondent. The revised PRGs will be documented in a technical memorandum that will be reviewed and approved by EPA. These modified PRGs will specify the contaminants and media of interest, exposure pathways and receptors, and an acceptable contaminant level or range of levels (at particular locations for each exposure route). In light of the baseline risk assessment, the Respondent will also review and, if necessary, modify the site-specific remedial action objectives for the institutional controls.

ii. Develop general response action (4.2.2)

The Respondent will develop general actions for ground water defining containment, treatment, pumping, institutional controls or other actions, singly or in combination, to satisfy the remedial action objectives.

iii. Identify areas or volumes of media (4.2.3)

The Respondent will identify areas or volumes of media to which general response actions may apply, taking into account requirements for protectiveness as identified in the remedial action objectives. The chemical and physical characterization of the site will also be taken into account.

iv. Identify, screen, and document remedial technologies and institutional controls. (4.2.4; 4.2.5)

The Respondent will identify and evaluate technologies and institutional controls applicable to each general response action to eliminate those that cannot be implemented at the site. General response actions will be refined to specify remedial technology types and institutional controls that may meet the remedial action objectives. Technology process options for each of the technology types will be identified either concurrent with the identification of technology types, or following the screening of the considered technology types. Process options will be evaluated on the basis of effectiveness, implementability, and cost factors to select and retain one or, if necessary, more representative processes for each or, if necessary, more representative processes for each technology type. The technology types and process options will be summarized for inclusion in the technical memorandum. The reasons for eliminating alternatives must be specified.

With respect to institutional controls, Respondent shall identify appropriate

proprietary, governmental controls and informational devices which when used singly, layered or used in a series, may meet the remedial action objectives. In the evaluation of the effectiveness of the institutional control(s) the Respondent(s) should consider the likelihood of failure of the institutional control and identify the likely factors that could lead to failure. If not done previously, institutional controls that are not legally available should be eliminated at this stage. The reasons for eliminating alternatives must be specified.

v. Assemble and document alternatives (4.2.6)

The Respondent will assemble selected representative technologies and institutional controls into alternatives for ground water. Together, all of the alternatives will represent a range of treatment and containment and institutional combinations that will address the ground water. A summary of the assembled alternatives and their related action-specific ARARS will be prepared by the Respondent for inclusion in the technical memorandum. The reasons for eliminating alternatives during the preliminary screening process must be specified.

vi. Refine alternatives (4.2.7)

The Respondent will refine the remedial alternatives to identify contaminant volume addressed by the proposed process and sizing of critical unit operations as necessary. Sufficient information will be collected for an adequate comparison of alternatives. PRGs for each chemical in each medium will also be modified as necessary to incorporate any new risk assessment information presented in EPA's baseline risk assessment report. Additionally, action-specific ARARs will be updated as the remedial alternatives are refined.

b. Conduct and document screening evaluation of each alternative (4.3)

The Respondent may perform a final screening process based on short and long term aspects of effectiveness, implementability, and relative cost. Generally, this screening process is only necessary when there are many feasible alternatives available for detailed analysis. If necessary, the screening of alternatives will be conducted to assure that only the alternatives with the most favorable composite evaluation of all factors are retained for further analysis. As appropriate, the screening will preserve the range of treatment and containment and institutional control alternatives that was initially developed. The range of remaining alternatives will include options that use treatment technologies and permanent solutions to the maximum extent practicable.

c. Alternatives Development and Screening Deliverables (4.5)

The Respondent will prepare a technical memorandum summarizing the work performed in

and the results of each task above, including an alternatives array summary. These will be modified by the Respondent if required by EPA's comments to assure identification of a complete and appropriate range of viable alternatives to be considered in the detailed analysis. This deliverable will document the methods, rationale, and results of the alternatives screening process.

TASK 5 - DETAILED ANALYSIS OF REMEDIAL ALTERNATIVES (RI/FS Guidance, Chapter 6)

The detailed analysis will be conducted by the Respondent to provide EPA with the information needed to allow for the selection of a site remedy. This analysis is the final task to be performed by Respondent during the FS.

a. Detailed Analysis of Alternatives (6.2)

The Respondent will conduct a detailed analysis of alternatives which will consist of an analysis of each option against a set of nine evaluation criteria and a comparative analysis of all options using the same evaluation criteria as a basis for comparison.

i. Apply nine criteria and document analysis (6.2.1 - 6.2.4)

The Respondent will apply nine evaluation criteria to the assembled remedial alternatives to ensure that the selected remedial alternative will be protective of human health and the environment; will be in compliance with, or include a waiver of, ARARS; will be cost-effective; will utilize permanent solutions and alternative treatment technologies, or resource recovery technologies, to the maximum extent practicable; and will address the statutory preference for treatment as a principal element. The evaluation criteria include: (1) overall protection of human health and the environment; (2) compliance with ARARS; (3) long-term effectiveness and permanence; (4) reduction of toxicity, mobility, or volume; (5) short-term effectiveness; (6) implementability; (7) cost; (8) state (or support agency) acceptance; and (9) community acceptance. (Note: criteria 8 and 9 may be considered after the FS report has been released to the general public if none of the retained remedial alternatives includes institutional controls. If any of the retained remedial alternatives include institutional controls which require state or community participation to implement, monitor or enforce the controls, then state and community acceptance must be determined prior to public release of the RI/FS report. It is necessary to ascertain whether such parties are willing to participate in the implementation, monitoring or enforcement of institutional controls in order to determine whether such remedial alternatives will be effective, are implementable, and to evaluate cost.)

For each alternative the Respondent should provide: (1) a description of the

alternative that outlines the waste management strategy involved and identifies the key ARARs associated with each alternative, and (2) a discussion of the individual criterion assessment. If the Respondent does not have direct input on criteria (8) state (or support agency) acceptance and (9) community acceptance, these will be addressed by EPA. The Respondent(s) shall evaluate institutional controls against the nine-criteria for remedy selection and shall include a discussion of the evaluation criteria set forth in the Site Manager's Guide. The reasons for eliminating alternatives must be specified.

ii. Compare alternatives against each other and document the comparison of alternatives (6.2.5; 6.2.6)

The Respondent will perform a comparative analysis between the remedial alternatives. That is, each alternative will be compared against the others using the evaluation criteria as a basis of comparison. Identification and selection of the preferred alternatives are reserved by EPA. The Respondent will prepare a technical memorandum summarizing the results of the comparative analysis.

b. Memorandum on Institutional Controls and Screening

Respondent shall submit a memorandum for EPA review and approval on the institutional controls considered as potential parts of the remedial action. The Memorandum on Institutional Controls and Screening shall (1) define the performance goals for the institutional control and how long the institutional control needs to remain in place; (2) identify the geographic area to be covered by institutional controls including the railroad corridor and provide a map of such area; (3) include a Reuse Assessment prepared in accordance with "Reuse Assessments: A Tool to Implement the Superfund Land Use Directive," OSWER 9355.7-06P, June 4, 2001," which details the current and reasonably anticipated future use of the area to be covered by institutional controls and the basis for those determinations; (4) identify any legal or administrative restrictions already in place for the Site that may serve as effective institutional controls; (5) identify Respondent's proposed institutional control options (i.e., proprietary controls, governmental controls, or informational devices) that are available to meet the performance goals; (6) identify any parties (e.g., state, local governmental entities, local landowners, conservation organizations) whose cooperation, assistance or participation will be needed to implement, monitor or enforce Respondent's proposed institutional controls; (7) describe the known or anticipated willingness of parties identified in (6) above to cooperate, assist or participate in the implementation, monitoring or enforcement of institutional controls and under what conditions; (8) state whether any of the institutional controls will require the acquisition of an interest in real property; and (9) assess the cost of implementing, monitoring and enforcing institutional controls for the full time that the institutional control(s) must remain in effect. The Memorandum on Institutional Controls and Screening shall be submitted as an appendix to the Draft Feasibility Study Report and submitted at or before the time of

submission of the Draft Feasibility Study Report.

c. Detailed Analysis Deliverables (6.5)

In addition to the technical memorandum summarizing the results of the comparative analysis, the Respondent will submit a draft FS report to EPA for review and approval. The Draft FS report shall include the Memorandum on Institutional Controls and Screening as an appendix. Once EPA's comments have been addressed by the Respondent to EPA's satisfaction, the final FS report may be bound with the final RI report. This report, as ultimately adopted or amended by EPA, provides a basis for remedy selection by EPA and documents the development and analysis of remedial alternatives. The Respondent will refer to the RI/FS Guidance for an outline of the report format and the required report content. The Respondent will prepare a final FS report which satisfactorily addresses EPA's comments.

REFERENCES FOR CITATION

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the RI/FS process:

The (revised) National Contingency Plan.

"Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive No. 9355.3-01.

"Interim Guidance on Potentially Responsible Party Participation in Remedial Investigation and Feasibility Studies," U.S. EPA, Office of Waste Programs Enforcement, Appendix A to OSWER Directive No. 9355.3-01.

"Guidance on Oversight of Potentially Responsible Party Remedial Investigations and Feasibility Studies, Volume 1" U.S. EPA, Office of Waste Programs Enforcement, July 1, 1991, OSWER Directive No. 9835.1(c).

"A Compendium of Superfund Field Operations Methods," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.

"Guidance for the Data Quality Objectives Process (QA-G-4)," (EPA/600/R-96/055, August 2000).

"Guidance for the Data Quality Objectives Process for Hazardous Waste Sites (QA/G-4HW)," (EPA/600/R-00/007, January 2000).

"EPA Requirements for Quality Management Plans (QA/R-2)," (EPA/240/B-01/002, March 2001).

"EPA Requirements for Quality Assurance Project Plans (QA/R-5)," (EPA/240/B-01/003, March 2001).

"Guidance for Quality Assurance Project Plans (QA/G-5)" (EPA 600/R-98/018, February 1998).

"Users Guide to the EPA Contract Laboratory," U.S. EPA, Sample Management Office, January 1991, OSWER Directive No. 9240.0-01D.

"CERCLA Compliance with Other Laws Manual," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (draft), OSWER Directive No. 9234.1-01 and -02

"Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites," U.S. EPA, Office of Emergency and Remedial Response, (draft), OSWER Directive No. 9283.1-2.

"Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions," April 22, 1991, OSWER Directive No. 9355.0-30.

"Health and Safety Requirements of Employed in Field Activities," U.S. EPA, Office of Emergency and Remedial Response, July 12, 1981, EPA Order No. 1440.2.

OSHA Regulations in 29 CFR 1910.120 (Federal Register 45654, December 19, 1986).

"Interim Guidance on Administrative Records for Selection of CERCLA Response Actions," U.S. EPA, Office of Waste Programs Enforcement, March 1, 1989, OSWER Directive No. 9833.3A.

"Community Relations in Superfund: A Handbook," U.S. EPA, Office of Emergency and Remedial Response, January 1992, OSWER Directive No. 9230.0-3C.

"Community Relations During Enforcement Activities And Development of the Administrative Record," U.S. EPA, Office of Waste Programs Enforcement, November 1988, OSWER Directive No. 9836.0-1a.

**REMOVAL ACTION
SAMPLING AND ANALYSIS PLAN**

FOR THE

**CLINTON, IOWA
FORMER MANUFACTURED GAS PLANT SITE**

Prepared for

**INTERSTATE POWER AND LIGHT COMPANY
CEDAR RAPIDS, IOWA**


Project No. 1912839.0102

October 2004

Prepared by


**MWH
11153 Aurora Avenue
Des Moines, Iowa 50322
515-253-0830**

APPROVED BY:


Project Manager

DATE: 10-28-04

APPROVED BY:


Project Quality Assurance Officer

DATE: 10-28-04

APPROVED BY:

EPA On-Scene Coordinator

DATE: _____

REMOVAL ACTION SAMPLING AND ANALYSIS PLAN

TABLE OF CONTENTS

	PAGE
DISTRIBUTION LIST	D-1
SECTION 1 INTRODUCTION.....	1-1
PART I – FIELD SAMPLING PLAN	
SECTION 2 REMOVAL ACTION SAMPLING PROGRAM.....	2-1
2.1 Pre-Excavation Surface Soil Sampling	2-1
2.1.1 PCB Delineation.....	2-1
2.1.2 Residual Lead Impact Delineation	2-2
2.2 Confirmation Sampling.....	2-2
2.2.1 Scope and Objectives of Confirmation Sampling.....	2-3
2.2.2 Soil Sampling.....	2-3
2.2.2.1 Soil Screening and Sampling Frequencies	2-3
2.2.2.2 Excavation Confirmation Sampling.....	2-3
2.3 Water Sampling.....	2-5
2.4 Air Monitoring	2-5
2.4.1 DRIs	2-5
2.4.1.1 PID	2-6
2.4.1.2 Dräger CMS	2-6
2.4.1.3 Hydrogen Cyanide Meter	2-6
2.4.1.4 MINIRAM.....	2-6
2.4.1.5 Four-Gas Meter	2-6
2.4.1.6 Personal Monitoring Equipment	2-7
2.4.1.7 Sampling Frequency.....	2-7
2.4.2 Continuous Real-Time Air Monitoring Stations.....	2-7
2.4.3 Discrete Sample Air Monitoring Stations.....	2-8
2.5 Evaluation of Results and Corrective Measures	2-9
2.5.1 Soil	2-9
2.5.2 Water.....	2-9
2.5.3 Air Monitoring	2-10
SECTION 3 SAMPLE COLLECTION, HANDLING, AND ANALYSIS	3-1
3.1 Sample Containers.....	3-1
3.2 Sample Collection	3-1
3.2.1 Soil Samples.....	3-1
3.2.2 Water Samples.....	3-1
3.3.3 Air Samples.....	3-2
3.2.3.1 Particulates	3-2
3.2.3.2 PAHs	3-2
3.2.3.3 VOCs.....	3-2

REMOVAL ACTION SAMPLING AND ANALYSIS PLAN

TABLE OF CONTENTS (CONTINUED)

	PAGE
3.2.3.4 Hydrogen Cyanide.....	3-3
3.2.3.5 Lead.....	3-3
3.3 Sample Preservation.....	3-3
3.4 Sample Designation.....	3-4
3.4.1 PCB Delineation and Verification Samples.....	3-4
3.4.2 Residual Lead Delineation and Verification Samples.....	3-4
3.4.3 FMGP Impact Excavation Verification Samples.....	3-5
3.4.4 Water Samples.....	3-5
3.4.5 Perimeter Air Samples.....	3-6
3.4.6 Field Quality Control Samples.....	3-6
3.5 Sample Packaging and Shipment.....	3-7
3.5.1 On-Site Laboratory.....	3-7
3.5.2 Off-Site Laboratory.....	3-7
3.6 Sample Records and COC Documentation.....	3-7
3.7 Laboratory Analyses.....	3-8

PART II – QUALITY ASSURANCE PROJECT PLAN

SECTION 4 PROJECT DEFINITION AND ORGANIZATION.....	4-1
4.1 Purpose.....	4-1
4.2 Project Description.....	4-1
4.3 Project Organization and Responsibilities.....	4-2
4.3.1 EPA On-Scene Coordinator.....	4-2
4.3.2 IDNR Project Coordinator.....	4-2
4.3.3 IPL Project Coordinator.....	4-2
4.3.4 MWH Project Manager.....	4-2
4.3.5 MWH Project Staff.....	4-2
4.3.6 MWH Project Quality Assurance Officer.....	4-3
4.3.7 MWH Project Health and Safety Coordinator.....	4-3
4.3.8 Burns & McDonnell Air Monitoring Staff.....	4-3
4.3.9 Technical Advisory Committee.....	4-4
4.3.10 Subcontractors.....	4-4
4.3.10.1 Removal Activities.....	4-4
4.3.10.2 Laboratories.....	4-4
4.3.11 Special Training/Certification.....	4-4
4.3.11.1 MWH Project Staff.....	4-4
4.3.11.2 Field Personnel.....	4-4
4.3.11.3 Laboratory Personnel.....	4-5
4.3.12 Community Relations.....	4-5

REMOVAL ACTION SAMPLING AND ANALYSIS PLAN

TABLE OF CONTENTS (CONTINUED)

	PAGE
SECTION 5 DATA QUALITY OBJECTIVES AND CRITERIA	5-1
5.1 DQOs.....	5-1
5.1.1 Statement of the Problem.....	5-1
5.1.1.1 Problem Description.....	5-1
5.1.1.2 Decision Making.....	5-2
5.1.1.3 Resources.....	5-2
5.1.2 Identified Decision.....	5-2
5.1.2.1 Alternate Actions.....	5-2
5.1.2.2 Decision Statement.....	5-3
5.1.3 Identified Inputs to the Decision.....	5-3
5.1.3.1 Information Required to Resolve the Decision.....	5-3
5.1.3.2 Information to Establish an Action.....	5-3
5.1.3.3 Appropriate Methodology Required to Determine Action Levels.....	5-3
5.1.4 Defined Boundaries.....	5-4
5.1.4.1 Population of Interest.....	5-4
5.1.4.2 Spatial Boundaries.....	5-4
5.1.4.3 Temporal Boundaries.....	5-4
5.1.4.4 Scale of Decisions.....	5-4
5.1.4.5 Practical Constraints for Data Collection.....	5-4
5.1.5 Decision Rules.....	5-4
5.2 Measurement Performance Criteria.....	5-4
5.2.1 Precision.....	5-5
5.2.1.1 Field Precision.....	5-5
5.2.1.2 Laboratory Precision.....	5-5
5.2.2 Accuracy.....	5-5
5.2.2.1 Field Accuracy.....	5-6
5.2.2.2 Laboratory Accuracy.....	5-7
5.2.3 Representativeness.....	5-7
5.2.3.1 Field Data.....	5-7
5.2.3.2 Laboratory Data.....	5-7
5.2.4 Comparability.....	5-8
5.2.4.1 Field Data.....	5-8
5.2.4.2 Laboratory Data.....	5-8
5.2.5 Completeness.....	5-9
5.2.5.1 Field Data.....	5-9
5.2.5.2 Laboratory Data.....	5-9
5.2.6 Sensitivity.....	5-10
5.2.7 Traceability.....	5-10
5.3 Analytical Levels.....	5-10
5.4 QA/QC Sampling.....	5-10

REMOVAL ACTION SAMPLING AND ANALYSIS PLAN

TABLE OF CONTENTS (CONTINUED)

	PAGE
SECTION 6 SAMPLE CUSTODY	6-1
6.1 Field Sample Collection	6-1
6.1.1 Field Logbook	6-1
6.1.2 COC Documentation	6-2
6.2 Laboratory Receipt and Analysis	6-3
6.3 Final Evidence Files	6-4
SECTION 7 CALIBRATION PROCEDURES	7-1
7.1 Field Equipment	7-1
7.2 Laboratory Equipment	7-2
SECTION 8 ANALYTICAL PROCEDURES	8-1
SECTION 9 DATA REDUCTION, REVIEW, AND REPORTING	9-1
9.1 Calculations	9-1
9.2 Data Reduction	9-1
9.3 Data Assessment	9-1
9.4 Reconciliation with User Requirements	9-3
9.5 Data Reporting	9-3
SECTION 10 PERFORMANCE AUDITS	10-1
10.1 Field Performance	10-1
10.1.1 Internal Field Audits	10-1
10.1.2 External Field Audits	10-1
10.2 Laboratory Performance	10-2
10.2.1 Internal Laboratory Audits	10-2
10.2.2 External Laboratory Audits	10-2
SECTION 11 PREVENTATIVE MAINTENANCE	11-1
11.1 Field Equipment	11-1
11.2 Laboratory Equipment	11-1
11.3 Inspection/Acceptance Requirements of Supplies and Consumables	11-1
SECTION 12 CORRECTIVE ACTIONS	12-1
12.1 General Corrective Action Procedures	12-1
12.2 Field Corrective Action	12-1
12.3 Laboratory Corrective Action	12-3
12.4 Corrective Action During Data Assessment	12-4
SECTION 13 QUALITY ASSURANCE REPORTS	13-1
SECTION 14 REFERENCES	14-1

REMOVAL ACTION SAMPLING AND ANALYSIS PLAN

TABLE OF CONTENTS

LIST OF TABLES

TABLE NO.

- 2-1 Summary of PCB Compounds
- 2-2 Soil Action Levels
- 2-3 Summary of Soil Analytical Parameters
- 2-4 Summary of Water Disposal Analytical Parameters
- 2-5 Summary of Air Analytical Parameters
- 3-1 Sample Container and Analysis Summary
- 5-1 Method Detection Limits – Volatile Organic Compounds
- 5-2 Method Detection Limits – Semivolatile Organic Compounds
- 5-3 Method Detection Limits – Inorganic Parameters
- 5-4 Quality Control Sample Frequency and Criteria for Soil and Water Samples

LIST OF FIGURES

FIGURE NO.

- 2-1 Lead Sampling Locations
- 4-1 Project Organization

LIST OF ACRONYMS AND ABBREVIATIONS

BTEX	benzene, toluene, ethylbenzene, and xylenes
CAG	Community Advisory Group
CCB	continuing calibration blank
CCV	continuing calibration verification standard
CFR	Code of Federal Regulations
CMS	Chip Measurement System
COC	chain of custody
Consent Order	Administrative Order on Consent
COPC	constituent of potential concern
DCI	Dustcoating, Inc.
DQI	data quality indicator
DQO	data quality objective
DRI	direct-read instrument
ECCS	Environmental Chemistry Consulting Services, Inc.
EE/CA	Engineering Evaluation/Cost Analysis
EE/CA Baseline Risk Assessment	Engineering Evaluation/Cost Analysis Part II – Baseline Risk Assessment
EE/CA Site Characterization	Engineering Evaluation/Cost Analysis Part I – Site Characterization
EE/CA Removal Alternatives Evaluation	Engineering Evaluation/Cost Analysis Part III – Remedial Alternatives Evaluation
EPA	United States Environmental Protection Agency
FMGP	former manufactured gas plant
FSP	Field Sampling Plan
GAC	granular activated carbon
GC	gas chromatograph
GC/MS	gas chromatograph/mass spectrometer
HCl	hydrochloric acid
HNO ₃	nitric acid
ICB	initial calibration blank
ICV	initial calibration verification standard
IDNR	Iowa Department of Natural Resources
IPL	Interstate Power and Light Company
Keystone	Keystone Laboratories, Inc.
Lab QAO	Laboratory Quality Assurance Officer
LCS	laboratory control standard
LEL	Lower Explosive Limit
Lpm	liter per minute
mg	milligrams
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mg/m ³	milligrams per cubic meter
mu	meter unit
μg	micrograms
μg/kg	micrograms per kilogram

LIST OF ACRONYMS AND ABBREVIATIONS

$\mu\text{g/L}$	micrograms per liter
$\mu\text{g/m}^3$	micrograms per cubic meter
MDL	method detection limit
MQO	measurement quality objective
MS/MSD	matrix spike/matrix spike duplicate
NaOH	sodium hydroxide
NIOSH	National Institute of Occupational Safety and Health
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration
OSO	On-site Safety Officer
OVA	organic vapor analyzer
%R	percent recovery
PAH	polynuclear aromatic hydrocarbon
PC	Project Coordinator
PCB	polychlorinated biphenyl
PID	photoionization detector
PHSC	Project Health and Safety Coordinator
PM	Project Manager
PPE	personal protective equipment
ppb	parts per billion
ppm	parts per million
PQAO	Project Quality Assurance Officer
PRG	preliminary remediation goal
PUF	polyurethane foam
QA	quality assurance
QAM	quality assurance manual
QA/QC	quality assurance/quality control
QAPP	Quality Assurance Project Plan
QC	quality control
RAWP	Removal Action Work Plan
RF	response factor
RL	reporting limit
RPD	relative percent difference
SAP	Sampling and Analysis Plan
SOP	standard operating procedure
SQL	sample quantitation limit
SSP	Site Safety Plan
STL	Severn Trent Laboratories, Inc.
TAC	Technical Advisory Committee
TSP	total suspended particulates
UTM	Universal Transverse Mercator
UVF	ultraviolet fluorescence
VOC	volatile organic compound
XRF	X-ray fluorescence

DISTRIBUTION LIST

The following personnel will receive or have ready access to copies of this plan and are responsible for its implementation as it applies to their roles in the project. Any needed clarifications of items presented in this plan should be directed to the Project Manager or Project Quality Assurance Officer.

<u>Name</u>	<u>Company/Agency</u>	<u>Title</u>
Kevin Larson	EPA	On-Scene Coordinator
Mick Leat	IDNR	Project Coordinator
Dean Hargens	IPL	Project Coordinator/TAC Member
Randy Kroneman	MWH	Project Manager
Ryan Wylie	MWH	Field Supervisor
Tim Wineland	MWH	Project Quality Assurance Officer
Michael Geringer	MWH	Project Health and Safety Coordinator/ TAC Member
Jeffrey Coon, P.E.	MWH	TAC Member
Donna Davis	Burns & McDonnell	Air Monitoring Project Manager
Trent Temperly	ECCS, Inc.	Laboratory Project Manager
Jeff King	Keystone Laboratories, Inc.	Laboratory Project Manager
Jeannine McCrumb	Severn Trent Laboratories, Inc.	Laboratory Project Manager

Notes:

ECCS = Environmental Chemistry Consulting Services, Inc.
EPA = Environmental Protection Agency
IDNR = Iowa Department of Natural Resources
IPL = Interstate Power and Light Company
TAC = Technical Advisory Committee

SECTION 1

SECTION 1

INTRODUCTION

This document is the Sampling and Analysis Plan (SAP) for the Removal Action Work Plan (RAWP) for the former manufactured gas plant (FMGP) site in Clinton, Iowa. The primary purpose of this SAP is to describe the sampling objectives, protocol, and quality assurance/quality control (QA/QC) requirements for the removal action. The SAP is composed of two main components: Part I – Field Sampling Plan (FSP), and Part II – Quality Assurance Project Plan (QAPP).

This FSP has been prepared to define and direct data collection efforts throughout the removal action. The objective of the FSP is to describe the rationale and methods of field sampling and related activities to be conducted as part of the RAWP.

The QAPP describes the project organization, functional activities, and QA/QC activities to be followed. The purpose of the QAPP is to adequately describe various removal action work components, particularly the QA/QC procedures necessary to achieve the objectives listed in the RAWP. The QAPP generally follows the format and content guidelines in the United States Environmental Protection Agency (EPA) documents: *Quality Assurance/Quality Control Guidance for Removal Activities* (EPA, 1990) and *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA, 1988).

A summary of the site location, description, and history is provided in the RAWP, with greater detail provided in the June 2000 Engineering Evaluation/Cost Analysis (EE/CA) Part I – Site Characterization (EE/CA Site Characterization) report (IPL, 2000).

SECTION 2

PART I – FIELD SAMPLING PLAN

SECTION 2

REMOVAL ACTION SAMPLING PROGRAM

This sampling program describes the overall soil, water, and air sampling to be conducted in support of the removal action activities. Split samples of specific soil or water samples will be made available to the EPA or Iowa Department of Natural Resources (IDNR) representatives upon request.

2.1 PRE-EXCAVATION SURFACE SOIL SAMPLING

This portion of the FSP details the procedures and analytical parameters for delineating the extent of surface soil impacts in the polychlorinated biphenyl (PCB) “hot spot” on the Interstate Power and Light Company (IPL) service center (Site 1) and the residual lead impacts on the former Allied Steel property (Site 2).

As described in the RAWP, MWH personnel will delineate an on-site sampling grid consisting of an alphanumeric system in 20-foot intervals. The sampling grid will be laid out to guide sample collection for pre- and post-excavation sampling activities. The grid system will be keyed into permanent site features and the Universal Transverse Mercator (UTM) coordinate system.

2.1.1 PCB Delineation

Based on results of the EE/CA Site Characterization, an isolated “hot spot” area of surface soil impacted with PCBs was detected near surface soil sample SS-4 near the western fence of the service center yard on Site 1. Although this is not related to the FMGP operations, this impacted area is on IPL’s property and is being addressed as part of the overall removal action. The full extent of soil to be removed has not been delineated. Therefore, additional surface soil sampling will be conducted to better define the potential extent of impacts and the level of effort required for the removal action.

Delineation of the extent of PCB impacts will be accomplished by the collection and analysis of surface soil samples. Samples will be collected at each node of a 10-by-10-foot subset of the site grid over an area approximately 30 feet wide (E-W) by 40 feet long (N-S), and surrounding SS-4 (up to 20 sample points). The samples will be collected from the 0-to-6-inch depth interval using hand auger or small shovel/trowel, and the sample material will be collected in a small stainless steel bowl. The soil will then be placed in the appropriate laboratory-supplied sample jar.

Samples to be analyzed for PCBs will be submitted to Keystone Laboratories, Inc. (Keystone) in Newton, Iowa for analysis. The samples will be analyzed using EPA Method 8082 for the individual PCB compounds listed in Table 2-1.

Initially, the samples from the grid nodes surrounding SS-4 will be analyzed for PCBs. The reported concentrations for each location will be summed and compared to the soil action level of 25 milligrams per kilogram (mg/kg). If any of the samples fail to meet the 25 mg/kg soil action level, additional samples from grid nodes in the direction of the exceedance will be analyzed until the extent of PCB impacts is delineated within the grid. Identification, labeling, handling, chain-of-custody (COC) documentation, and QA/QC procedures for the samples are discussed later in this SAP.

2.1.2 Residual Lead Impact Delineation

Prior to excavation of FMGP-related impacts on Site 2, additional surface soil sampling will be conducted to delineate the extent of residual lead-impacted soil. The delineation is intended to identify areas with lead concentrations exceeding the soil action level proposed in the RAWP, and define areas with lead concentrations above the original lead cleanup level used by Riverview Partners for the initial lead removal.

Surface soil sampling locations and their respective lead concentrations generated during the 1994 Site Screening Inspection, the EE/CA, and additional lead screening conducted by the EPA in September 1994 are shown in Figure 2-1. Based on the distribution of the sampling points and results, additional surface soil sampling will be conducted at the proposed sampling locations also shown in Figure 2-1. The proposed sampling locations are intended to supplement the existing data and document residual lead concentrations across the site.

At each proposed sampling location, surface soil samples will be collected from the 0-to-3-inch depth interval and the 6-to-12-inch depth interval. Both samples from each location will be analyzed on site for total lead using a hand-held X-ray fluorescence (XRF) analyzer. Because the XRF analysis is non-destructive, every 20th sample analyzed by the XRF analyzer will also be analyzed for total lead by Keystone.

The sample results will be compared to the soil action level for lead. If a sample from the 0-to-3-inch depth interval fails to meet the soil action level, additional sampling may be conducted to further define the lateral extent of the residual lead impacts. If a sample from the 6-to-12-inch depth interval fails to meet the soil action level, an additional sample will be collected from the 18-to-24-inch depth interval at the location where the failing sample was collected and at selected surrounding locations as needed to define the extent of the impacts. This sampling protocol is intended to minimize the amount of soil to be removed by identifying specific areas of elevated residual lead.

2.2 CONFIRMATION SAMPLING

This confirmation sampling program discusses the approach and methods for sampling and analysis to verify the excavation has achieved the soil action levels, or document residual concentrations where additional excavation is not feasible.

2.2.1 Scope and Objectives of Confirmation Sampling

In all areas where impacted soil is removed, confirmation sampling will be conducted to demonstrate compliance with soil action levels established in the Administrative Order on Consent (Consent Order) between the EPA and IPL. Soil confirmation sampling will be conducted after soil removal has been completed and prior to backfilling. Sampling will only be performed in those areas where soil removal has taken place.

The objectives of the soil confirmation sampling program are to 1) provide adequate data to document that accessible soil containing concentrations above the specified soil action levels has been removed, 2) determine whether additional removal is required, and 3) document residual concentrations if the maximum extent of excavation has been achieved. The maximum extent of excavation may be defined by risk-based criteria or by physical or legal boundaries.

Confirmation sampling for any other constituents of potential concern (COPCs) will be addressed in this document and the RAWP. Identification, labeling, handling, COC documentation, and QA/QC procedures for all samples are discussed both in the FSP and QAPP portions of this document.

2.2.2 Soil Sampling

For the confirmation sampling, samples will be collected from the appropriate grid cell node and will be identified by grid locations to enable tracking of results.

2.2.2.1 Soil Screening and Sampling Frequencies. The initial extent of soil excavation will be based upon existing soil data, pre-excavation sampling results, and visual observations. For the removal of the PCB-impacted soils, confirmation sampling will be conducted after the anticipated extent of "hot spot" soil has been removed. Areas of lead impacts identified during the pre-excavation surface soil sampling will be excavated to the extent deemed necessary based on field screening using the XRF analyzer. Following the excavation, confirmation samples will be collected and submitted for total lead analysis by Keystone.

For the FMGP-related impacts, field screening will be performed to provide a preliminary measurement of the need for additional excavation. Volatile Organic Compound (VOC) field screening will be conducted using a photoionization detector (PID). Based on the field screening results and observations, or upon nearing the excavation limits of the areas identified in Figure 4-1 of the RAWP, confirmation samples for laboratory analysis will be collected. For all soil excavation areas, the confirmation sampling is intended to evaluate the need for continued soil removal or verify the cleanup levels have been achieved to within the soil action levels presented in Table 2-2.

2.2.2.2 Excavation Confirmation Sampling. Confirmation sampling of the excavation will be conducted for comparison to the soil action levels presented Table 2-2 and in the Consent Order (Appendix A of the RAWP). The confirmation sampling will be conducted according to the procedures outlined in this section.

Soil samples will be collected over the intervals described in Sections 2.2.2.2.1, 2.2.2.2.2, and 2.2.2.2.3 for the excavation sidewalls, excavation floor, and stockpile staging areas, respectively. It is intended all deep excavation confirmation samples be collected directly from the bucket of the excavation equipment to limit entry of personnel into the excavation and, therefore, minimize exposure to site contaminants and dangers inherent upon entering an excavation. However, properly trained personnel and the necessary equipment will be on site to allow entry into the excavation for sample collection, if the layout of the excavation demands such measures. Confirmation samples from the PCB and lead removal areas, which are expected to be less than 2 feet deep, will be collected from the grid cell nodes using a hand auger, shovel, or other small sampling equipment. Samples from any stockpile staging areas will also be collected using a hand auger, shovel, or other small sampling equipment. To limit potential impacts of volatilization, confirmation samples will be collected from a depth of approximately 3 inches below the surface of the excavation.

2.2.2.2.1 Excavation Sidewalls

Confirmation samples will be collected from the sidewalls of the deep excavation to determine the necessary areal extent of the soil removal action. One grab sample will be collected every 10 linear feet from the excavation sidewalls. The vertical location of each subsample will be the area suspected of the highest level of residual contaminant concentration, based on visual observations. The samples will be analyzed for the suite of parameters listed in Table 2-3. Sidewall samples will not be collected from the walls of excavations less than 2 feet deep.

2.2.2.2.2 Excavation Floor

The floor of the excavation will be subdivided into 20-by-20-foot grids. One grab sample will be collected from the grid nodes located within the excavation and analyzed for the suite of parameters listed in Table 2-3.

2.2.2.2.3 Stockpile Staging Areas

Although not anticipated, soil stockpiles may be created periodically. Prior to closing on-site stockpile staging areas, confirmation samples will be collected. The confirmation samples will be collected after the area is no longer being used for stockpile staging and the area is visually cleared of residual soil from the excavation. The samples will be analyzed for the suite of parameters listed in Table 2-3. If a sample fails to meet the soil action levels, additional soil will be scraped from the grid, and the area will be resampled.

2.2.2.2.4 Backfill Materials

Grab samples of backfill material originating off site will be collected and analyzed for the constituents in Table 2-3 to ensure this material meets the soil action levels. A single, random grab sample will be collected from approximately every 500 tons of imported backfill material.

2.2.2.2.5 Laboratory Analysis

Laboratory analyses for organic compounds in the soil samples associated with the excavation will be conducted on site in a mobile laboratory by Environmental Chemistry Consulting Services, Inc. (ECCS) in accordance with EPA-approved methods. Inorganic analyses (i.e., PCBs and lead) will be conducted by Keystone. Applicable QA/QC measures are discussed in the QAPP.

2.3 WATER SAMPLING

Water will be generated during the removal activities through decontamination of vehicles and equipment, and, if necessary, from dewatering of FMGP structures to facilitate excavation. The water will be passed through a separator/stilling basin to remove any floating or sinking FMGP residuals and remove excess sediment. The water will then be pumped to an on-site storage tank. Periodically, water will be pumped from the tank and transported to the DCI Environmental, Inc. (DCI) facility in Cedar Rapids, Iowa for treatment and disposal. Prior to being transported to DCI, a single composite sample will be collected and submitted for laboratory analysis in accordance with disposal requirements of DCI.

Laboratory analyses for the water samples will be conducted by Keystone for analysis of the parameters listed in Table 2-4 in accordance with EPA-approved methods. Applicable QA/QC measures are discussed in the QAPP.

2.4 AIR MONITORING

An air monitoring program has been developed to monitor air during soil excavation and handling activities. The objective of the perimeter air monitoring program is to evaluate and mitigate off-site migration of fugitive emissions (vapors and dust) associated with the remediation activities planned at the site. The monitoring plan has been established to protect both on-site workers and the general public located outside the site boundaries.

The air monitoring program consists of three levels of monitoring: 1) hand-held screening and evaluation of worker breathing zones using direct-read instruments (DRIs), 2) continuous real-time perimeter air monitoring using individual gas chromatograph/mass spectrometer (GC/MS) instruments, and 3) discrete periodic perimeter sampling for off-site laboratory analysis.

2.4.1 DRIs

DRIs will be used to conduct ambient air sampling at the perimeter of the FMGP site. At the beginning of the work day, and then periodically throughout the day during site activities, DRI measurements will be taken at various designated locations around the site perimeter. DRIs will also be used to frequently monitor site conditions in the exclusion zone. The sampling instruments will be used to determine concentrations of particulates, total VOCs, benzene, ammonia, and hydrogen cyanide. If these readings exceed levels established for upgrades in the

level of personnel protective equipment (PPE), perimeter sampling frequency and selection of analytes may be increased.

DRIs for air monitoring during site activities will be comprised of a PID, a Dräger Chip Measurement System (CMS) with benzene and ammonia chips, and a hydrogen cyanide meter (Monitox or equivalent). Airborne particulates will be both visually and electronically monitored using an aerosol/dust monitor (MINIRAM) or equivalent.

Readings from the DRIs will be recorded on Air Monitoring Data Sheets. A copy of the Air Monitoring Data Sheet is included in Appendix F of the RAWP.

2.4.1.1 PID. The site perimeter will be monitored for organic vapors using a PID equipped with a 10.2 electron-volt lamp. The PID will be calibrated to benzene using isobutylene calibration span gas at the beginning of each work day according to manufacturer instructions. Following calibration, readings will be recorded using upwind background measurements. At the end of each work day, readings will be taken using the calibration span gas to determine calibration variations. All calibration information will be recorded on an "Equipment Calibration" form (Attachment E of the Standard Site Safety Plan [SSP]). The PID will be operated in the 0 to 20 parts per million (ppm) range, and readings will be taken in the breathing zone (2 to 5 feet above the ground surface). More frequent monitoring will be conducted if elevated readings are recorded.

2.4.1.2 Dräger CMS. Benzene and ammonia Dräger CMS chips will be used in conjunction with the PID. Readings for benzene will be taken only when PID readings are above background concentrations. Readings for ammonia will be taken periodically during excavation of the FMGP-related impacts in the vadose zone soil. All readings will be taken in the breathing zone near the potential point of exposure (2 to 5 feet above the ground surface).

2.4.1.3 Hydrogen Cyanide Meter. A Monitox or equivalent hydrogen cyanide meter will be used to monitor potential exposure to hydrogen cyanide gas. Readings will be taken in the breathing zone (2 to 5 feet above the ground surface). More frequent monitoring will be conducted if readings above background are recorded.

2.4.1.4 MINIRAM. Airborne particulates will be both visually monitored and measured with a MINIRAM by MWH personnel. Visual observations and readings obtained from the MINIRAM will be logged on an Air Monitoring Data Sheet.

2.4.1.5 Four-Gas Meter. If confined space entry is conducted by MWH personnel during the course of field activities to be conducted at the Clinton FMGP site, a four-gas meter will be used in addition to previously discussed DRIs to determine if entry can be performed, and if so under what level of protection. The meter will measure Lower Explosive Limit (LEL), hydrogen sulfide, oxygen, and carbon monoxide. Appropriate forms must be completed, and procedures outlined in Federal OSHA Standard: Title 29, Code of Federal Regulations (CFR), Part 1910.146 must be followed for approved entry.

2.4.1.6 Personal Monitoring Equipment. In support of the DRIs, passive sampler badges and personal sampling pumps will be used during the first three days of significant excavation activities to provide time weighted averages for air particulates and collect samples for analysis of polynuclear aromatic hydrocarbons (PAHs); lead; hydrogen cyanide; and benzene, ethylbenzene, toluene, and total xylenes (BTEX). This data will be used to verify the accuracy of the DRIs.

The passive sampler badges will be worn by the maximally exposed worker and submitted for rapid turn-around chemical analysis on a daily basis for the first three days of soil handling activities. If the analytical results are in close agreement with the DRI measurements, additional use of the passive sampler badges and personal sampling pumps may not be required. The On-site Safety Officer (OSO) will confer with the project health and safety coordinator prior to modifying the personnel air sampling requirements. Additional information on the badges and personal sampling pumps are discussed in the site-specific SSP Addendum prepared for the removal activities at the site, which is included as Appendix C of the RAWP.

2.4.1.7 Sampling Frequency. During site activities, perimeter air monitoring will be conducted daily. The frequency will be determined by the OSO or his/her designee based on site activities, wind conditions, and the presence of potential receptors. Perimeter air monitoring will occur before and after excavation activities each day, plus a minimum of three additional times during the day when excavation or soil handling is in progress.

2.4.2 Continuous Real-Time Air Monitoring Stations

The continuous real-time monitoring will utilize an automated monitoring system consisting of five (5) units that each include a Photovac Voyager Gas Chromatograph (GC) and a MIE DR-200 DataRAM Dust Meter. The purpose of the real-time air monitoring will be to collect reliable real-time instantaneous data that can be used to adjust field activities to ensure that fugitive emissions are controlled. The units will be connected using a wireless radio system that transmits data to an on-site central computer. Data will be continuously compiled and stored. A weather station connected to the radio system will also be used. The weather station will be designed to measure site-specific wind speed and direction, temperature, barometric pressure and relative humidity.

The continuous real-time air monitoring stations will be set up surrounding each primary area of excavation (Site 1 and Site 2) as shown in Figure 9-1 of the RAWP. Upon completion of excavation on Site 1, the units will be moved to the Site 2 locations. The units are intended to operate 24 hours per day, 7 days per week. An experienced operator will be on site during work activities to calibrate and monitor the equipment. The units will be calibrated twice daily on days of field activity.

Predetermined response levels (as indicated below) control a three-colored light unit that provides the construction team with a visual awareness of perimeter air conditions and immediate information to adjust site activities on a short-term notice. An automated paging system will also be in place as another form of notification. Because benzene is generally the primary VOC of concern, response levels or "action levels" will be programmed for benzene and

separate response levels will be programmed for particulate matter (PM₁₀) in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). The GC will operate in the VOC mode until a total VOC concentration exceeding 0.3 ppm triggers the benzene mode.

The following response levels will trigger the three-colored light unit:

Green Light	Benzene < 0.05 ppm Dust < 150 $\mu\text{g}/\text{m}^3$
Yellow Light	Benzene \geq 0.05 ppm Dust \geq 250 $\mu\text{g}/\text{m}^3$
Red Light	Benzene > 0.5 ppm Dust > 500 $\mu\text{g}/\text{m}^3$

If action levels are exceeded, the construction team will be made immediately aware of the situation and operations such as slowing down activities, foaming, watering or other control measures can be implemented. The effectiveness of the modified operations will be immediately measured by the continuous real-time system.

These response levels may be adjusted depending on site conditions and the results of the ongoing time-averaged sampling and analysis discussed below.

2.4.3 Discrete Sample Air Monitoring Stations

During soil excavation and handling activities, ambient air sampling will be conducted at the perimeter of the FMGP site using discrete time-averaged sample air monitoring stations. The purpose of utilizing these sampling stations in addition to the real-time monitoring instruments is to provide defensible confirmation data to support the real-time results.

Discrete time-averaged samples will be collected from locations that match the locations of the real-time units. The discrete time-averaged sampling program will consist of establishing pre-excavation air quality conditions, as well as the collection and analysis of 24-hour ambient air samples for BTEX, PAHs, PM₁₀, and lead periodically throughout remediation activities. Key parameters are identified in Table 2-5.

SUMMA[®] canisters will be used to collect BTEX samples. High-volume samplers with cartridges with polyurethane foam (PUF)/XAD resin sampling media will be used to collect PAH samples. High-volume samplers with quartz fiber filters will be used to collect PM₁₀ and lead samples.

Sampling will be conducted for three days at all five stations identified on Figure 9-1 of the RAWP prior to the start of removal activities associated with each side of the site. Discrete time-averaged sampling during the removal action will include collection of samples from five SUMMA[®] canisters, five high-volume PAH samplers and five high-volume PM₁₀ samplers per day; and the analyses of up to 15 of the SUMMA[®] canisters, up to 10 PUF/XAD filters and up to

10 PM₁₀ filters collected per week. A detailed description of the sample collection procedures is presented in Section 3.2.3 of this SAP. Selection of samples to be analyzed will be done in the field depending on wind speed, wind direction, the component of remediation activities and professional judgment of field personnel. Selection of samples for analysis will also be determined such that a sufficient number of samples is collected from each station for future statistical analysis of data.

The discrete time-averaged sample data will be reviewed and evaluated as it is received, in order to make field adjustments and/or modifications, if necessary. If actual field conditions indicate that a revision to the ambient air monitoring plan is warranted, a revised plan will be submitted to the EPA for review.

Samples will be submitted for standard turn-around if DRIs and real-time instruments indicate site workers are permitted to work in Level D PPE. If monitoring indicates the need to upgrade the level of PPE, discrete air samples will be collected and submitted for rapid turn-around, and the frequency of ambient air sampling may be increased. This approach is based on the assumption that, if worker exposure is acceptable without respiratory protection in the exclusion zone, then off-site emissions will be below actions levels.

2.5 EVALUATION OF RESULTS AND CORRECTIVE MEASURES

2.5.1 Soil

Confirmation sample analytical results for soil will be compared to the soil action levels identified in the Consent Order and Table 2-2. If the sample analytical results are less than the applicable limits, no further removal will be necessary; however, if results are greater than the soil action levels, then additional excavation and resampling will be performed until the cleanup limits are achieved. An exception to this may occur if 1) the additional excavation would extend onto adjacent property owned by others, 2) the excavation would jeopardize the structural integrity of on-site or off-site structures, 3) the additional excavation could prove to be unsafe, or 4) additional excavation is not practical or feasible (i.e., groundwater encountered).

2.5.2 Water

Results from the water sampling will be compared to the discharge limitations of DCI. If the concentrations exceed those allowed by DCI, a sump pump will be lowered into the tank and the water will be pumped through a canister containing granular activated carbon (GAC) to reduce the concentrations. The length of time the water will be cycled through the GAC and back into the tank will be determined by on-site personnel based on the concentrations reported in the initial sampling, the volume of water in the tank, and the flow rate through the GAC canister. After the water has been cycled, another sample will be collected and submitted for analysis. Treatment will be repeated until the concentrations meet the limitations for discharge.

2.5.3 Air Monitoring

The following perimeter action levels have been established for the FMGP site:

- PID indicates sustained (15 minutes) organic vapor concentrations in excess of 5 meter units.
- Benzene colorimetric tube readings exceeding 1 ppm.
- PAH or lead concentrations exceeding 0.05 milligram per cubic meter (mg/m^3).
- Total air particulates exceeding $5 \text{ mg}/\text{m}^3$ or at levels irritating to the eyes, nose, or throat.
- Hydrogen cyanide readings equal to or exceeding 4.7 ppm.

During excavation activities, dust and offensive odors will be monitored by the OSO. By controlling airborne particulates, lead and PAH concentrations at the site perimeter will be minimized. Therefore, to the extent possible, airborne particulates at the site will be kept to a minimum during all field activities. If it is determined that a perimeter ambient air action level is exceeded or dusty conditions are observed; work areas will be wet down with water, soil piles that are not actively being used will be covered; if necessary under windy conditions, activities will be curtailed until winds subside.

Reinforced polyethylene sheeting may be spread over the side slopes and/or floor of the excavation in an effort to reduce volatilization and odors. All stockpiled soil will be covered overnight with polyethylene sheeting to control odors and prevent infiltration of precipitation. To control odors from the excavation, odor suppressant foam may be applied to the open face of the excavation, if site conditions require.

The truckloads of contaminated soil leaving the site will be covered with a tarpaulin to further reduce odors and dust emissions while transporting the loads to the thermal treatment staging area. In addition, odor-suppressant foam may be added, as necessary, to truckloads of contaminated soil leaving the site.

SECTION 3

SECTION 3

SAMPLE COLLECTION, HANDLING, AND ANALYSIS

This section discusses sample handling, documentation, and analytical procedures. To ensure samples are identified correctly and remain representative of the environment, and to maintain and document sample integrity during collection, transportation, storage, and analysis; the sample documentation and COC procedures outlined in this section will be adhered to during the sampling activities.

3.1 SAMPLE CONTAINERS

All sample containers will be obtained specifically for this investigation from the laboratory providing the analysis. The laboratory will be responsible for cleaning and preparing the containers as well as adding or providing the appropriate preservatives. Any containers suspected of improper cleaning or preparation will be discarded. Prior to use, the containers will be stored in a dry, relatively clean environment. A summary of the required containers for each analysis is presented in Table 3-1.

Sample containers will be labeled immediately before or after sample collection using indelible ink. At a minimum, the containers will be labeled with the following information:

- Site Name
- Sample Identity
- Date
- Time
- Sampler's Initials

Sample identity will follow the designation scheme presented in Section 3.4. Additional information, as applicable, will also be included on the label.

3.2 SAMPLE COLLECTION

Confirmation sampling of the excavation will be conducted for comparison to cleanup criteria described above and presented in the Consent Order. The confirmation sampling will be conducted according to the procedures outlined both in this section and in the QAPP.

3.2.1 Soil Samples

MWH personnel will collect pre-excavation and confirmation soil samples for the various soil sampling strategies, as described in Section 2 of this SAP. After the sample container is filled and labeled, the lip of the container will be cleared of residual soil or other debris to ensure a positive seal with the lid. The sample will then be placed in an iced cooler.

3.2.2 Water Samples

Water samples to be collected from the on-site storage tank will be collected by lowering a polyethylene bailer into the tank through an access or vent hole in the top. The bailer will be lowered to the approximate mid-depth of the water in the tank in order to collect a representative

sample. The water will be poured directly from the bailer into laboratory-supplied containers. A new disposable bailer and a new segment of polyethylene rope will be used for each sample collection event.

The samples will be submitted to Keystone for analysis of parameters listed in Table 2-4.

3.2.3 Air Samples

The following subsections discuss the site perimeter ambient air monitoring analytes and their corresponding collection methods for the discrete air samples. Information pertaining to sample collection methods and laboratory analytical methods are presented below. Detailed information pertaining to quality control samples is presented in the QAPP. Analysis of discrete air samples will be performed by Severn Trent Laboratories, Inc. (STL) in Colchester, Vermont.

3.2.3.1 Particulates. Ambient air monitoring of PM₁₀ will be conducted in accordance with 40 CFR Part 50. Samples will be collected on pre-weighed quartz fiber filters over a 24-hour period using a Dawson, Allegro, BSI, or equivalent high-volume sampler. Calibrations will be performed before and after each sampling event to verify performance of each sampler. An Air Monitoring Data Sheet will be used to record the sampling and calibration data for each sampling event. An example particulate Air Monitoring Data Sheet is included in Appendix F of the RAWP.

The particulate analysis will be performed using gravimetric measurements in accordance with 40 CFR Part 50, Appendix J. This method provides for measurement of mass concentration of particulate matter with an aerodynamic diameter of less than or equal to 10 micrometers in ambient air over a 24-hour period. The reporting limit (RL), using this method, is 5 milligrams (mg).

3.2.3.2 PAHs. Air monitoring of PAHs will be conducted in accordance with EPA Method TO-13A. Samples will be collected using PUF samplers. Samples will be collected on cleaned quartz fiber filters in combination with a precleaned and prepared PUF/XAD resin cartridge to capture both nonvolatile and semivolatile fractions, respectively. Calibration will be performed on each sampler prior to sample collection. Each sample will be collected over a 24-hour period. A Field Data Sheet will be used to record the sampling and calibration data for each sampling event. An example of a PAH Air Monitoring Data Sheet is included in Appendix F of the RAWP.

The analysis will be performed as specified in modified EPA Method TO-13A using GC/MS. The detection limits for individual PAHs using this method range from 0.5 microgram (μg) to 1.5 μg , depending upon the specific compound.

3.2.3.3 VOCs. Air monitoring of VOCs will be conducted in accordance with EPA Method TO-15. The sample will be collected in clean, certified, 6-liter, stainless-steel SUMMA[®] canisters equipped with a flow regulator. The regulator will be calibrated and preset by the laboratory performing the analysis. The canister pulls the sample under a vacuum over an 8-hour duration. The preset sampling position will be verified in the field, both prior to initiating

and after completion of each sampling event. An Air Monitoring Data Sheet will be used to record the sampling and calibration data for each sampling event. An example of a VOC Air Monitoring Data Sheet is included in Appendix F of the RAWP.

The analysis will be performed as specified in EPA Method TO-15 using GC/MS, full scan. Typical detection limits for individual VOCs using this method range from 0.054 to 0.22 part per billion (ppb).

3.2.3.4 Lead. Determination of lead in suspended particulate matter from ambient air will be conducted in accordance with 40 CFR Part 50. Analysis for lead will be conducted on the same sample media as used to determine PM_{10} . Therefore, the samples will be collected on a quartz filter over a 24-hour period using a Dawson, Allegro, BSI, or equivalent, high-volume air sampler. Calibrations will be performed before and after each sampling event to verify performance of each sampler. A Field Data Sheet will be used to record the sampling and calibration data for each sampling event. An example of a lead Air Monitoring Data Sheet is included in Appendix F of the RAWP.

The lead analysis will be conducted in accordance with 40 CFR Part 50, Appendix G. Concentrations of lead in suspended particulate matter from ambient air will be determined using atomic absorption analysis. The RL for lead, using this method, is 5 mg.

3.3 SAMPLE PRESERVATION

The containers to be used for soil and air sample collection and analyses do not require chemical preservatives. However, the containers for several of the liquid sample analyses do require the addition of a chemical preservative. Liquid samples for VOC analysis require the addition of hydrochloric acid (HCl). The liquid samples for cyanide analysis require the addition of sodium hydroxide (NaOH) as a preservative. Liquid samples for metals analysis require acidification through the addition of nitric acid (HNO_3) as a preservative. In addition, all soil and water samples will be thermally preserved by being kept in an iced cooler until received by the laboratory. Care will be taken during sample collection to verify that preservatives have been added to containers and the appropriate containers have been supplied. Samples collected during subfreezing temperatures will be protected from freezing.

The containers and filters used for air sampling do not require chemical preservatives. All air samples, utilizing the PUF samplers, will be placed in an iced cooler after collection and during sample shipment.

Table 3-1 specifies the containers, preservatives, methods, and holding times for the various sample types collected during the removal action.

3.4 SAMPLE DESIGNATION

Unique sample designations will be assigned to each sample collected during the course of the removal action. The sample designations will be composed of a series of letters, numerals, and descriptive modifiers that will identify the type of sample, the date, and the location from which

the sample was collected. Each of the various matrices and sample types will be uniquely identified according to the protocol presented in the following sections.

The sample collection activities will be further documented in the field logbook, and the sample location will be identified on a site map.

3.4.1 PCB Delineation and Verification Samples

Samples collected from the PCB “hot spot” will be uniquely identified using the site grid system. The sample designation for the PCB delineation and verification samples is made up of the following components:

PCB-grid cell-depth-mmddy

where,

- PCB = readily identifies the sample as a PCB delineation or verification sample
- grid cell(s) = based on site coordinates
- Depth = identifies the approximate depth of sample retrieval
- mmddy = identifies the month, date, and year

example:

PCB-H6-1'-072204

The sample collection activities will be further documented in the field logbook and the sample location will be identified on a site map. Additional information will be placed on the sample label as appropriate.

3.4.2 Residual Lead Impact Delineation and Verification Samples

Identification of samples collected for lead impact delineation and verification will be based on the of interest from which the sample was generated. The sample designation for the lead delineation samples is made up of the following components:

Pb-grid cell-depth-mmddy

where,

- Pb = readily identifies the sample as a lead delineation or verification sample
- grid cell = based on the coordinates of the sampling locations shown on Figure 2-1
- depth = identifies the approximate depth of sample retrieval below the original grade
- mmddy = identifies the month, date, and year

example:

Pb-J8-0-3"-072204

The sample collection activities will be further documented in the field logbook and the sample location will be identified on a site map. Additional information will be placed on the sample label as appropriate.

3.4.3 FMGP Impact Excavation Verification Samples

Samples collected from the excavation base and sidewalls will be uniquely identified using the site grid system. The sample designation for the excavation verification samples is made up of the following components:

EC-site-grid cell-excavation location-depth-mmddyy

where,

- EC = readily identifies the sample as an excavation confirmation sample
- Site = designates S1 for Site 1 and S2 for Site 2
- grid cell(s) = based on site coordinates (e.g., G6)
- excavation location = describes the area of excavation (i.e., sdwall = sidewall and fl = floor)
- Depth = identifies the approximate depth of sample retrieval
- mmddyy = identifies the month, date, and year of sample collection

example:

EC-S1-G6-sdwall-1'-072204

The excavation verification sample collection activities will be further documented in the field logbook and the sample location will be identified on a site map. Additional information will be placed on the sample label as appropriate.

3.4.4 Water Samples

Samples collected to verify compliance with the limits prescribed for disposal at DCI will be collected prior to each batch disposal. Sample designation will adhere to the following protocol:

location-sample number-mmddyy

where,

- location = on-site storage tank or settling basin
- sample number = a three-digit number which uniquely identifies the dewatering sample in ascending order of collection
- mmddyy = identifies the month, date, and year of sample collected

example:

storage tank-001-061504

The water sample collection activities will be further documented in the field logbook. Additional information will be placed on the sample label as appropriate.

3.4.5 Perimeter Air Samples

Containers holding perimeter air sample cartridges and filters will be uniquely identified according to the following protocol:

PA-location-sample number-mmddyy

where,

- PA = readily identifies the sample as a perimeter air monitoring sample
- location = sample station designation
- sample number = a three-digit number which uniquely identifies the perimeter air sample in ascending order of collection
- date = the ending date of the sample collection period

example:

PA-DN-011-061504

The sample collection activities, meteorological conditions, and the specific physical location of the sample collection will be further documented in the field logbook and field forms. Additional information will be placed on the sample label as appropriate.

3.4.6 Field Quality Control Samples

In order to minimize the potential for laboratory bias, QC samples originating in the field will be uniquely identified in such a way as not to link them with the corresponding field sample. The corresponding field sample will clearly be noted in the field logbook. The designation of field QC samples will be according to the following protocol:

QC-sample number-date of collection

where,

- QC = readily identifies the sample as a field quality control sample
- sample number = a three-digit number which uniquely identifies the QC sample in ascending order of collection
- date = the date that the sample is collected

example:

QC-001-061504

The QC sample collection activities will be further documented in the field logbook and the corresponding field sample will be clearly identified in the field logbook. Additional information will be placed on the sample label as appropriate.

3.5 SAMPLE PACKAGING AND SHIPMENT

3.5.1 On-Site Laboratory

Samples to be analyzed on site in the mobile laboratory will be collected as previously described and placed in an iced cooler. The samples will be placed in the cooler in a manner that will protect the containers against damage during handling and transportation to the mobile laboratory. The completed COC form will be maintained with the samples, and the samples will be delivered directly to the mobile laboratory by MWH or ECCS personnel.

3.5.2 Off-Site Laboratory

For samples to be analyzed at an off-site laboratory, the sample container will then be placed in an iced cooler and surrounded by inert packing material in a way such that the containers do not touch each other or the sides or bottom of the cooler. The remaining space will then be filled with packaging material. The COC form will be placed in a waterproof bag and taped to the inside of the cooler lid. The lid will be secured by taping around the cooler in at least two locations. The cooler will be picked up by a laboratory courier or shipped via overnight carrier.

3.6 SAMPLE RECORDS AND COC DOCUMENTATION

Records of sampling methods will be maintained throughout each sampling activity. The records will document the location and time of sample collection, instrument calibration information, any QA/QC information, and any changes in sampling plans or protocol.

All samples submitted for laboratory analysis will be entered into a sample tracking log. The log will contain the sample identity, date collected, date shipped, and date of receipt of laboratory analytical report.

Sample custody and documentation procedures will begin at the time the samples are collected. After the sample is collected, MWH personnel will immediately begin the COC documentation. An example of the COC form is shown in Appendix G of the RAWP. The form is used to record the date and time of sample collection and the number of sample containers submitted for analysis. The form is stored and shipped with the samples. The COC form will be signed (as relinquished) by MWH personnel at the time of shipment and will be countersigned (as received) by the laboratory personnel. To detect if samples have been tampered with during transportation to the analytical laboratory, a custody seal will be placed on the front of the cooler and signed by the personnel collecting the sample.

Upon arrival at the laboratory, the laboratory sample custodian will inspect each sample for breaks or leaks, inappropriate caps or bottles, air bubbles in VOC samples, incomplete sample labels, and incomplete paperwork or discrepancies between sample labels and paperwork. The MWH Field Supervisor will be notified immediately of samples that fail inspection, and he/she

will initiate measures to replace the samples, if necessary, and avoid recurrence of similar problems.

3.7 LABORATORY ANALYSES

All samples submitted for laboratory analysis will be analyzed, at a minimum, for the parameters listed in Tables 2-3 through 2-5, as appropriate for the sample media. All routine analytical procedures are to be performed according to the stated methods for the specific analyses.

SECTION 4

PART II - QUALITY ASSURANCE PROJECT PLAN

SECTION 4

PROJECT DEFINITION AND ORGANIZATION

4.1 PURPOSE

The purpose of this QAPP is to adequately describe the project organization, functional activities, and QA/QC activities necessary to achieve the data quality objectives (DQOs). Redundancies between the QAPP and RAWP have been minimized, and references between documents are made where needed to facilitate review.

The overall objective of the removal action is to reduce the risk to human health and the environment by removing accessible materials at the site which have concentrations exceeding site-specific risk thresholds; which will result in a reduction of potential risks to human health and the environment.

4.2 PROJECT DESCRIPTION

From approximately 1869 to 1952, the site was occupied by a manufactured gas plant that generated gas for use in the Clinton area. Gas manufacturing residues left on site resulted in impacted soil and groundwater.

The removal actions detailed in the RAWP are intended to address residual soil impact and source areas that generally occur in the upper 10 feet of unconsolidated material at the site. Implementation of the removal action will consist of excavation, segregation, cleaning or treatment, and disposal of the contaminated media. Following removal of accessible contaminated soil and rubble, the confirmation sampling program described previously in the FSP for soil, water, and air will be implemented. An integral component of the removal action will also be the implementation of institutional and engineering controls.

Major activities of the removal action include:

- Excavation of the contents of the accessible gas holders and tar wells and impacted soil to remove potential source material and to reduce the potential for continued releases or leaching of impacts to soil and groundwater.
- Implementation of institutional controls for the inaccessible gas holder to prevent possible future exposure risks.
- Excavation of PCB-impacted surface soil to eliminate the direct contact exposure pathway in surface soil.
- Excavation of lead-impacted surface soil to eliminate the direct contact exposure pathway in surface soil.

- Implementation of institutional controls to manage exposure risks by limiting intrusive work, and contingent engineering controls, designed and implemented on an as-needed basis, in conjunction with future site development to prevent exposure to impacted soil.
- Abandonment of former storm sewer lines and the water intake line to minimize potential conduits for migration of possible impacted sediment and/or groundwater.

4.3 PROJECT ORGANIZATION AND RESPONSIBILITIES

This section describes the overall approach and management procedures that will be used during the removal action. A description of the project organization, responsibilities, training, subcontractor management, procedures, and quality management is also presented in the following subsections. The project organization chart is presented in Figure 4-1. Responsibilities of key project personnel are presented below:

4.3.1 EPA On-Scene Coordinator

The EPA On-Scene Coordinator (OSC) or their designee will oversee the removal action planning and implementation to confirm that the requirements of the Consent Order are met. The EPA OSC will also serve as the principal EPA contact for the project.

4.3.2 IDNR Project Coordinator

The IDNR Project Coordinator (PC) will receive copies of all documents submitted to the EPA and will consult with the EPA on the removal action plan and implementation.

4.3.3 IPL PC

The IPL PC will administer the removal action for IPL and will be the primary contact for the regulatory agencies. The IPL PC will oversee the entire project. All changes in the project scope of work, due to field change orders or other unforeseen circumstances, will be approved by the IPL PC.

4.3.4 MWH Project Manager

The MWH Project Manager (PM) will be responsible for overall review and tracking of the project schedule and budget, overall coordination of field and office activities, management of MWH subcontractors, and development of documents for the removal action on behalf of IPL. The MWH PM is also the primary MWH point of contact for client and regulatory agency communications.

4.3.5 MWH Project Staff

The project staff includes the MWH Field Supervisor and other field personnel required to complete the removal action tasks. The staff will report directly to the MWH PM and will be

responsible for completing the majority of the technical planning and implementation, construction oversight, and preparation of project deliverables.

The MWH Field Supervisor is responsible for the day-to-day oversight and technical implementation of project tasks. This individual will also be responsible for budget and schedule tracking of individual project components. Field Supervisor duties include ensuring the proper manifesting of off-site shipments of excavated material and that the proper sample collection, handling, and COC procedures are followed. The MWH Field Supervisor is also responsible for collection of appropriate QC samples and execution of the sampling procedures outlined in the RAWP. Additional responsibilities include monitoring on-site subcontractors; ensuring compliance with the site-specific SSP Addendum and the air monitoring program; assuring that all field personnel are properly briefed and trained; maintaining field logs, project files, and other information; communicating field activity information to the MWH PM; and documenting/communicating any field decisions that result in a deviation from the RAWP. The Field Supervisor is responsible for ensuring that all logbooks, field forms, and other on-site documentation are copied and sent to MWH's Des Moines, Iowa office weekly.

Additional field staff will assist as the MWH PM and Field Supervisor as needed.

4.3.6 MWH Project Quality Assurance Officer

The MWH Project Quality Assurance Officer (PQAO) is responsible for the review and approval of the RAWP and QAPP, and any necessary revisions to those plans. The MWH PQAO is also charged with coordinating audits and data review/validation activities, and reporting the findings of such to the MWH PM. Additional responsibilities include review of interim project deliverables and technical correspondence.

4.3.7 MWH Project Health and Safety Coordinator

The MWH Project Health and Safety Coordinator (PHSC) will be responsible for the review and implementation of the site-specific SSP Addendum, monitoring health and safety activities to ensure compliance with the site-specific SSP Addendum, and documenting/communicating any changes required in the site-specific SSP Addendum. The MWH PHSC will also be responsible for conducting health and safety audits during the removal activities.

4.3.8 Burns & McDonnell Air Monitoring Staff

Burns & McDonnell is serving as the primary contractor for the perimeter air monitoring using the real-time and discrete time-averaged sampling stations. The Burns & McDonnell Air Monitoring PM will coordinate the overall air perimeter air monitoring program and serve as the primary contact for IPL. The air monitoring field staff will coordinate the perimeter sample collection and analysis, monitor real-time air conditions, and alert field personnel in the event of a change in the air monitoring response level.

4.3.9 Technical Advisory Committee

The Technical Advisory Committee (TAC) is composed of senior MWH and IPL employees with significant experience in the management and performance of similar projects. The TAC, which will review all major deliverables for this project, will be convened periodically during the course of the work to provide review comments and overall guidance to the project staff.

4.3.10 Subcontractors

All subcontractors performing work as part of this project are responsible for following the procedures in this QAPP, the site-specific SSP Addendum, and other procedures deemed appropriate by the MWH PM. The MWH Field Supervisor has the responsibility of ensuring that subcontractor personnel are familiar with the project-specific requirements. MWH will provide on-site oversight on behalf of IPL.

4.3.10.1 Removal Activities. DCI has been selected as the primary contractor for the excavation, transportation, and thermal treatment of the impacted soil and debris. DCI was selected based on economics and DCI's previous successful thermal treatment for IPL and others in the State of Iowa. DCI will also act as the primary contractor for the remediation and construction activities. Other major providers will subcontract through DCI for tasks such as transportation of clean backfill material and the abandonment of the water intake and former sewer lines.

4.3.10.2 Laboratories. ECCS will provide on-site mobile laboratory services for analysis of the soil confirmation samples. Keystone will serve as the analytical laboratory for water samples collected as part of the removal action, and will also provide analysis of soil samples as needed to confirm the results of the mobile laboratory. STL will serve as the primary analytical laboratory for air samples.

4.3.11 Special Training/Certification

All personnel associated with this project will have sufficient training to safely, effectively, and efficiently perform their assigned tasks.

4.3.11.1 MWH Project Staff. All MWH project staff are required to read and understand the RAWP, the site-specific SSP Addendum, and this SAP. The project staff will also attend the project kickoff meeting prior to initiation of the fieldwork. The project kickoff meeting will be conducted by the MWH PM and MWH Field Supervisor with the objectives of ensuring all staff are comfortable with the procedures and requirements presented in the project plans, identify any additional training required, and address any questions or issues project staff may have.

4.3.11.2 Field Personnel. All field personnel must have successfully completed a training course of at least 40 hours that meets the requirements specified in 29 CFR § 1910.120(e) on safety and health at hazardous waste operations. In addition, all personnel who have completed the initial 40-hour training more than one year before the commencement of site work must

successfully complete a refresher course of at least 8 hours that meets the requirements of 29 CFR § 1910.120(e) on safety and health at hazardous waste operations.

The MWH PHSC will be responsible for ensuring field personnel for each participating organization have current health and safety training prior to commencement of field sample collection activities. The health and safety training records will be maintained as discussed in the site-specific SSP addendum.

No other specialized training is anticipated for this project. However, field personnel performing sample collection and measurement activities will be properly trained in equipment use and procedures necessary for each task prior to entering the field.

Each subcontractor will employ their internal procedures for ensuring personnel are adequately experienced in their assigned duties and are receiving any needed training. Training courses or workshops on operation of specific equipment, techniques, or procedures shall be documented. The requirements of this SAP will be reviewed by management and field personnel of each participating organization to ensure persons with appropriate credential and experience are assigned to the tasks to be performed. It will be the responsibility of the MWH Field Supervisor to ensure field personnel understand and comply with the applicable SAP requirements for their individual tasks.

4.3.11.3 Laboratory Personnel. The laboratory shall employ sufficient personnel with the necessary education, training, technical knowledge, and experience for their assigned functions. Laboratory training records are maintained by the laboratory and must be available for review upon request.

4.3.12 Community Relations

Primarily, the EPA will coordinate community relations activities. IPL will assist the EPA, as requested, to provide historical information, participate in public meetings, or prepare and distribute a fact sheet. IPL may provide additional information and communications with site employees. Any other community relations activities desired by IPL will be reviewed and approved by the EPA prior to implementation.

The Clinton FMGP Community Advisory Group (CAG) provides a setting for interested parties in the community to get up-to-date information about site activities and provides a forum for discussing community views and concerns about planning and implementation of site activities. CAG members meet periodically to review and comment on technical documents and studies related to site activities. Through the EPA, the CAG is represented in reviews and comments regarding proposed activities at the Clinton FMGP site.

SECTION 5

SECTION 5

DATA QUALITY OBJECTIVES AND CRITERIA

“Data quality” refers to the level of reliability associated with a particular data set or data point. The data quality associated with environmental measurement data is a function of the project rationale, the sample collection procedures, and the analytical methods and instrumentation used in making the measurements. The overall quality assurance (QA) objective is to develop and implement procedures for field sampling, sample custody, laboratory analysis, and data reporting that will provide data that meet task-specific DQOs and are legally defensible. This section discusses the DQOs and measurement performance criteria established for the removal action.

5.1 DQOs

In order to verify achievement of the overall objectives of the removal action, the appropriate amount and type of data must be collected. The remedial investigation/feasibility study (RI/FS) process includes the development of site-specific DQOs to help determine what types of data are needed. This process is being carried forward for the removal action to provide a framework for evaluating data collected during the removal action.

DQOs are qualitative and quantitative statements that specify the data quality necessary to support specific decisions or regulatory actions. The DQOs describe which data are needed, why the data are needed, and data end use. The DQOs also establish numeric limits for the data to allow the data user (or reviewers) to determine whether the data collected are of sufficient quality for their intended use.

5.1.1 Statement of the Problem

The nature of the removal action, associated planning team, and resources are summarized below.

5.1.1.1 Problem Description. Impacted soil and fill material associated with historic site operations was documented in the EE/CA Site Characterization report (IPL, 2000). These impacts were further evaluated in the August 2001 EE/CA Part II – Baseline Risk Assessment (EE/CA Baseline Risk Assessment) report (IPL, 2001). These evaluations indicate some areas of impacted soil have the potential to pose a health risk under certain exposure scenarios. Potential removal alternatives were evaluated in the July 2002 EE/CA Part III – Removal Alternatives Evaluation (EE/CA Removal Alternatives Evaluation) report (IPL, 2002). Based on this series of reports, preliminary remediation goals (PRGs) were developed for use as site-specific soil action levels for the removal action.

The basis for the removal action is to remove, treat, or isolate these areas of impacted soil to prevent potential exposures. Additional tasks of the removal action are intended to restrict or eliminate potential migration of impacts.

5.1.1.2 Decision Making. The following individuals are involved in decision making for the site focused RI/FS activities:

- Mr. Kevin Larson – EPA
- Mr. Mick Leat – IDNR
- Mr. Greg Taylor – IPL
- Mr. Dean Hargens – IPL
- Mr. Randy Kroneman – MWH
- Mr. Ryan Wyllie – MWH

5.1.1.3 Resources. MWH personnel—including geologists, engineers, and environmental scientists—from corporate staff and qualified subcontractors will be used to collect and analyze field data. MWH staff who will be involved with the removal action activities include:

- Mr. Randy Kroneman – PM
- Mr. Ryan Wyllie – Field Supervisor
- Other qualified MWH field personnel

The personnel listed above, along with personnel from the analytical laboratories will review and evaluate the analytical results.

5.1.2 Identified Decision

Data collected during the removal action activities will attempt to answer the following questions:

- Has the reasonably accessible impacted soil (exceeding the soil action levels) been removed?
- Have the location and extent of residual impacts been defined?
- Are the data representative of the media sampled?
- Was the information obtained in a timely fashion for the appropriate handling of the materials (for regulatory and health/safety purposes)?
- Is the air quality data adequate for evaluation of worker health and safety of off-site populations at the site perimeter?
- Are institutional and/or engineering controls adequate to restrict potential exposures to residual impacts?

5.1.2.1 Alternate Actions. Potential alternate actions to address the answers to these questions include:

- Extend excavations where feasible.
- Perform supplemental soil sampling.
- Perform additional air monitoring.
- Amend the sampling frequency.

- Amend the list of analytical analyses.
- Conduct no further action.

5.1.2.2 Decision Statement. Determine whether the answers to the removal action questions stated above require any of the listed potential alternate actions.

5.1.3 Identified Inputs to the Decision

The following information will be required to resolve the decision statement:

- Laboratory analytical and field screening results for soil samples.
- Laboratory analytical results for accumulated water.
- Laboratory analytical, field screening, and field real-time monitoring results for air samples.
- Subsurface conditions.
- Historical soil analytical data and field measurements.

5.1.3.1 Information Required to Resolve the Decision. Soil, water, and air samples will be collected and analyzed for the parameters described in this SAP. The soil confirmation sampling program is intended to provide adequate data to 1) document that accessible soil containing concentrations above the specified soil action levels has been removed, 2) determine whether additional removal is required, and 3) document residual concentrations if the maximum extent of excavation has been achieved. The maximum extent of excavation may be defined by risk-based criteria or by physical or legal boundaries.

Confirmation sampling will also extend to sampling and analysis of accumulated water that is collected from the excavations and equipment/personal decontamination activities. This sampling will be conducted to determine acceptability and document compliance with water disposal requirements.

Air quality sampling is intended to document air quality in the work zone and at defined locations around the site. Air monitoring and confirmation sampling will include real-time fixed station measurements, samples collected for off-site analysis, and hand-held instruments.

5.1.3.2 Information to Establish an Action. Further removal action, water treatment, or emissions control will be determined by the:

- Comparison of soil concentrations to the soil action levels.
- Comparison of water concentrations to the disposal limitations.
- Comparison of air monitoring data to background, recommended air quality standards, and PPE upgrade levels.

5.1.3.3 Appropriate Methodology Required to Determine Action Levels. Laboratory analysis, field screening activities, and air monitoring will be conducted in accordance with the procedures and methods described in the standard method sources described in the RAWP, this SAP, and/or in accordance with other approved testing procedures.

5.1.4 Defined Boundaries

Based on the EE/CA Site Characterization, EE/CA Baseline Risk Assessment, and PRG comparison, the removal action boundaries are defined in the following subsections.

5.1.4.1 Population of Interest. The populations of interest are carcinogenic PAH, PCB, and lead concentrations in surface soil (0-2 feet below ground surface), and carcinogenic PAH concentrations in vadose zone soil from 2 feet bgs to the groundwater surface.

5.1.4.2 Spatial Boundaries. The area included in the removal action is defined as the special consideration areas and surrounding impacted soil as described in the RAWP.

5.1.4.3 Temporal Boundaries. The soil impacts are defined by results from the EE/CA Site Characterization and previous site investigations as compared to the soil action levels.

5.1.4.4 Scale of Decisions. The data will be used to evaluate compliance with the objectives of the removal action and the Consent Order.

5.1.4.5 Practical Constraints for Data Collection. Inaccessibility of sample locations due to property access issues, structural obstacles, traffic, utilities, and adjacent land use may limit data collection.

5.1.5 Decision Rules

If the initial extent of excavation does not remove all soil that is impacted above the soil action levels, additional soil will be excavated, if possible.

If an excavation is limited due to physical or legal barriers or constraints, samples will be collected from the sidewalls to document residual concentrations.

If air quality readings or results indicate concentrations above upgrade of perimeter limits, appropriate response actions will be undertaken to reduce emissions and/or exposures.

If water quality results do not meet the limitations for disposal, the water will be treated on site and resampled until the concentrations are below the disposal limits.

5.2 MEASUREMENT PERFORMANCE CRITERIA

While the previous DQO development process determines the type of data to be collected and evaluated, measurement performance criteria for the data collected assess whether the data quality satisfies the DQOs. Measurement performance criteria are often expressed as data quality indicators (DQIs) that assess data quality in quantitative and qualitative terms. The principal DQIs are precision, accuracy, representativeness, comparability, completeness, sensitivity, and traceability. Quantitative DQIs include precision, accuracy, completeness, and sensitivity. Representativeness, comparability, and traceability are qualitative DQIs.

For each DQI, acceptable limits are established based on data characteristics, such as sample matrix or analyte. These established limits are referred to as measurement quality objectives (MQOs). Data are evaluated against the MQOs to determine data usability to meet project objectives. The DQIs listed above are defined and discussed in this section.

5.2.1 Precision

Precision is the degree of variability among individual measurements of the same sample under similar conditions. For duplicate measurements, precision is expressed as the relative percent difference (RPD) of the pair and is calculated using the following equation:

$$\text{RPD (\%)} = \frac{|D_1 - D_2|}{1/2 (D_1 + D_2)} \times 100$$

where:

D_1 = concentration of analyte in the primary sample.

D_2 = concentration of analyte in the duplicate sample.

5.2.1.1 Field Precision. Field precision will be assessed through the collection and analysis of field duplicate samples. One field duplicate will be collected per twenty soil and water environmental samples. Field duplicates for soil should have an RPD less than or equal to 50 percent when both the sample and duplicate are greater than or equal to five times the method detection limit (MDL), and an RPD less than or equal to 100 percent when the sample and/or duplicate is less than five times the MDL but greater than the detection limit. For water samples, field duplicates should have an RPD less than or equal to 25 percent when both the sample and duplicate are greater than or equal to five times the MDL, and an RPD less than or equal to 50 percent when the sample and/or duplicate is less than five times the MDL but greater than the detection limit. If these criteria are exceeded, then corrective action, such as described in Section 12 of this QAPP, will be taken. No field duplicates will be collected as part of the air monitoring program.

Field precision of the in-field screening instruments will be determined through replicate measurements.

5.2.1.2 Laboratory Precision. Laboratory precision will be assessed through the analysis of:

- Field duplicate samples.
- Matrix spike/matrix spike duplicate (MS/MSD) samples.
- Laboratory control standards (LCSs).

5.2.2 Accuracy

Accuracy is the degree of agreement of a measurement or an average of measurements with an accepted reference or “true” value, and is a measure of bias in a system. The accuracy of a

measurement system is affected by errors introduced through such factors as the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analytical techniques. Accuracy will be evaluated from the analysis of spiked samples and reference standards by calculating percent recovery (%R) with the following equation:

$$\%R = \frac{|X_s - X_u|}{K} \times 100\%$$

where: X_s is the measured value of the spiked sample
 X_u is the measured value of the unspiked sample
K is the known amount of the spike in the sample.

5.2.2.1 Field Accuracy. A qualitative bias assessment of field data will be conducted by reviewing the sample collection, preservation, handling, and shipping procedures for compliance with the specifications presented in this SAP. A quantitative assessment of the field program will be conducted by reviewing the results of equipment rinse blank sample analyses, which are used to measure the accuracy of equipment decontamination. One equipment blank sample will be collected per twenty soil or water samples. Equipment blanks will be prepared by routing deionized water through the sampling equipment after equipment decontamination and prior to field sample collection. Equipment blanks should contain no parameter of interest above two times the MDL. If an equipment blank exceeds this criterion, then the source of the contamination will be investigated for future work and appropriate corrective action instituted. Corrective action procedures are described in Section 12 of this QAPP. No equipment blanks will be collected in cases where dedicated or disposable sampling equipment is used. No field equipment blanks will be collected as part of the air monitoring program.

Trip blanks, which can be used to assess the cross-contamination effects on accuracy due to VOC migration during shipping and storage, are not proposed for use during the soil, water, or air sampling conducted as part of the removal action (trip blanks will be used during groundwater monitoring conducted as part of the additional remediation investigation for the site). Trip blanks are not proposed for use during the removal action because 1) no compound-specific VOC action levels for soil are proposed, 2) the concentrations of concern for VOCs in soil and water are higher than what can reasonably be expected to result from cross-contamination during shipping and storage, and 3) the canisters used for air sampling are unlikely to be impacted by cross-contamination during shipping and storage because of the presence of a secure valve on the canister.

Various in-field screening instruments will be utilized during the removal action in support of the water disposal and health and safety monitoring. The accuracy of field measurements of organic vapors and other parameters will be addressed through pre-measurement calibrations and post-measurement verifications in the field.

Soil screening and air monitoring for health and safety purposes will be conducted using a PID. The instrument will be used to measure the concentration of trace gases in a sample headspace. The PID will be read to the nearest 0.1 meter unit (mu) on the 0 to 20 scale; 1 mu on the 0 to 200

scale; and 10 mu on the 0 to 2,000 scale. Accuracy shall be within 1 percent of the meter scale during calibration using isobutylene standard gas.

5.2.2.2 Laboratory Accuracy. Laboratory accuracy will be assessed quantitatively through analysis of the following samples or standards as applicable for the sample media and analysis:

- Method blanks
- MS/MSD samples
- LCSs
- Initial calibration verification standards (ICVs)
- Continuing calibration verification standards (CCVs)
- Internal standards
- Surrogate spikes (organic analysis only)
- Tune standards (GC/MS analysis only)
- Interference checks (metals analysis only)
- Initial calibration blanks (ICBs) (metals analysis only)
- Continuing calibration blanks (CCBs) (metals analysis only)

Evaluation of laboratory accuracy will be conducted by the laboratory and MWH as part of the data verification and validation described in Section 9.

5.2.3 Representativeness

Representativeness is a qualitative expression of the degree to which sample data accurately and precisely represent a characteristic of a population, a sampling point, or an environmental condition. Representativeness is maximized by ensuring, for a given task, the number and locations of sampling points and the sample collection and analysis techniques are appropriate for the task, and this SAP provides information reflecting "true" site conditions.

5.2.3.1 Field Data. Representativeness of field data is dependent upon the proper design of the data collection procedures. Representativeness of the field data will be evaluated by assessing whether the sampling procedures defined in this SAP were followed during sample collection. In addition, the analytical results from field duplicate samples will be used to evaluate the representativeness of the field sampling procedures. Selection of sampling locations is discussed in the FSP.

5.2.3.2 Laboratory Data. Laboratory data will be evaluated for representativeness by assessing the following:

- Compliance with analytical criteria specified in this SAP.
- Compliance with sample preservation and holding times.
- Field duplicate sample results.
- RLs.

5.2.4 Comparability

Comparability is a qualitative expression of the measure of confidence that one data set can be compared to another and combined for decision-making purposes. Comparability is dependent on similar QA objectives between data sets and is achieved through the use of the following: standardized methods for sample collection and analysis; standardized units of measure; normalizing results to standard conditions; and standard and comprehensive reporting formats as defined by this SAP. Comparability may also be assessed using statistical analysis of data both within a data set and within two or more discrete data sets.

To be comparable, two sets of data should:

- Be in the same consistent units for all presentations (micrograms per liter [$\mu\text{g/L}$] or milligrams per liter [mg/L] for liquid, mg/kg or micrograms per kilogram [$\mu\text{g/kg}$] for solid, and micrograms per cubic meter [$\mu\text{g/m}^3$] or milligrams per cubic meter [mg/m^3] for air).
- Apply to the same interval, horizon, accumulation, etc.
- Be results of the same analytical procedures.
- Be derived from samples collected in a similar manner under similar conditions.

In order to obtain comparable sets of data, the following protocols will be followed:

- Sample locations will be carefully described so that the interval they represent can be determined.
- Laboratory analytical procedures will be standard methods.
- The sampling procedures set forth in the FSP and relevant standard operating procedures (SOPs) will be followed by all individuals who collect samples.

5.2.4.1 Field Data. Field data comparability is dependent on the use of similar sampling and analytical methodology and the use of standard units of measure for similar tasks at a site. For this project, field data will be collected using standard sampling and measurement procedures. All field data will be recorded in the field logbook or on the applicable field forms. Comparability of field data will be evaluated by reviewing the field documentation to determine whether the field data collection procedures and sample collection, handling, and shipping protocols specified in this SAP and the RAWP were followed.

5.2.4.2 Laboratory Data. Laboratory data comparability is dependent on the use of similar sampling and analytical methodology and the use of standard units of measure for similar tasks at a specific site. For this project, chemical data will be collected using standard sampling and analyses procedures. Data comparability will also be assessed by comparing investigative sample data to QA or QC sample data.

5.2.5 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system relative to the amount of data scheduled for collection under correct, normal conditions. Completeness measures the effectiveness of collecting the required samples, completing the required analyses, and producing valid results.

The sampling plan set forth in the FSP was designed to characterize 1) the excavation boundaries, 2) the excavated material, 3) the water for disposal, and 4) the ambient air at the site perimeter. In order for the data set to be complete, all the data planned for collection should be collected. Some data may be lost, however, due to unforeseen circumstances such as breakage of a sample container; inaccessibility of a sampling point; or, in the case of air samples, a significant change in the predominant wind direction during collection of the sample. To achieve completeness, these data gaps will be addressed in a manner appropriate to the situation. For example, if a planned sampling point is inaccessible, the sample location will be moved to a nearby accessible location where the same site condition can be sampled; if a critical sample is lost due to breakage, another will be collected; if a significant change in wind direction occurs, additional air sampling will be conducted the following day.

Completeness will be calculated on a per-analyte basis using the following equation:

$$\text{percent completeness} = \frac{\text{number of valid results}}{\text{number of possible results}}$$

where: The number of valid results is the total number of analytical measurements considered usable (not rejected ["R" flagged]) based on the precision, accuracy, and holding time evaluation.

5.2.5.1 Field Data. Field completeness is a quantitative measure of the actual number of samples collected compared to those samples scheduled for collection. The field data percent completeness goal for data collected under this SAP is 90 percent.

5.2.5.2 Laboratory Data. Laboratory data completeness is a quantitative measure of the percentage of valid data provided, as determined by the precision, accuracy, and holding time criteria evaluation. Completeness will be calculated using the completeness equation by dividing the total number of valid data points by the total number of data points. The laboratory completeness goal for data collected under this SAP is 90 percent.

If the 90 percent completeness goal is not met for laboratory data, the MWH PM will be immediately notified. The determination regarding the need for corrective action will be based upon how critical the data are to the project DQOs and will be made by the MWH PM and the IPL PC in conjunction with the EPA OSC and the IDNR PC.

5.2.6 Sensitivity

Sensitivity is the capability of a method or instrument to discriminate among measurement responses representing different levels of the variable of interest. MDLs, sample quantitation limits (SQLs), and RLs will be used to ensure proper sensitivity.

5.2.7 Traceability

Traceability is the extent to which data can be substantiated by hard-copy documentation. Documentation will exist in two forms: one that links quantification to authoritative standards and one that explicitly describes the history of each sample from time of collection to time of analysis.

5.3 ANALYTICAL LEVELS

The parameters and required MDLs associated with standard EPA, NIOSH, and Occupational Safety and Health Agency (OSHA) procedures will be acceptable for the analysis of water, soil/waste, and air samples collected during the removal action. The soil action levels specified in Table 2-2 do not require lower laboratory detection limits or special analytical techniques. Tables 2-3 through 2-5 define the parameters of interest for each media that will be sampled in support of the removal action. The MDLs for the specific methods proposed for use during the removal action are presented in Tables 5-1 through 5-3.

Field screening will be performed to provide a preliminary measurement of the need for additional excavation. VOC field screening will be conducted with a PID or organic vapor analyzer (OVA); PAH field screening may be conducted using ultraviolet fluorescence (UVF).

5.4 QA/QC SAMPLING

To support the data quality evaluation described in this section, QA/QC sampling and analysis will be conducted for all phases of data collection. Additional QA/QC samples to be analyzed include various duplicate samples, blanks, and additional sample volume for laboratory use. The sample frequency and criteria for the QA/QC sampling is summarized in Table 5-4.

SECTION 6



MWH

SECTION 6

SAMPLE CUSTODY

To ensure samples are identified correctly and remain representative of the environment, the sample documentation and custody procedures outlined in this section will be adhered to during the sampling program to maintain and document sample integrity during collection, transportation, storage, and analysis. Field personnel will be responsible for ensuring proper documentation and custody procedures are initiated at the time of sample collection, and that individual samples can be tracked from the time of sample collection until custody of the samples is transferred to the laboratory. The laboratory will be responsible for maintaining sample custody documentation from the time the laboratory receives the samples until final sample disposal.

Custody is one of several factors in establishing the admissibility of environmental data as evidence in a court of law. Custody procedures help to satisfy the two major requirements for admissibility: relevance and authenticity.

A sample or evidence file is under a person's custody if:

- The item is in actual possession of the person.
- The item is in the view of the person after being in actual possession of the person.
- The item was in actual physical possession but is locked up to prevent tampering.
- The item is in a designated and identified secure area.

The sample custody program for this project is designed to assure that each sample is accounted for at all times. Sample custody consists of three separate parts: field sample collection, laboratory receipt and analyses, and final evidence files.

6.1 FIELD SAMPLE COLLECTION

Sample custody during and immediately following the time of sample collection is maintained through the use of sample labels, COC forms, and any other sample-identifying forms or logs used in the field. The primary records developed in the field will be the field logbook and COC forms. The contents of each of these are described below.

6.1.1 Field Logbook

Field logbooks will provide the means of recording data collection activities. As such, entries will be described in as much detail as possible so that another person going to the site could reconstruct a particular situation. Field logbooks will be bound field survey books or notebooks, and will be stored in the field office when not in use. Each logbook will be identified by the project name and job number.

Entries in the logbook will contain a variety of information. At the beginning of each entry, the date, start time, weather, and the signature of the person making the entry will be recorded. The names of visitors to the site and the purpose of their visit will also be recorded in the field logbook. Measurements taken and samples collected will be recorded. Whenever a sample is collected or a measurement is taken, a detailed description of the sample location shall be recorded. Any photographs taken of the sample location will also be noted. All equipment used to make measurements will be identified, along with the date, time, and results of calibration. All entries will be made in indelible ink, signed, and dated; and no erasures will be made. If an incorrect entry is made, the information will be crossed out with a single strike mark, initialed, and dated by the sampler.

Exceptions to using the field logbook for recording relevant data are limited to activities for which a dedicated field form has been developed. Copies of these types of forms are contained in Appendices F and G of the RAWP.

The MWH Field Supervisor will be responsible for ensuring security and maintaining control of all field documentation until transferred to the project files controlled by the MWH PM.

6.1.2 COC Documentation

Sample custody and documentation procedures will begin at the time the samples are collected. After the sample is collected, field personnel will immediately begin the COC documentation. The COC form is used to record the following information, where appropriate:

- Sample identification
- Date collected
- Time collected
- Sample matrix
- Analyses and specific methods required
- Number of sample containers
- Laboratory
- Project name
- Job number
- Report and invoice contact information
- Turn-around time
- Level of QC package
- Signature of sampler(s)
- Any special instructions
- Number of coolers
- Method of shipment and bill of lading number

The COC form will consist of, at a minimum, triplicate copies. The original copy of the form will accompany the samples to the laboratory, one duplicate copy will be reviewed and filed by

the MWH PQAO, and one duplicate copy will be kept in the project files maintained by the MWH PM.

Each COC form will be completed properly in the field at the time of sample collection to ensure sample custody is documented, the appropriate sample volume has been collected, and the scheduled analyses are properly assigned. All entries will be made using indelible ink. Any errors will be corrected by drawing a single line through the incorrect entry, entering the correct information, and then initialing and dating the change. Unused portions of the COC form will be crossed out and initialed.

The COC form will be signed (as relinquished) by field personnel at the time of shipment or delivery and will be countersigned (as received) by laboratory personnel. To detect tampering of the samples during transportation to the analytical laboratory, a custody seal will be placed across the opening of the cooler and signed by the personnel collecting the sample. Commercial carriers are not required to sign off on the custody form provided the custody form is sealed inside the sample cooler and the custody seals remain intact. The shipping tracking number and airbill will serve as evidence of custody transfer between the field sampler and carrier, and the carrier and laboratory. The sampler will retain and file copies of the COC record and the shipping airbill after the samples are shipped. An example of the COC form is presented in Appendix G of the RAWP.

6.2 LABORATORY RECEIPT AND ANALYSIS

The project analytical laboratories will maintain strict COC procedures in accordance with their laboratory quality assurance manuals (QAMs). Sample custody in each of the laboratories is assured through the use of approved procedures and programs.

Upon arrival at the laboratory, the laboratory sample custodian will check the integrity of the shipping container by verifying the custody seal is not broken. The cooler will be opened and examined for evidence of proper cooling, and the internal temperature will be recorded. The individual sample containers will be inspected for breakage, damage, leakage, inverted septa, inappropriate caps or bottles, air bubbles in VOC samples, and incomplete sample labels. The contents of the shipping container will then be verified against the COC form. If any problems are observed, they will be documented on the sample custody form and communicated to the MWH PM or MWH Field Supervisor immediately so appropriate corrective action can be determined and implemented. The original completed COC form will be returned to MWH and filed in the project files.

The laboratory will follow its SOPs for sample log-in, storage, tracking, and control. These procedures will be documented and available for review upon request. After completion of sample log-in, samples will be stored in secure, limited access areas in an environment that maintains any required temperature preservation.

Sample custody will be maintained by the laboratory until the samples are disposed of. The laboratory will be responsible for sample disposal, which will be conducted in accordance with all applicable local, state, and federal regulations.

6.3 FINAL EVIDENCE FILES

A final evidence file will be the central repository for data, documentation, and reports that constitute evidence relevant to sampling and analysis activities as described in this SAP and the RAWP. MWH is the custodian of and will maintain the contents of the evidence files for the Clinton FMGP site removal action activities.

The final evidence file will include the following items, if generated:

- Field records (field logbooks, field data forms, sample collection records, etc.)
- Field data
- Correspondence
- Invoices
- Photographs
- Drawings
- Laboratory data deliverables
- Data verification and validation reports
- Field and laboratory audit reports
- Final, progress, and QA reports
- All custody documentation (tags, COC forms, airbills, etc.)

Evidence files will be maintained for six years from the completion of the removal action.

SECTION 7

SECTION 7

CALIBRATION PROCEDURES

General programmatic requirements for the calibration of instruments are established in the EPA document *A Compendium of Superfund Field Operations Methods*, (EPA, 1987), and in manufacturer's specifications. For any activity that affects data quality, instrument calibration must be done in accordance with the formal written procedures specified by the EPA guidance and by the applicable manufacturer's operations manual. It is also necessary for instruments to be calibrated, operated, and maintained within manufacturer's specifications by trained personnel.

7.1 FIELD EQUIPMENT

The calibration and maintenance history of general field equipment used to make measurements at hazardous waste sites is an important part of the QA/QC program of a project and is the responsibility of the field sampling team. An equipment status report sheet is kept (as applicable) for each piece of equipment whose use affects data quality. If the calibration schedule is not adequately maintained, or accuracy cannot be attained in accordance with this QAPP, that instrument will be labeled "HOLD" and considered unavailable for use until the specifications are met. Equipment maintenance and calibration schedules will follow manufacturers' guidelines and other relevant SOPs. The following critical spare parts and equipment should be maintained in the field or will be available to field personnel in short order:

- Half-face or full-face respirator
- Approved respirator cartridges
- Calibration gases for PID
- Batteries for all meters
- 254-nanometer UV lamp

To ensure the quality of sampling equipment and instruments used during the removal action, the following QC tasks will be conducted by the MWH Field Supervisor:

- Selecting and controlling the equipment inventories.
- Ensuring personnel training for field equipment operation and maintenance.
- Ensuring that the on-site equipment is functioning and has been calibrated prior to its use in the field.
- Ensuring a calibration check will take place after sampling.
- Ensuring that necessary data adjustments to reflect differences between the two calibrations are recorded in the field logbook or equipment calibration log.
- Ensuring instrumentation will be cleaned, decontaminated, checked for damage, and repaired, if needed.

- Ensuring field calibration activities will be noted in the field logbook or field data form and will include, at a minimum, the following:
 - Calibrator's name
 - Instrument name/model
 - Date/time of calibration
 - Standard(s) used and source
 - Temperature (if it influences the measurement)
 - Results of calibration (raw data and summary)
 - Corrective actions taken

7.2 LABORATORY EQUIPMENT

Instrument calibration is necessary to ensure the analytical system is operating correctly and functioning at the proper sensitivity to meet the required RLs. Calibration establishes the dynamic range of an instrument, establishes response factors (RFs) to be used for quantitation, and demonstrates instrument sensitivity.

The laboratories will be responsible for the proper calibration and maintenance of laboratory analytical equipment. Criteria for calibration are specific to the instrument and the analytical method. Each instrument will be calibrated according to the manufacturer's guidelines using standard solutions appropriate to the type of instrument and the linear range established for the method. All reported analytes will be present in both initial and continuing calibrations, which must meet the acceptance criteria specified in the laboratory analytical method SOPs.

SECTION 8

SECTION 8

ANALYTICAL PROCEDURES

Laboratory analyses to be performed on the samples and the analytical methods to be used are presented in Tables 2-3 through 2-5. All laboratory analyses of soil and water will be conducted following EPA-accepted procedures and protocols for organic and inorganic analyses. The analyses of air samples collected as part of the removal action will be conducted in accordance with the EPA-accepted procedures identified in this QAPP.

SECTION 9



MWH

SECTION 9

DATA REDUCTION, REVIEW, AND REPORTING

The data review, verification, validation, and reconciliation procedures to be conducted during the removal action are described in this section.

9.1 CALCULATIONS

A legible, reproduction-quality record of each calculation will be prepared on standard engineering paper. An individual with sufficient qualifications will review each calculation for accuracy. Both the originator and reviewer will initial the calculation sheet, and the original sheet will be placed in the project files.

9.2 DATA REDUCTION

Sample analysis and data reduction of the analytical results will be the responsibility of the analytical laboratory, and will be completed in accordance with the procedures outlined in the laboratory QAM. MWH will perform some data reduction of information compiled at the site over the course of the removal action.

9.3 DATA ASSESSMENT

The field and laboratory procedures described in this SAP will be reviewed to assess whether these activities were performed in a manner appropriate for accomplishing the project objectives. The MWH PQAO will coordinate the data assessment with support from appropriate members of the project team, including the MWH Field Supervisor and MWH PM. The data will be qualitatively and quantitatively assessed on a project-wide, task-specific, matrix-specific, parameter-specific, unit-specific basis.

This assessment will include an initial review of the field and analytical results followed by data verification and data validation. "Data verification" is the process of evaluating the completeness, correctness, and conformance/compliance of a specific data set against the method, procedural, or contractual requirements. "Data validation" refers to an analyte- and sample-specific process that extends the evaluation of data beyond method, procedural, or contractual compliance (i.e., data verification) to determine the analytical quality of a specific data set. MWH will perform data verification and data validation on the laboratory data to determine whether the data have been generated in accordance with the procedures identified in this SAP. Data verification/validation involves identifying the technical usability of the data for making decisions pertaining to satisfying the project objectives. The data assessment will also be conducted to identify any inconsistencies and/or anomalous values. Any inconsistencies will be resolved immediately, if possible, by seeking clarification from the personnel responsible for data collection.

Data verification and validation will be performed in general accordance with applicable portions of the EPA documents *Contract Laboratory Program National Functional Guidelines for Organic Review* (EPA, 1999b) and *Contract Laboratory Program National Functional Guidelines for Inorganic Review* (EPA, 2002). The data review, verification, and validation methods and criteria are discussed below.

1. Each laboratory will be responsible for validation of its raw analytical data.
2. The MWH PQAO and support staff will verify 100 percent of the following laboratory and field QC data to ensure that the results are within the established limits:
 - COC forms
 - holding times
 - analytical methods
 - field duplicates
 - equipment blanks
3. The MWH PQAO and support staff will review a minimum of 10 percent of the following laboratory QC data to ensure that the results are within the established limits:
 - CCVs
 - laboratory blanks
 - MS/MSDs
 - laboratory duplicates
 - LCSs
4. The MWH PQAO will issue a report to the MWH PM that describes QC requirements not met, and identifies the data that are affected by the outliers.

If analysis of a QC sample indicates a batch of samples is not in control, the laboratory will determine whether the analysis can proceed, if selected samples should be rerun, or if corrective action needs to be taken before analyzing additional samples. Out-of-control analyses and information justifying accuracy or precision outside acceptance criteria will be documented. The MWH PM will be notified as soon as possible to determine the appropriate corrective action for out-of-control events resulting in unacceptable data. A permanent record of any corrective actions taken will be maintained in the laboratory files.

The laboratory will also be responsible for reviewing all final data reports for proper format and reporting consistency prior to release of the reports to the MWH PM. This review will include confirmation of the following, at a minimum:

- Inclusion of data qualifiers with appropriate references and narrative on the quality of results.
- Satisfaction of SAP requirements.

9.4 RECONCILIATION WITH USER REQUIREMENTS

The MWH PM, MWH Field Supervisor, and MWH PQAO will determine whether field and analytical data or data sets meet the requirements necessary for decision making. The results of measurements will be compared to the DQO requirements set forth in this SAP. As data are evaluated, anomalies in the data or data gaps may become apparent to the data users. Data generated will be used to develop tables and graphic representations of the removal or distribution of residual FMGP impacts. The DQOs will be considered satisfied if the data are sufficient (based on the quality and completeness of the data) to document the soil and groundwater concentrations.

Data not meeting the data users' needs (if any) will be identified and appropriately noted in the project database so the decision-makers are aware of the data limitations.

9.5 DATA REPORTING

Selected data will be presented in summary tables and figures. Computer spreadsheets and programs may be used to facilitate the presentation of some or all of the data. Data evaluation in the Monthly Progress Reports and the Removal Action Report will be clearly described in a logical progression from initial data presentation to conclusions. All reports will be reviewed prior to transmittal to ensure consistency with the project objectives and appropriateness of interpretations, conclusions, and recommendations. Reviews will be conducted by the MWH PQAO (for transmittals of technical information) and the TAC (for major project deliverables).

SECTION 10



MWH

SECTION 10

PERFORMANCE AUDITS

Performance audits may be conducted as independent assessments of sample collection and analysis procedures. Audits may be conducted by internal (MWH) and/or external (EPA or IDNR) auditors. Field audits are intended to independently assess compliance with field procedures specified in this SAP. Laboratory audits will be used to evaluate the ability of the laboratory to produce data that fulfill the objectives established for this project, comply with the QC criteria presented in this SAP, and identify any areas requiring corrective action.

10.1 FIELD PERFORMANCE

10.1.1 Internal Field Audits

The MWH Field Supervisor will be responsible for monitoring the performance of the field subcontractors for conformance with project plans and standard procedures. An internal field performance audit will be conducted, at a minimum, twice during the performance of the removal action. Audits shall include review of the following items as appropriate: procedures, type and condition of equipment, calibration procedures, personnel qualifications, and documentation.

Periodic reviews of project records may be conducted at the discretion of the MWH PQAO to ensure completeness and traceability of data and results. A minimum of one such audit will be performed during the removal action. Documentation of the results of the audit will be prepared under the direction of the MWH PQAO and distributed to the MWH PM, MWH Field Supervisor, and other applicable project personnel.

A minimum of one health and safety audit will also be conducted either at the request of the MWH PM or at the discretion of the MWH PHSC. The MWH PHSC will be responsible for coordinating the performance of the audit, which will include observations of procedures, discussions with project personnel, and a review of field documentation. Documentation of the results of the audit will be prepared under the direction of the MWH PHSC and distributed to the MWH PM, MWH Field Supervisor, and other applicable project personnel.

10.1.2 External Field Audits

Audits of field sample collection, handling, and documentation procedures used during the removal action may be conducted by the EPA or IDNR. The purpose of the audit will be to document the quality of field procedures and verify field procedures are conducted as described in this SAP. External field audits may be conducted any time during field activities. Audits may or may not be announced and are performed at the discretion of the EPA and/or IDNR.

10.2 LABORATORY PERFORMANCE

The designated laboratories for this project may undergo performance and system audits as required by the applicable State, the EPA, and other programs listed in the laboratory QAM. The results of such audits will be made available to the MWH PQAO upon request.

In-house audits of laboratory systems and performance will be a regular part of the laboratory's QA program. External audits may be conducted by MWH, the EPA or the IDNR.

10.2.1 Internal Laboratory Audits

The Laboratory Quality Assurance Officer (Lab QAO) performing analytical testing services for this project may perform periodic internal systems audits to evaluate laboratory operations and QC procedures in accordance with the laboratory QAM. These audits are intended to serve two purposes: 1) to ensure the laboratory is complying with the procedures defined in the laboratory QAM, SOPs, and contract, and 2) to determine any sample flow or analytical problems. Internal audits performed by the participating laboratory during the period of removal action may be requested by the MWH PM, as necessary, to review associated QA/QC issues relevant to this project.

10.2.2 External Laboratory Audits

An audit of laboratory procedures used during the course of removal action sample analysis activities may be conducted by and at the discretion of MWH, the EPA, and/or the IDNR.

The following general areas may be evaluated during an external laboratory audit:

- Sample custody procedures
- Calibration procedures and documentation
- Completeness of data forms, notebooks, and other reporting requirements
- Data review and verification procedures
- Data storage, filing, and record keeping procedures
- QC procedures, tolerances, and documentation
- Operating conditions of facilities and equipment
- Training and maintenance activity documentation
- Systems and operations overview
- Security of laboratory automated systems

SECTION 11



MWH

SECTION 11

PREVENTATIVE MAINTENANCE

11.1 FIELD EQUIPMENT

Preventative maintenance requirements for field monitoring equipment, an equipment calibration schedule, and a list of critical spare parts and equipment are provided in Section 7 of this QAPP. Field equipment scheduled for use during this project will be uniquely identified, and records of service, calibration, and use will be maintained in the field logbook. Equipment exceeding the recommended service intervals or failing calibration testing will be tagged and not used until successfully recalibrated or serviced.

11.2 LABORATORY EQUIPMENT

The laboratory maintains its own schedule and procedures for preventative maintenance of laboratory equipment, which is documented in the laboratory QAP.

11.3 INSPECTION/ACCEPTANCE REQUIREMENTS OF SUPPLIES AND CONSUMABLES

Only supplies and consumables of adequate quality to sustain confidence in sample collection, processing, and laboratory analyses will be used for this project. Where no independent assurance of the quality of outside supplies is available, procedures to ensure the quality of the purchased materials consistent with the overall project technical and quality criteria will be established. Purchased supplies and consumables will not be used until they have been inspected, calibrated, or otherwise verified to ensure compliance with any standard specifications relevant to all calibrations or tests being performed for the project. Records of all supplies and consumables used for the project will be maintained.

Inspections or acceptance testing will be documented, including the procedures followed, the individuals responsible, the evaluation frequency, and the handling and storage conditions. The established procedures must enable project personnel to verify critical supplies and consumables meet relevant project quality objectives prior to use. Supplies and consumables used during sample collection and processing will be inspected on an as-received basis.

SECTION 12

SECTION 12

CORRECTIVE ACTIONS

Corrective action is the process of identifying, recommending, approving, and implementing measures to counter unacceptable procedures or out-of-control performance that can affect data quality. Corrective action can occur during field activities, laboratory analyses, data verification, and data validation. This section presents the general corrective action steps to be followed whenever an out-of-control or potentially out-of-control issue or activity is noted.

12.1 GENERAL CORRECTIVE ACTION PROCEDURES

A corrective action program will be implemented to promptly address conditions that have a potential for compromising data quality. Personnel will be notified that corrective actions may be necessary if:

- QC data are outside the warning or acceptable windows for precision, accuracy, and completeness.
- Issues of nonconformance are noted in subcontractor or field personnel performance.
- Deficiencies are detected by the MWH PQAO or his designee during audits.

The underlying causes and the full extent of the condition negatively impacting data quality will be determined and corrected in order to prevent recurrence. All project staff are responsible for bringing potential nonconformance issues to the attention of the MWH PM for evaluation of appropriate corrective actions. If a nonconformance is determined to exist that cannot be resolved within the parameters of this SAP or the RAWP, a Corrective Action Request will be initiated. Corrective Action Requests may also be initiated as a result of surveillance inspections or quality audits.

For each incidence of noncompliance, a formal corrective action program will be established and implemented at the time the problem is identified. The person who identifies the problem is responsible for notifying the MWH PM, who in turn will notify the EPA OSC. Implementation of corrective action will be confirmed in writing through the same channels.

Any nonconformance with the established QC procedures in this SAP will be identified and corrected in accordance with this SAP. The MWH PM (or designee) will issue a nonconformance report for each nonconformance condition.

12.2 FIELD CORRECTIVE ACTION

During field activities, the field staff will be responsible for documenting and reporting all suspected technical and QA nonconformances and/or deficiencies. The nonconformances and/or deficiencies will be documented in the field logbook and reported to the MWH PM. If the

problem is associated with field measurements or sampling equipment, the field staff will take appropriate steps to correct the problem. Typical field corrective actions include the following:

- Ensuring the meters or instruments are adjusted properly for ambient conditions, such as temperature.
- Checking or replacing batteries.
- Recharging batteries.
- Recalibrating the instruments.
- Replacing the meters or instruments used to measure field parameters.
- Stopping work (if necessary) until the problem is corrected.

If a nonconformance or problem requires a major adjustment to the field procedures outlined in this SAP (e.g., changing sampling methodology or sampling schedule), the MWH PM will be responsible for initiating corrective actions and notifying the IPL PC and the EPA OSC. The MWH PM will be responsible for:

- Evaluating the reported nonconformance.
- Controlling additional work on nonconforming items.
- Determining the appropriate corrective actions in conjunction with appropriate PMs and the IPL PC.
- Maintaining a log of all nonconformances and corrective actions.
- Approving all changes verbally or in writing prior to field implementation, if feasible. If deemed unacceptable, the action taken during the period of deviation will be evaluated to determine the significance of any departure from established program practices.
- Ensuring explanation of nonconformances and corrective actions is included in an appendix to the Removal Action report.
- Ensuring additional work dependent on the nonconforming activity is not performed until the appropriate corrective actions are completed.
- Reporting all changes to all affected parties, including the PC.

Corrective action in the field may be initiated when the sample network or rationale is changed (i.e., quantity of samples modified, sampling locations added/moved, etc.), or when sampling procedures and/or field analytical procedures require modification due to unexpected conditions. In general, any member of the field team may identify the need for corrective action. The field staff, in consultation with the MWH PM, will recommend a corrective action. The IPL PC and the EPA OSC will approve the corrective measure to be implemented by the field team. It will be the responsibility of the MWH Field Supervisor and the MWH PM to ensure the corrective action has been implemented.

If the corrective action will supplement the existing sampling plan (i.e., additional samples) using existing and approved procedures in this SAP, corrective action approved by the MWH PM will be documented. If corrective actions prevent project QA objectives from being achieved (i.e., fewer samples/analytical fractions or alternate locations, etc.), it will be necessary

for all levels of project management—including the MWH PM, IPL PC, the EPA OSC, and IDNR PC—to concur with the proposed action.

Corrective action resulting from internal field audits will be implemented immediately if data may be adversely affected due to unapproved or improper use of approved methods. The MWH PM will identify deficiencies and recommend corrective action to the MWH Field Supervisor. The MWH Field Supervisor and field team will perform implementation of corrective actions. Corrective action will be documented in QA reports to the entire project management team.

Corrective actions will be implemented and documented in the field logbook. Corrective actions will not be initiated by any staff member without prior communication of findings through the proper channels. If corrective actions are insufficient, the MWH PM or the EPA OSC may suspend fieldwork.

12.3 LABORATORY CORRECTIVE ACTION

Corrective actions are required whenever unreliable analytical results prevent the QC criteria from being met, as specified by the analytical method, the laboratory SOPs, or this SAP. The SOPs specify the majority of the conditions during or after analysis that automatically trigger corrective action or optional procedures. These conditions may include dilution of samples, additional sample extract cleanup, or automatic reinjection/reanalysis when certain QC criteria are not met. Furthermore, a number of conditions—such as broken sample containers, multiple phases, low/high pH readings, and potentially high concentration samples—may be identified during sample log-in or just prior to analysis. The corrective action taken depends on the analysis and the nonconformance.

Corrective action will also be undertaken if one of the following occurs:

- Blanks consistently contain target analytes above acceptance levels.
- Undesirable trends are detected in spike recoveries.
- Spike recoveries are outside the QC limits.
- RPDs between sample split or duplicate analyses are consistently outside QC limits.
- There are unusual changes in RLs.
- Deficiencies are detected during QA audits.
- Inquiries concerning data quality are received from the MWH PQAO.

A member of the laboratory technical staff will identify the need for corrective action. The laboratory will also ensure implementation and documentation of the corrective action. If the nonconformance causes project objectives not to be achieved, it will be necessary to inform the MWH PM, who must concur with the proposed corrective action. Once resolved, full documentation of the corrective action procedure will be filed with the laboratory QA department. If corrective action does not rectify the situation, the laboratory will contact the MWH PM prior to release of the data. A summary of the corrective actions will be included in the data reports submitted to MWH.

12.4 CORRECTIVE ACTION DURING DATA ASSESSMENT

The need for corrective action may be identified during the data verification or data validation processes. Potential types of corrective action may include resampling by the field team or reanalysis of samples by the laboratory.

As previously stated, percent completeness will be used to determine whether the data quality meets the objectives for the project. If completeness objectives are not met for individual parameters, the MWH PQAO will review reasons for the invalid data with the MWH PM and/or the MWH Field Supervisor. The corrective actions that will be taken are dependent upon how critical the data are to the DQOs, the ability to mobilize the field team, whether the samples are still within holding time criteria, and the reasons for the incomplete data (e.g., holding time exceeded). An evaluation will also be conducted if a sample does not generate data for a parameter category (e.g., VOCs). Such a data gap could result from sample container breakage or sample loss during analysis. If MWH determines the missing results are critical to accomplishing project objectives, additional sampling will be conducted to obtain the missing data. The MWH PM will be responsible for approving implementation of a corrective action, documenting the corrective action, and notifying the IPL PC.

SECTION 13

SECTION 13

QUALITY ASSURANCE REPORTS

The MWH PQAO will maintain a record of all audits and Corrective Action Requests and track their progress. Unresolved Corrective Action Requests will be summarized in a monthly QA status report to project management. If there are no outstanding corrective actions at the end of a month, no QA status report will be issued.

Additionally, any conditions adverse to quality that are discovered during the course of the project will be documented in reports from the MWH PQAO to the MWH PM, MWH Field Supervisor, and other appropriate project personnel. Upon response by the MWH PM, a memorandum will be issued by the MWH PQAO to project files acknowledging that adequate corrective actions have been performed.

Deliverables associated with this project will contain separate QA sections in which data quality information collected during specific tasks is summarized. Deliverables include reports that summarize the sampling program findings. Submission of these reports is the responsibility of the MWH PM. QA sections will 1) identify all QA samples collected and the corresponding primary samples, 2) report accuracy, precision, and completeness of the data as well as the results of any performance and system audits, and 3) identify any corrective action needed or taken during the project. In addition, whenever necessary, updates on training provided and changes in key personnel will be reported. Any anticipated field or laboratory problems for upcoming activities that could bear on data quality will be reported with proposed solutions. Furthermore, detailed references to SAP modifications will also be highlighted. To the extent possible, assessment of the project should also be performed on the basis of available QC data and overall results in relation to originally targeted objectives.

SECTION 14



MWH

SECTION 14

REFERENCES

EPA, 1987. *A Compendium of Superfund Field Operations Methods*. OSWER Directive No. 9355.0-14. EPA/540/P-87/001, December 1987.

EPA, 1988. *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA*. EPA/540/G-89/004, October 1988.

EPA, 1990. *Quality Assurance/Quality Control Guidance for Removal Activities*. EPA/540/G-90/004, April 1990.

EPA, 1999a. "Compendium Method IO-3.1: Selection, Preparation and Extraction of Filter Material" from the *Compendium of Methods for the Determination of Inorganic Compounds in Ambient Air*. EPA/625/R-96/010a, June 1999.

EPA, 1999b. *Contract Laboratory Program National Functional Guidelines for Organic Review*. EPA/540/R-99/008, October 1999.

EPA, 2002. *Contract Laboratory Program National Functional Guidelines for Inorganic Review*. EPA/540/R-01/008, July 2002.

IPL, 2000. *Engineering Evaluation/Cost Analysis Part I – Site Characterization*. Clinton, Iowa Former Manufactured Gas Plant Site, June 2000.

IPL, 2001. *Engineering Evaluation/Cost Analysis Part II – Baseline Risk Assessment*. Clinton, Iowa Former Manufactured Gas Plant Site, August 2001.

IPL, 2002. *Engineering Evaluation/Cost Analysis Part III – Removal Alternatives Evaluation*. Clinton, Iowa Former Manufactured Gas Plant Site, July 2002.

P:\Word Processing\ALLIANT-IPL\Clinton-FMGP Site\10-04-REMOVAL ACTION WORK PLAN\APPENDIX B - 10-04-Removal Action SAP\10-04-Removal Action SAP.doc

TABLES

TABLE 2-1
SUMMARY OF PCB COMPOUNDS

Compound	Method Detection Limit^a (mg/kg)
Arochlor 1016	0.050
Arochlor 1016	0.050
Arochlor 1221	0.050
Arochlor 1232	0.050
Arochlor 1242	0.050
Arochlor 1248	0.050
Arochlor 1254	0.050
Arochlor 1260	0.050

Notes:

^a = United States Environmental Protection Agency Method 8082

mg/kg = milligrams per kilogram.

PCB = polychlorinated biphenyl.

TABLE 2-2
SOIL ACTION LEVELS

Compound	Depth Interval	
	Surface Soil (0-2 feet) (mg/kg)	2 Feet to Water Table (mg/kg)
Benzo(a)anthracene	28	310
Benzo(a)pyrene	2.8	31
Benzo(b)fluoranthene	28	310
Benzo(k)fluoranthene	280	3,100
Chrysene	2,800	31,000
Dibenz(ah)anthracene	2.8	31
Indeno(1,2,3-cd)pyrene	28	310
PCBs (total)	25	25
Lead	800	1,200

Notes:

mg/kg = milligrams per kilogram.

PCBs = polychlorinated biphenyls

TABLE 2-3

SUMMARY OF SOIL CONFIRMATION SAMPLING ANALYTICAL PARAMETERS

FMGP-Related Impact Excavation Site 1 and Site 2	PCB "Hot Spot" Excavation Site 1	Residual Lead Excavation Site 2
<u>Polynuclear Aromatic Hydrocarbons</u>	<u>PCBs</u>	<u>Metals</u>
Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Benzo(g,h,i)perylene Chrysene Dibenzo(a,h)anthracene Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene Naphthalene Phenanthrene Pyrene	Arochlor 1016 Arochlor 1016 Arochlor 1221 Arochlor 1232 Arochlor 1242 Arochlor 1248 Arochlor 1254 Arochlor 1260	Lead
<u>Volatile Organic Compounds</u>		
Benzene Ethylbenzene Toluene Xylenes, total		

Notes:

FMGP = former manufactured gas plant

PCB = polychlorinated biphenyl

TABLE 2-4

SUMMARY OF WATER DISPOSAL ANALYTICAL PARAMETERS

Volatile Organic Compounds	Polynuclear Aromatic Hydrocarbons	Acid-Extractable Compounds	Other Analytes
Benzene Ethylbenzene Toluene Xylenes, total	Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Benzo(g,h,i)perylene Chrysene Dibenzo(a,h)anthracene Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene 2-Methylnaphthalene Naphthalene Phenanthrene Pyrene	4-Chloro-3-Methylphenol 2-Chlorophenol 2,4-Dichlorophenol 2,4-Dimethylphenol 2,4-Dinitrophenol 2-Methyl-4,6-Dinitrophenol 2-Nitrophenol 4-Nitrophenol Pentachlorophenol 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol	Oil & Grease

TABLE 2-5

SUMMARY OF AIR ANALYTICAL PARAMETERS

Perimeter Air Monitoring	
Volatile Organic Compounds ^a	Benzene Toluene Ethylbenzene Xylenes, total
Polynuclear Aromatic Hydrocarbons	Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Benzo(g,h,i)perylene Chrysene Dibenzo(a,h)anthracene Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene 2-Methylnaphthalene Naphthalene Phenanthrene Pyrene
Other Parameters	PM ₁₀ Lead

Notes:

^a All volatile organic compounds from Method TO-14 will be reported.

PM₁₀ = Particulate matter less than 10 microns

TABLE 3-1

SAMPLE CONTAINER AND ANALYSIS SUMMARY

Parameter	Method	Container Type	Container Quantity/Size	Preservative	Holding Time
<u>Pre-excavation/Confirmation:</u>					
Benzene, toluene, ethylbenzene, and xylenes	SW-846 8260	Wide-Mouth Glass	One 4-ounce	Cool, 4°C	14 Days
Polynuclear aromatic hydrocarbons	SW-846 8270	Wide-Mouth Glass	One 4-ounce	Cool, 4°C	14 Days Pre-Extraction 40 Days Post-Extraction
Polychlorinated biphenyls	SW-846 8082	Wide-Mouth Glass	One 4-ounce	Cool, 4°C	14 Days Pre-Extraction 40 Days Post-Extraction
Lead	SW-846 6010	Wide-Mouth Glass	One 4-ounce	None	6 months
<u>Water Disposal:</u>					
Volatile organic compounds	SW-846 8260	Glass Vial	Three 40-milliliter	HCl to pH <2 Cool, 4°C	14 Days
Polynuclear aromatic hydrocarbons	SW-846 8310	Amber Glass	One 1-liter	Cool, 4°C	7 Days Pre-Extraction 40 Days Post-Extraction
Acid-extractable compounds	SW-846 8270	Amber Glass	One 1-liter	Cool, 4°C	7 Days Pre-Extraction 40 Days Post-Extraction
<u>Perimeter Air Monitoring:</u>					
Volatile organic compounds	EPA TO-15	Stainless Steel SUMMA® Canister	One 6-liter	None	14 Days
Polynuclear aromatic hydrocarbons	EPA TO-13A	PUF/XAD-2	One Filter	Cool, 4°C	7 Days Pre-Extraction 20 Days Post-Extraction
PM ₁₀	40 CFR Part 50, Appendix J	Glass Fiber Filter	One Filter ^a	None	None
Lead	40 CFR Part 50, Appendix G	Glass Fiber Filter	One Filter ^a	None	6 Months

Notes:

^a Both analyses will be performed from a single filter.

°C = degrees Celsius

EPA = United States Environmental Protection Agency

HCl = hydrochloric acid

TABLE 5-1
METHOD DETECTION LIMITS
VOLATILE ORGANIC COMPOUNDS

Analyte	Soil (mg/kg) (Method 8260)	Water (µg/L) (Method 8260)	Air (µg/m ³) (Method TO-15)
Acetone	-	-	4.0
Benzene	0.2	1.0	2.0
Bromodichloromethane	-	-	2.0
Bromoform	-	-	2.0
Bromomethane	-	-	2.0
2-Butanone (MEK)	-	-	4.0
Carbon Disulfide	-	-	2.0
Carbon Tetrachloride	-	-	2.0
Chlorobenzene	-	-	2.0
Chlorodibromomethane	-	-	2.0
Chloroethane	-	-	2.0
Chloroform	-	-	2.0
Chloromethane	-	-	2.0
1,2-Dibromoethane	-	-	2.0
1,2-Dichlorobenzene	-	-	2.0
1,3-Dichlorobenzene	-	-	2.0
1,4-Dichlorobenzene	-	-	2.0
1,1-Dichloroethane	-	-	2.0
1,2-Dichloroethane	-	-	2.0
1,1-Dichloroethene	-	-	2.0
cis-1,2-Dichloroethene	-	-	2.0
trans-1,2-Dichloroethene	-	-	2.0
1,2-Dichloropropane	-	-	2.0
1,3-Dichloropropane	-	-	2.0
Ethylbenzene	0.2	1.0	2.0
2-Hexanone	-	-	4.0
Methylene Chloride	-	-	2.0
4-Methyl-2-Pentanone (MIBK)	-	-	4.0
Methyl tert-Butyl Ether	-	-	2.0
Styrene	-	-	2.0
1,1,2,2-Tetrachloroethane	-	-	2.0
Tetrachloroethylene	-	-	2.0
Toluene	0.2	1.0	2.0
1,1,1-Trichloroethane	-	-	2.0
1,1,2-Trichloroethane	-	-	2.0
Trichloroethene	-	-	2.0
Trichlorofluoromethane	-	-	2.0
Trichlorotrifluoroethane	-	-	2.0
Vinyl Acetate	-	-	4.0
Vinyl Chloride	-	-	2.0
Xylenes, Total	0.2	1.0	2.0

Notes:

Reporting limits are highly matrix dependent. The reporting limits listed may not always be achievable.

mg/kg = milligrams per kilogram

µg/L = micrograms per liter

µg/m³ = micrograms per cubic meter

TABLE 5-2
METHOD DETECTION LIMITS
SEMIVOLATILE ORGANIC COMPOUNDS

Analyte	Soil (mg/kg)	Water (µg/L)	Air (µg/sample)
<u>Acid Extractable Compounds</u>		<u>Method 8270</u>	
4-Chloro-3-Methylphenol	-	10.0	-
2-Chlorophenol	-	10.0	-
2,4-Dichlorophenol	-	10.0	-
2,4-Dimethylphenol	-	10.0	-
2,4-Dinitrophenol	-	20.0	-
2-Methyl-4,6-Dinitrophenol	-	20.0	-
2-Nitrophenol	-	10.0	-
4-Nitrophenol	-	10.0	-
Pentachlorophenol	-	20.0	-
2,4,5-Trichlorophenol	-	50.0	-
2,4,6-Trichlorophenol	-	10.0	-
<u>Polynuclear Aromatic Hydrocarbons</u>	<u>Method 8270</u>	<u>Method 8310</u>	<u>Method TO-13A</u>
Acenaphthene	0.33	2.00	0.50
Acenaphthylene	0.33	2.00	0.50
Anthracene	0.33	0.500	0.50
Benzo(a)anthracene	0.33	0.100	0.50
Benzo(b)fluoranthene	0.33	0.100	0.50
Benzo(k)fluoranthene	0.33	0.100	0.50
Benzo(a)pyrene	0.33	0.100	0.50
Benzo(g,h,i)perylene	0.33	0.100	0.50
Chrysene	0.33	0.100	0.50
Dibenzo(a,h)anthracene	0.33	0.100	0.50
Fluoranthene	0.33	0.200	0.50
Fluorene	0.33	0.500	0.50
Indeno(1,2,3-cd)pyrene	0.33	0.100	0.50
Naphthalene	0.33	2.00	0.50
Phenanthrene	0.33	0.500	0.50
Pyrene	0.33	0.200	0.50

Note: Reporting limits are highly matrix dependent. The reporting limits listed may not always be achievable.

TABLE 5-3

METHOD DETECTION LIMITS
INORGANIC PARAMETERS

Analyte	SOIL (mg/kg)		WATER (mg/L)		AIR (mg/sample)	
	Method	MDL	Method	MDL	Method	MDL
Lead, total	EPA 6010B	0.3	-	-	40 CFR 50, Appendix G	5
Cyanide, total	-	-	-	-	-	-
PM ₁₀	-	-	-	-	40 CFR 50, Appendix J	5

Notes:

Reporting limits are highly matrix dependent. The reporting limits listed may not always be achievable.

CFR = Code of Federal Regulations

EPA = United States Environmental Protection Agency

MDL = Method Detection Limit

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

mg/sample = milligrams per sample

PM₁₀ = Particulate matter less than 10 microns.

TABLE 5-4

**QUALITY CONTROL SAMPLE FREQUENCY AND CRITERIA
FOR SOIL AND WATER SAMPLES**

	Volatile Organic Compounds (VOCs)	Polynuclear Aromatic Hydrocarbons (PAHs)	Inorganic Compounds
Field Quality Control Samples			
Trip Blanks			
• Frequency	1 per VOC shipping container	Not Required	Not Required
• Criteria	<MDL		
Equipment Blanks			
• Frequency	1/20 Field Samples	1/20 Field Samples	1/20 Field Samples
• Criteria	<2xMDL	<2xMDL	<2xMDL
Field Duplicates			
• Frequency	1/20 Field Samples	1/20 Field Samples	1/20 Field Samples
• Criteria – Soil	RPD ≤ 50% - 100% ^a	RPD ≤ 50% - 100% ^a	RPD ≤ 50% - 100% ^a
• Criteria – Water	RPD ≤ 25% - 50% ^b	RPD ≤ 25% - 50% ^b	RPD ≤ 25% - 50% ^b
Laboratory Quality Control Samples			
Method Blanks			
• Frequency	1/20 Samples or 1/Batch	1/20 Samples or 1/Batch	1/Batch
• Criteria	Compound-Specific ^b	<MDL	<MDL
Matrix Spikes			
• Frequency	1/20 Samples	1/20 Samples	1/Batch
• Criteria	Compound-Specific ^c	Compound-Specific ^c	Compound-Specific ^c
Matrix Spike Duplicates			
• Frequency	1/20 Samples	1/20 Samples	1/Batch
• Criteria	Compound-Specific ^c	Compound-Specific ^c	Compound-Specific ^c

Notes:

^a Field duplicates for soil should have a relative percent difference (RPD) less than or equal to 50% when both the sample and duplicate are greater than or equal to five times the MDL, or less than or equal to 100% when the sample and/or duplicate is less than five times the MDL but greater than the detection limit.

^b Field duplicates for water should have a relative percent difference (RPD) less than or equal to 25% when both the sample and duplicate are greater than or equal to five times the MDL, or less than or equal to 50% when the sample and/or duplicate is less than five times the MDL but greater than the detection limit.

^c Compound-specific criteria; see the appropriate laboratory Quality Assurance Plan (QAP).

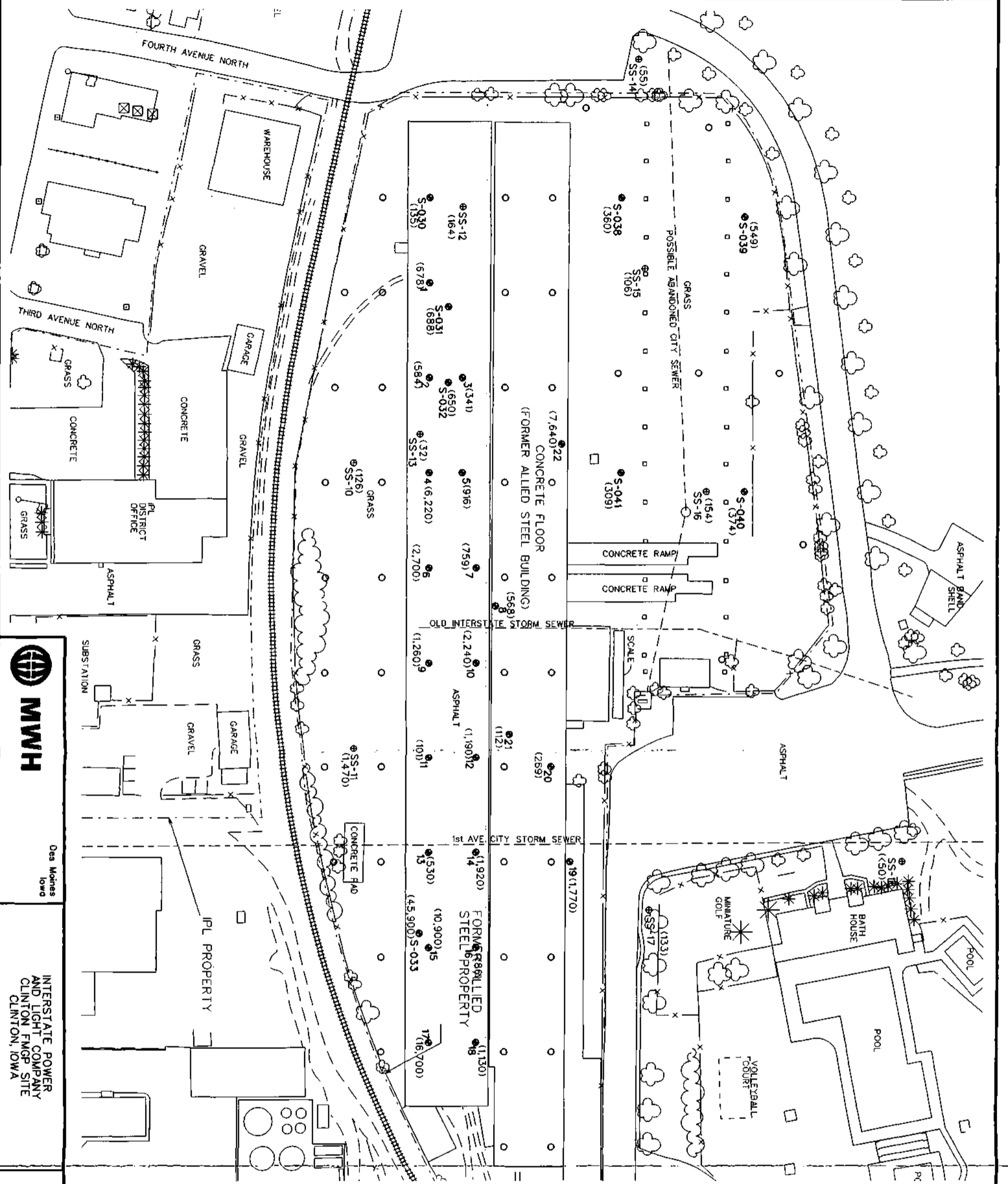
MDL = Method Detection Limit

RPD = Relative Percent Difference

FIGURES

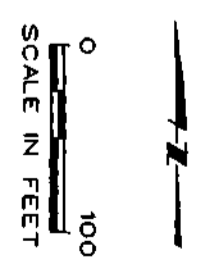


MWH



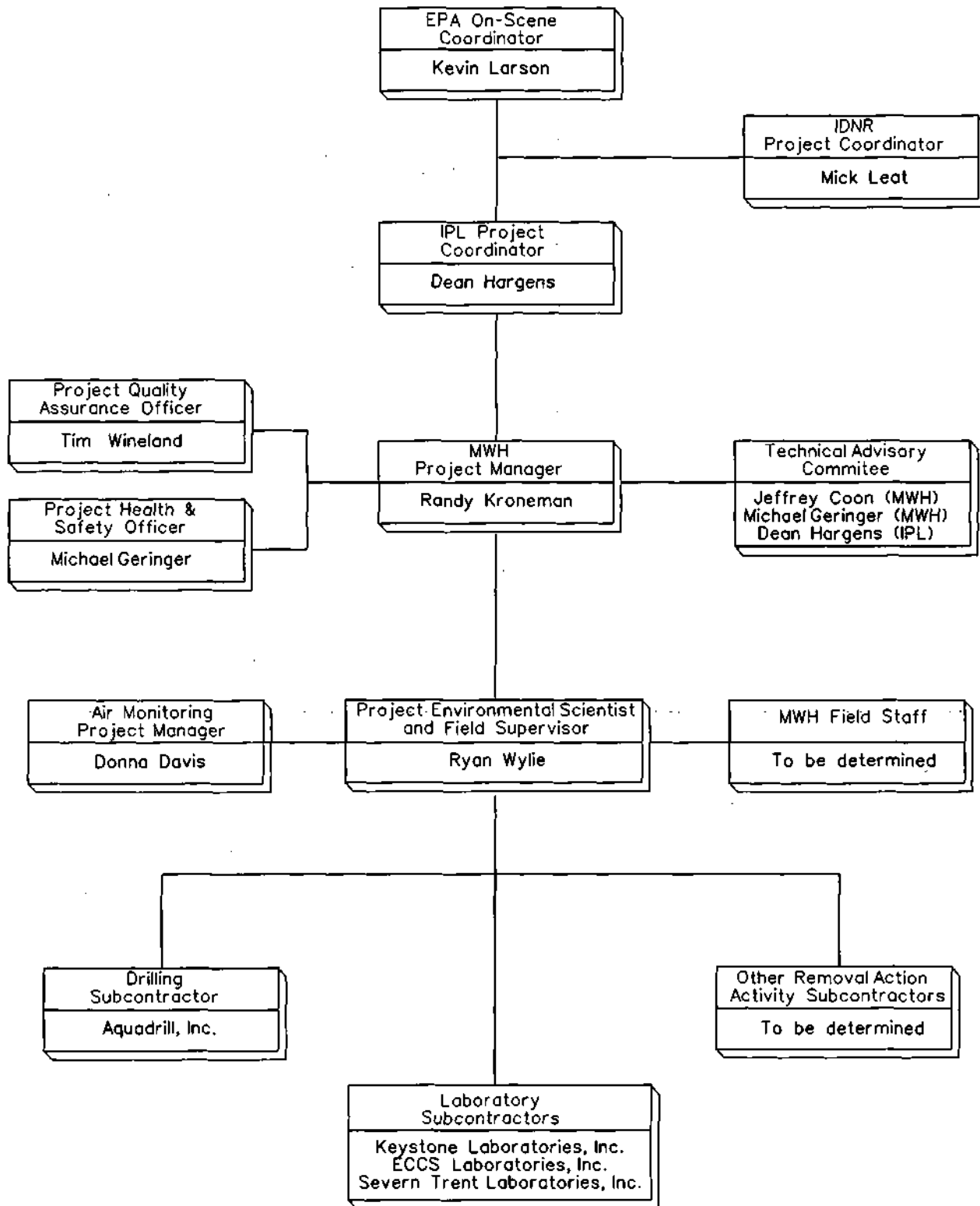
LEGEND:

- SITE SCREENING INSPECTION SURFACE SOIL SAMPLING LOCATION
- EE/CA SURFACE SOIL SAMPLING LOCATION
- EPA LEAD SCREENING SAMPLE LOCATION
- PROPOSED LEAD SCREENING SAMPLE LOCATION
- (1,130) CONCENTRATION OF LEAD IN mg/kg



Des Moines Iowa
INTERSTATE POWER AND LIGHT COMPANY
CLINTON FMGP SITE
CLINTON, IOWA

LEAD SAMPLING LOCATIONS



\\uswest01\proj\... \client\Energy\Clinton\fmgp\eecc\pe.dgn:28-OCT-2004



Des Moines
Iowa

INTERSTATE POWER AND
LIGHT COMPANY
CLINTON FMGP SITE
CLINTON, IOWA

PROJECT ORGANIZATION

FIGURE
4-1

SITE SAFETY PLAN ADDENDUM
FOR
REMOVAL ACTION
FORMER MANUFACTURED GAS PLANT SITE
CLINTON, IOWA

Prepared for
INTERSTATE POWER AND LIGHT COMPANY
CEDAR RAPIDS, IOWA

Project No. 1912839.0102
October 2004

Prepared by

MWH Americas, Inc.
11153 Aurora Avenue
Des Moines, Iowa 50322
515-253-0830

PREPARED BY:


Health and Safety Coordinator

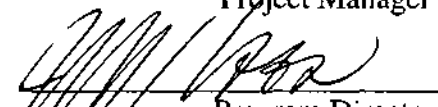
DATE: Oct 26, 2004

APPROVED BY:


Project Manager

DATE: Oct. 26, 2004

APPROVED BY:


Program Director

DATE: 10/28/04

TABLE OF CONTENTS

	PAGE
1.0 INTRODUCTION.....	1
2.0 SITE DESCRIPTION, HEALTH RISK, AND ACCIDENT PREVENTION.....	1
2.1 Site Description.....	1
2.2 Associated Chemical Hazards.....	2
2.3 Proposed Removal Action Activities.....	2
2.4 Safety and Health Risk Analysis.....	3
2.4.1 Chemical Toxicity Hazard.....	3
2.4.2 Physical Hazards.....	4
2.4.3 Levels of Personal Protection.....	13
2.5 Activity Hazard Analysis.....	13
2.5.1 IPL Portion of Site.....	13
2.5.1.1 PCB- and Lead-Impacted Soil Removal.....	13
2.5.1.2 FMGP-Impacted Soil Removal.....	14
2.5.1.3 Demolition of Metal Building.....	15
2.5.1.4 Site Restoration.....	16
2.5.2 Former Allied Steel Portion of Site.....	16
2.5.2.1 FMGP-Impacted Soil Removal.....	16
2.5.2.2 Storm Sewer Cleaning and Abandonment.....	16
2.5.2.3 Construction of Storm Sewer Extension.....	17
2.5.2.4 Site Restoration.....	17
2.5.3 Soil Sampling/Field Screening.....	17
2.5.4 Surveying and Mapping.....	18
3.0 ASSIGNMENT OF RESPONSIBILITIES.....	18
3.1 HSC.....	18
3.2 PM.....	19
3.3 OSO.....	19
3.4 Field Staff.....	19
3.5 Notification Requirements.....	19
4.0 MEDICAL SURVEILLANCE AND TRAINING.....	20
4.1 Emergency Medical Assistance and First-Aid Equipment.....	20
5.0 SITE CONTROL.....	20
6.0 PPE.....	21
6.1 Level D PPE.....	22
6.2 Level C PPE.....	22
6.3 Respirator Selection and Fit Test.....	23

TABLE OF CONTENTS (CONTINUED)

	PAGE
7.0 HAZARD ASSESSMENT.....	23
7.1 Site Survey	23
7.2 Air Monitoring in Exclusion Zone.....	24
7.2.1 DRIs	24
7.2.1.1 PID	24
7.2.1.2 Dräger CMS	25
7.2.1.3 HCN Meter.....	25
7.2.1.4 MINIRAM.....	25
7.2.1.5 Four-Gas Meter	25
7.2.2 Integrated Air Sampling Instruments	26
7.2.2.1 Integrated Organic Vapor Monitoring Badge.....	26
7.2.2.2 Personal Pumps	26
7.3 Soil Screening	26
7.3.1 PID	26
7.3.2 UVF.....	26
7.4 Action Levels for Upgrading Protection	26
7.4.1 Action Levels for Upgrade to Level C	26
7.4.2 Action Levels for Ceasing Operations	28
8.0 Site Evacuation Procedures.....	29
8.1 Site Evacuation.....	29
8.2 Off-Site Evacuation.....	30
9.0 General Site Safety Requirements.....	30

LIST OF ATTACHMENTS

ATTACHMENT A - CONFINED SPACE ENTRY PROCEEDURE.....	A-1
ATTACHMENT B - CODE OF SAFE WORKING PRACTICES	B-1
ATTACHMENT C - PERSONAL ACKNOWLEDGMENT	C-1
ATTACHMENT D - TAILGATE SAFETY MEETING FORM.....	D-1
ATTACHMENT E - EMERGENCY ASSISTANCE INFORMATION.....	E-1
ATTACHMENT F - MATERIAL SAFETY DATA SHEETS.....	F-1

TABLE OF CONTENTS (CONTINUED)

LIST OF TABLES

TABLE NO.		PAGE
2-1	Toxicity Information and Occupational Health Guidelines	5
2-2	Odor and Exposure Characteristics	7
2-3	Abbreviations for Symptoms of Exposure	11
7-1	Personal Sampling and Analytical Methods	27

LIST OF FIGURES

FIGURE NO.		FOLLOWING PAGE
2-1	Site Location Map	1
2-2	Site Layout Map	1
4-1	Emergency Route to Hospital.....	20

1.0 - INTRODUCTION

MWH has developed this site-specific Site Safety Plan (SSP) addendum to address health and safety procedures for the removal action activities to be conducted at the former manufactured gas plant (FMGP) site in Clinton, Iowa. The planned site activities are discussed in detail in the January 2004 Removal Action Work Plan (RAWP), prepared by MWH on behalf of Interstate Power and Light Company (IPL). This site-specific SSP addendum establishes health and safety procedures for field activities that will minimize potential risk to MWH personnel, subcontractor, and visitors who will be performing on-site work. This site-specific SSP addendum, in conjunction with the MWH Standard SSP, comprise the overall health and safety plan for the site. Throughout this SSP addendum, the Standard SSP will be referenced; therefore, both plans must be on site during the completion of the removal action activities.

The Standard SSP and this site-specific SSP addendum have been prepared in compliance with the requirements of the Occupational Safety and Health Administration (OSHA) Hazardous Waste Operation and Emergency Response Standards (29 Code of Federal Regulations [CFR] §1910.120) and other applicable OSHA regulations. Actual working conditions may require modification of this site-specific SSP addendum. Except in emergency situations, the Domestic Energy and Industry Operations Group Health and Safety Manager (HSM) or Health and Safety Coordinator (HSC) must approve any modifications before they can be implemented. Written documentation of the change must be attached as additional addenda to the Standard SSP. A "Field Change Request" form is included as Attachment A of the Standard SSP.

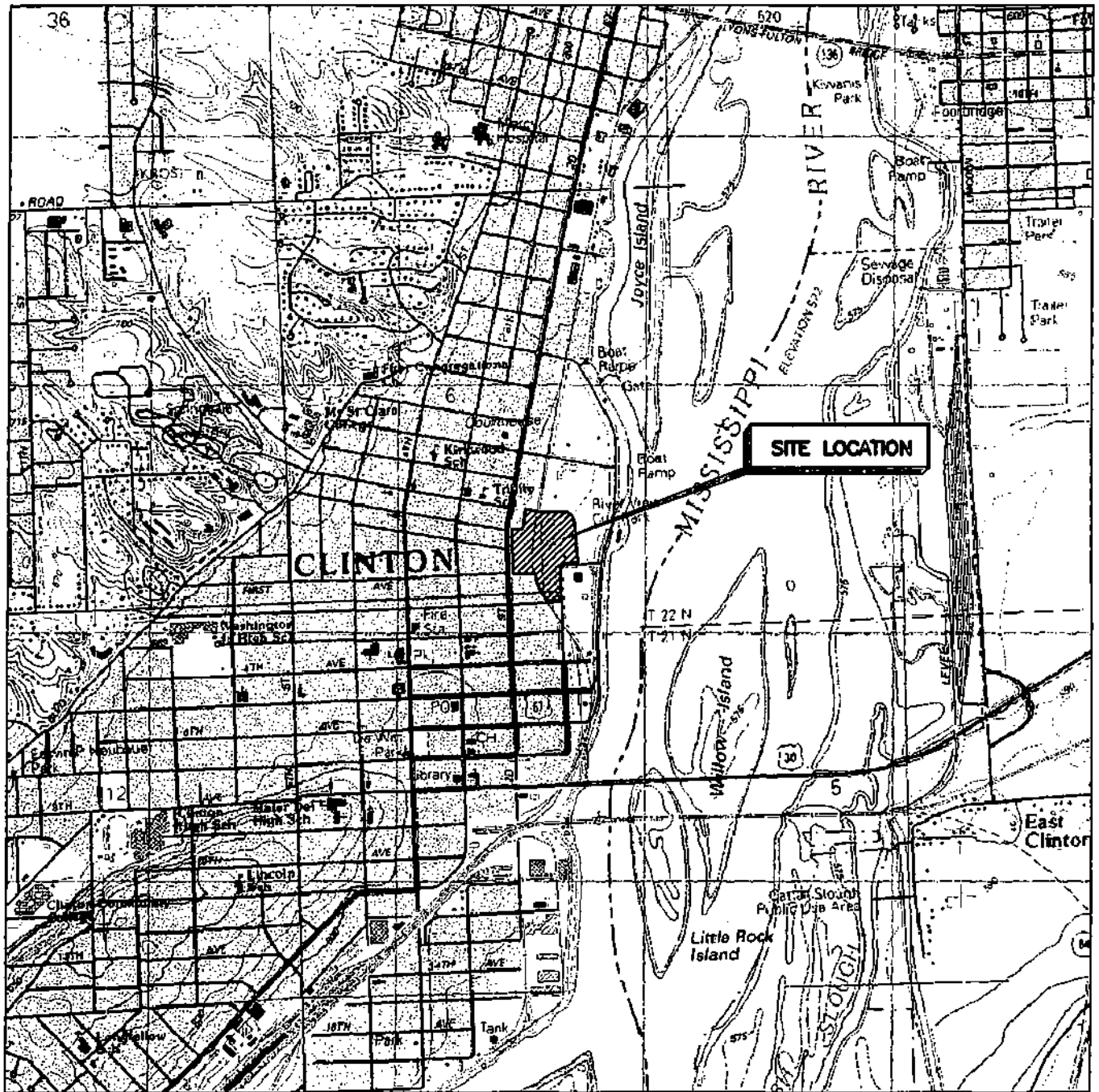
The Standard SSP and this site-specific SSP addendum apply to all MWH employees who will potentially be exposed to safety and/or health hazards associated with the proposed removal action activities. Subcontractors are required to provide their own HSP which, at a minimum, must comply with the requirements of 29 CFR §1910.120 and other applicable OSHA regulations. If they choose, subcontractors can adopt applicable portions of MWH's SSP addendum for this project. The adoption is an independent action on the part of the subcontractor working for MWH and does not relieve the subcontractor from having their own Personnel Training, Injury and Illness Prevention, Medical Surveillance, and Hazard Communication programs, as presented in the MWH Standard SSP. In addition, even with the adoption of applicable portions of this site-specific SSP addendum, the subcontractor is expected to perform an independent evaluation of risks associated with planned activities and determine the best course of action to minimize these potential risks.

This site-specific SSP addendum has been developed based on available knowledge regarding the specific chemical hazards and anticipated potential physical hazards which could be associated with the proposed removal action activities planned for the site.

2.0 - SITE DESCRIPTION, HEALTH RISK, AND ACCIDENT PREVENTION

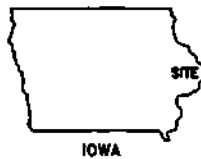
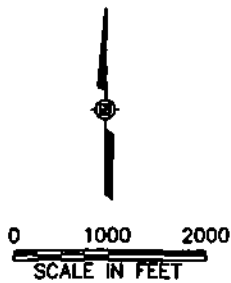
2.1 - Site Description

The Clinton FMGP site is located in the SW 1/4, SE 1/4, Section 6, Township 81 North, Range 7 East in downtown Clinton (Figure 2-1), Clinton County, Iowa. The current site layout and boundaries are shown in Figure 2-2. The site consists of two main parcels divided by the



02-MAR-2004

FIG 040 ALLIANT CLINTON FMGP EEDA SLIM



MAP SOURCE:
USGS TOPOGRAPHIC QUADRANGLE
CLINTON, IOWA-ILLINOIS
(1953, PHOTOREVISED 1976)

SITE LOCATION:
SECTION 6 T81N R7E
CLINTON COUNTY, IOWA



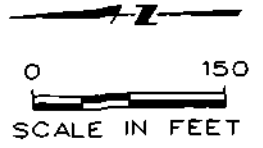
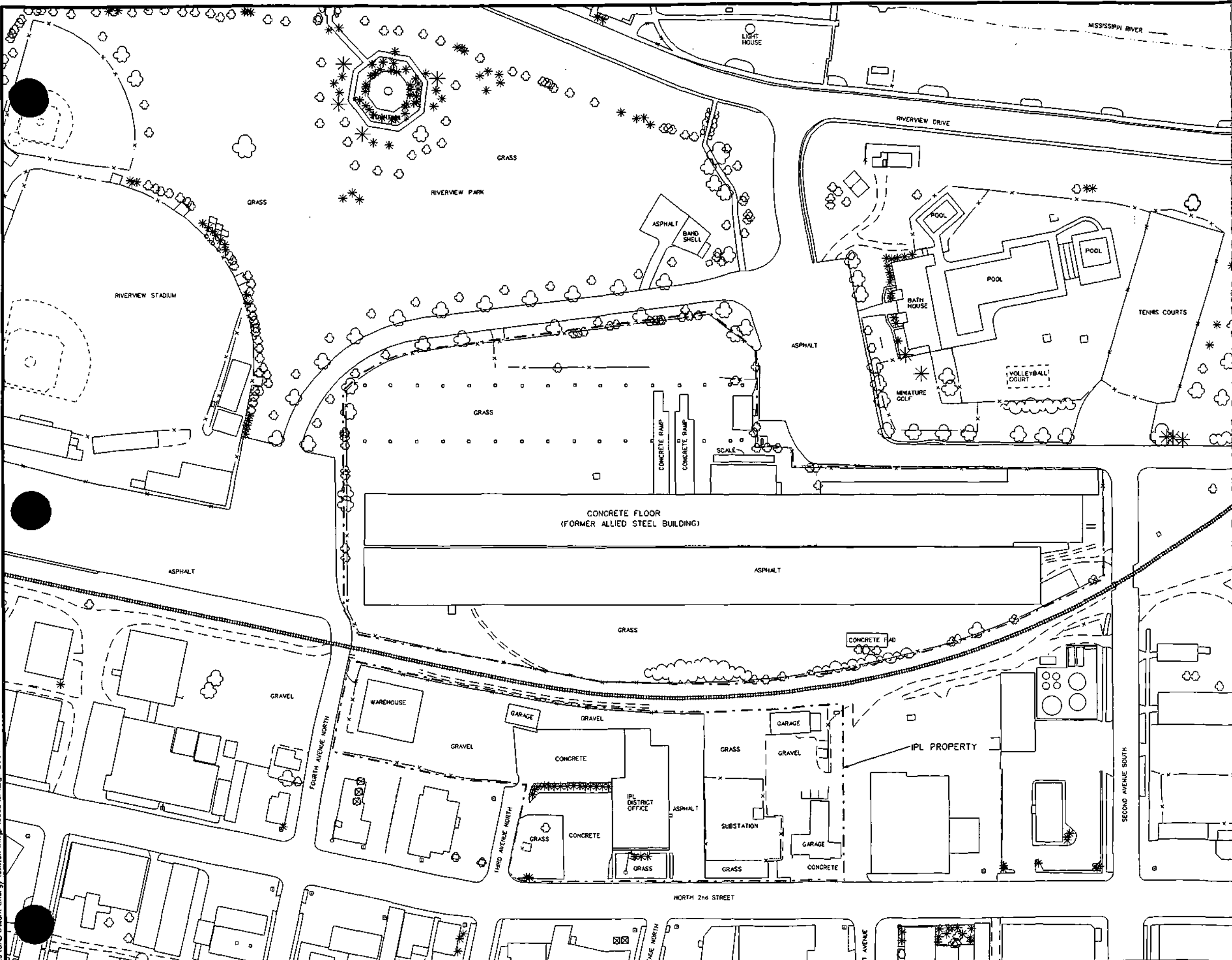
DES MOINES
IOWA

INTERSTATE POWER AND
LIGHT COMPANY
CLINTON FMGP SITE
CLINTON, IOWA

SITE LOCATION MAP

FIGURE

2-1



LEGEND:

- x- FENCE LINE
- - - PROPERTY LINE
- * SHRUBS AND TREES
- EXISTING FEATURES

\\uswest01\projects\CAD\Alliant_Energy\Clinton\mwp\esca\mwp068_2004

Iowa, Chicago and Eastern (IC&E) railroad right-of-way. The parcel west of the railroad tracks is referred to as the IPL portion. The parcel east of the IC&E railroad tracks is referred to as the former Allied Steel property. Both parcels are currently owned by IPL.

The IPL portion of the site is occupied by IPL and used for a district office and service center. The main features at the site include the office building, several garages and equipment storage buildings, and an electrical substation. A concrete customer parking lot is located on the north side of the office building with access to the lot from 3rd Avenue North. South of the district office building is an asphalt parking lot for employee parking. Grassed areas are located along North 2nd Street in front of the substation and office building, and adjacent to the customer parking lot. The portions of the site utilized for equipment and vehicle storage are fenced. Most of this area is graveled with isolated areas of concrete and grass.

The former Allied Steel portion of the site is currently vacant, but was previously occupied by a 160,000-square foot structural steel building, a concrete block office building, and small production support buildings. These facilities were used by Allied Steel for fabrication of steel beams. The buildings were demolished in 1998, leaving the concrete and asphalt floors and foundations in place. A chain-link fence surrounds the entire Allied Steel portion of the site.

Riverview Park is located along the east side of the site and separates the site from the Mississippi River. North of the former Allied Steel portion of the site, Riverview Park includes a baseball stadium for Clinton's minor league baseball team. Along the northern half of the site, Riverview Park contains a fountain, band shell, and a dry-docked riverboat, which is now used as a theater. Along the southern half of the site, Riverview Park includes a swimming pool, miniature golf course, and tennis courts. The eastern edge of Riverview Park is a flood control levee built by the United States Army Corps of Engineers. Docked adjacent to the levee is a riverboat casino. A marina is located a short distance upstream.

The remainder of the site is surrounded primarily by commercial and retail operations. One residence is located adjacent to the northwest corner of the site with additional residential areas west of businesses on North 2nd Street.

2.2 - Associated Chemical Hazards

Byproducts of FMGP processes include volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), hydrogen cyanide (HCN), hydrogen sulfide (H₂S), ammonia (NH₃), coke, tar, and arsenic. Other constituents of concern at the site include polychlorinated biphenyls (PCBs) and lead.

2.3 - Proposed Removal Action Activities

The proposed removal action activities planned for the IPL portion of the site include:

- Removal of a metal building and concrete.
- Removal of PCB-impacted soil.
- Removal of FMGP-impacted material from gas holders, tar wells and surrounding soil.
- Soil sampling.
- Ultraviolet fluorescence (UVF) and photoionization detector (PID) soil field screening.

- Construction of storm sewer extensions.
- Surveying and Mapping.
- Monitoring well abandonment and installation of replacement wells.

The proposed removal action activities planned for the former Allied Steel portion of the site include:

- In-place abandonment of storm sewer and water lines.
- Removal of FMGP-impacted material from gas holders, tar wells, and surrounding soil.
- Removal of lead-impacted soil.
- Soil sampling.
- UVF and PID soil field screening.
- Surveying and Mapping.
- Monitoring well abandonment and installation of replacement wells.

2.4 - Safety and Health Risk Analysis

2.4.1 - Chemical Toxicity Hazard. The potential toxic exposure hazard to site personnel associated with chemical contaminants which may be present at the areas described in Section 2.2 can be expressed in Threshold Limit Values-Time Weighted Averages (TLVs-TWAs), Permissible Exposure Limits (PELs), Recommended Exposure Limits (RELs), Short-Term Exposure Limits (STELs), and/or Immediately Dangerous to Life or Health (IDLH) values, as established by the American Conference of Governmental Industrial Hygienists (ACGIH), OSHA, and/or the National Institute for Occupational Safety and Health (NIOSH). Appropriate definitions for these health-based values are as follows:

TLV-TWA: The TWA airborne concentration of a substance for a normal 8-hour work day and 40-hour work week, to which nearly all workers may be repeatedly exposed day after day without adverse effects.

PEL: The TWA airborne concentration of a substance for a normal 8-hour work day and a 40-hour work week, to which workers may be exposed day after day without adverse effects. PELs are OSHA-promulgated exposure standards (29 CFR §1910.100).

REL: The TWA airborne concentration of a substance for a 10-hour exposure period (unless otherwise noted) during a 40-hour work week to which workers may be exposed during one day without adverse effects. RELs are established by NIOSH to reduce or eliminate adverse occupational health effects.

STEL: The TWA exposure that should not be exceeded at any time during a work day even if the 8-hour TWA is within the TLV-TWA. Exposures above the TLV-TWA up to the STEL should not be longer than 15 minutes and should not occur more than four times per day.

IDLH: The maximum airborne concentration of a substance that one could escape within 30 minutes without escape-impairing symptoms or any irreversible effects.

Available information regarding exposure levels and occupational exposure limits for potential contaminants, including TWA and IDLH values and ionization potentials, is presented in Table 2-1. Table 2-2 summarizes odor thresholds, routes of exposure, and symptoms. Table 2-3 presents the abbreviations used for symptoms. Tables 2-1, 2-2, and 2-3 are included following this page (yellow paper).

Due to the nature of this field work, the types and concentrations of these potential hazards remain unknown. Therefore, proper monitoring during planned intrusive activities is a necessity. Specific monitoring and hazard assessment will be covered in Section 7 of this site-specific SSP addendum.

2.4.2 - Physical Hazards. Physical hazards anticipated during the field work include heavy equipment operation; potential underground and overhead utility lines; fire or explosion; noise; heat and/or cold stress; electrical hazards; vehicle traffic hazards; pinch hazards; and slip, trip, and fall hazards. Details of MWH's policies pertaining to these hazards are presented in the Standard SSP and should be referenced prior to completing site activities. In particular, Sections 6 and 10, Common Physical Hazards and Thermal Stress, respectively, should be reviewed. It is anticipated the majority of work will be completed during the cold winter months of 2004 and 2005; therefore, it is imperative that frostbite and hypothermia monitoring be conducted.

To prevent the hazard of excavating into underground power cables or other utilities, all utilities will be marked prior to initiating excavation. MWH will contact Iowa One Call, work with local utilities, and contact IPL personnel to ensure, to the extent possible, that all underground utilities are identified and adequately marked. Excavations will be prohibited within 5 feet of marked underground utilities. Generally, the preferred distance of drilling or excavating equipment from the aboveground electrical lines is 20 feet or greater. If insulated barriers are installed to prevent contact with lines, clearance may be reduced to a distance within the designed working dimensions of the insulating barrier. The insulating barriers must be rated for the voltage of the lines being guarded and not be a part of, or an attachment to, the vehicle or its raised structure. Minimum distances from the equipment to overhead electrical lines based on known voltage, without insulators, are as follows:

<u>Nominal Power Line System (kiloVolts)</u>	<u>Minimum Required Clearance (feet)</u>
0-50	10
51-100	12
101-200	15
201-300	20
301-500	25
501-750	35
751-1,000	45

Source: United States Army Corps of Engineers.

TABLE 2-1
TOXICITY INFORMATION AND OCCUPATIONAL HEALTH GUIDELINES

Chemical Compound	Existing Contaminant Concentration in Groundwater (ppm)	NIOSH- ACGIH TWA (for air) (ppm/[mg/m ³])	NIOSH IDLH (for air) (ppm/[mg/m ³])	Ionization Potential (eV)
<u>Metals/Common Ions</u>				
Arsenic	0.216	-/C 0.002	Ca -/5	NA
Chromium	1.45	-/0.5	-/250	NA
Copper	1.10	-/1	100	NA
Cyanide	4.35	-/C 5	-/50	NA
Hydrogen Cyanide	NA	C4.7/C5	50/-	13.60
Hydrogen Sulfide	NA	C 10/-	100/-	10.46
Iron oxide	307	-/5	NA	NA
Lead	3.82	-/0.05	-/100	NA
Nickel	0.620	-/0.015	Ca -/10	NA
Nitrogen, Ammonia	113	25/18	300/210	10.18
Sulfate	1,120	-/-	-/-	-
Zinc	5.48	-/5	-/-	NA
<u>Volatile Compounds</u>				
Acetone	17.6	250/-	2,500/-	9.69
Benzene	10,500	0.1/0.32	Ca 500/1,600	9.24
1,2-Dichloroethane (ethylene dichloride)	4.0	1/4	Ca 50/-	11.05
Ethylbenzene	2,200	100/435	800/3,470	8.76
Methyl tert-butyl ether (MTBE)	162	40/-		
Toluene	4,610	100/375	500/1,900	8.82
Xylenes	3,390	100/435	900/3,900	8.56
<u>Acid Fraction</u>				
2,4-Dimethylphenol (xylenol)	25	-/-	-/-	-
2-Methylphenol (o-cresol)	116	2.3/-	250/-	8.93
4-Methylphenol (p-cresol)	319	2.3/-	250/-	8.97
Phenol	1,000	5, C 15.6/-	250/-	8.50
<u>Base/Neutral Fraction</u>				
Acenaphthylene	2,660	-/-	-/-	-
Acenaphthene	8,690	-/-	-/-	-
Anthracene	1,220	-/0.2	-/-	-
Benzo(a)anthracene	580	-/-	Ca -/-	-
Benzo(b)fluoranthene	641	-/-	-/-	-
Benzo(k)fluoranthene	360	-/-	Ca -/-	-
Benzo(g,h,i)perylene	387	-/-	-/-	-
Benzo(a)pyrene	619	-/0.2	Ca -/-	-
Chrysene	911	-/0.2	-/-	-

TABLE 2-1 (CONTINUED)

TOXICITY INFORMATION AND OCCUPATIONAL HEALTH GUIDELINES

Chemical Compound	Existing Contaminant Concentration in Groundwater (ppm)	NIOSH-ACGIH TWA (for air) (ppm/[mg/m ³])	NIOSH IDLH (for air) (ppm/[mg/m ³])	Ionization Potential (eV)
<u>Base/Neutral Fraction (continued)</u>				
Dibenzo(a,h)anthracene	227	-/-	-/-	-
Fluoranthene	1,740	-/-	-/-	-
Fluorene	3,280	-/-	-/-	-
Indeno(1,2,3-cd)pyrene	277	-/-	-/-	-
Naphthalene	29,500	10/-	250/-	8.12
Phenanthrene	4,600	-/0.02	-/-	-
Pyrene	2,070	-/0.2	-/-	-
<u>Others</u>				
Chlorodiphenyl (Aroclor 1242) (PCB)	NA	-/0.001	Ca -/5	-
Chlorodiphenyl (Aroclor 1254) (PCB)	NA	-/0.001	Ca -/5	-

- = Indicates no information available.
- C = Ceiling limit.
- Ca = Potential carcinogen.
- eV = Electron volts.
- f/cc = Fibers per cubic centimeter.
- mg/m³ = Milligrams per cubic meter.
- NA = Not applicable.
- NE = No evidence to indicate upper limit applicable.
- PCB = Polychlorobiphenyl
- ppm = Parts per million.

Abbreviations:

- ACGIH = American Conference of Governmental Industrial Hygienists
- IDLH = Immediately Dangerous to Life or Health
- NIOSH = National Institute for Occupational Safety and Health
- TWA = Time Weighted Average

References:

- 2003 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices.
- NIOSH Pocket Guide to Chemical Hazards, June 1997.
- Photovac Incorporated Technical Bulletin No. 11.
- Personnel Protection and Safety, EPA Course 165.2 (manual).
- The Condensed Chemical Dictionary, 10th Ed., 1981.
- Sax's Dangerous Properties of Industrial Materials, 8th Ed.

ODOR AND EXPOSURE CHARACTERISTICS

Contaminant	Odor Threshold (ppm)	Description of Odor	Route of Exposure ^a	Symptomology ^b
<u>Metals/Common Ions</u>				
Arsenic	NA	Odorless	Inh, Abs, Ing, Con	Ulceration of nasal septum, derm, GI disturbances, peri neur, resp irrit, hyperpigmentation of skin, [carc]
Chromium	NA	Odorless	Inh, Ing	Histologic fibrosis of lungs
Copper	NA	Odorless	Inh, Ing, Con	Irrit nasal muc memb, pharynx; nasal perforation; eye irrit; metallic taste; derm; in animals: lung, liver, kidney, damage; anemia
Cyanide	-	Almond-like	Inh, Abs, Ing, Con	Asphy and death can occur; weak, head, conf; nau, vomit; incr rate resp; slow gasping resp; irrit eyes, skin
Hydrogen Cyanide	-	Bitter, almond-like	Inh, Abs, Ing, Con	Asphy and death at high levels; weak, head, conf; nau, vomit; incr rate and depth of respiration or respiration slow and gasping
Hydrogen Sulfide	0.001-0.13	Rotten eggs	Inh, Ing, Con	Apnea, coma, convuls; irrit eyes: conj, pain, lac, photo, corneal vesic; irrit resp sys; dizz; head; ftg; irrity; insom; GI dist
Iron	-	-	Inh	-
Lead	NA	Odorless	Inh, Ing, Con	Weak, lass, insom; facial pallor; pal eye, anor, low-wgt, malnut; constip, abdom pain, colic; anemia; gingival lead line; tremor; para wrist, ankles; encephalopathy; nephropathy; irrit eyes; hypotension
Nickel	NA	Odorless	Inh, Ing, Con	Head, verti; nau, vomit, epigastric pain; substernal pain; cough, hyperpnea; cyan; weak; leucyt, pneuitis; delirium, convuls; [carc]
Nitrogen, Ammonia	0.043-53	Pungent, suffocating, irritating	Inh, Ing, Con	Eye, nose, throat irrit; dysp, bron spas, chest pain; pulm edema; pink frothy sputum; skin burns, vesic
Polychlorinated Biphenyls (PCBs)	-	Mild, hydrocarbon odor	Inh, Abs, Ing, Con	Irrit eyes, skin; acne-form derm; [carc]; in animals: liver damage
Sulfate	-	-	-	-
Zinc	NA	Odorless	Inh	Sweet, metallic taste; dry throat, cough; chills, fever; tight chest, dysp, rales, reduced pulm func; head; blurred vision; musc cramps, low back pain; nau, vomit; ftg, lass, mal

7

TABLE (CONTINUED)
ODOR AND EXPOSURE CHARACTERISTICS

Contaminant	Odor Threshold (ppm)	Description of Odor	Route of Exposure ^a	Symptomology ^b
<u>Volatile Compounds</u>				
Acetone	3.6-699	Fragrant, mint-like	Inh, Ing, Con	Irrit eyes, nose, throat; head, dizz; derm
Benzene	34-119	Aromatic, sweet, solventy	Inh, Abs, Ing, Con	Irrit eyes, nose, resp sys; gidd; head, nau, staggered gait; ftg, anor, lass; derm; bone marrow depres; [carc]
1,2-Dichloroethane (ethylene dichloride)	6-185	Sweet, chloroform-like	Inh, Abs, Ing, Con	CNS depres; nau, vomit; derm; irrit eyes, corneal opacity; [carc]
Ethylbenzene	0.092-0.60	Aromatic, oily, solventy	Inh, Ing, Con	Irrit eyes, muc memb; head; derm; narco, coma
Methyl tert-butyl ether			Inh, Abs, Ing, Con	Irrit to eyes, mucous membrane, headache, narcosis, dermatitis kidney; repro
Toluene	0.16-37	Sweet, pungent, benzene-like, sour, burnt	Inh, Abs, Ing, Con	Ftg, weak; conf, euph, dizz, head; dilated pupils, lac; ner, musc ftg, insom; pares; derm
Xylenes	0.081-40	Sweet, aromatic	Inh, Abs, Ing, Con	Dizz, excitement, drow, inco, staggering gait; irrit eyes, nose, throat; corneal vacuolization; anor, nau, vomit, abdom pain; derm
<u>Acid Fraction</u>				
2,4-Dimethylphenol (xylenol)	-	-	-	-
2-Methylphenol (o-cresol)	0.00005-0.0079	Sweet, tarry, phenol	Inh, Abs, Ing, Con	CNS effects; conf, depres, resp fail; dysp, irreg rapid resp, weak pulse; skin, eye burns; derm; lung, liver, kidney damage
4-Methylphenol (p-cresol)	0.00005-0.0079	Sweet, tarry, phenol	Inh, Abs, Ing, Con	CNS effects; conf, depres, resp fail; dysp, irreg rapid resp, weak pulse; skin, eye burns; derm; lung, liver, kidney damage
Phenol	0.0045-1	Sweet, acrid	Inh, Abs, Ing, Con	Irrit eyes, nose, throat; anor, low-wgt; weak, musc ache, pain; dark urine; cyan; liver, kidney damage; skin burns; derm; ochronosis; tremor, convuls, twitch

TABLE (CONTINUED)
ODOR AND EXPOSURE CHARACTERISTICS

Contaminant	Odor Threshold (ppm)	Description of Odor	Route of Exposure ^a	Symptomology ^b
<u>Base/Neutral Fraction</u>				
Acenaphthylene	-	-	-	-
Acenaphthene	-	-	-	Skin, eye and muc memb irrit; vomit
Anthracene	-	-	-	Skin irrit and allergen; known carcinogen
Benzo(a)anthracene	-	-	-	Known carcinogen
Benzo(b)fluoranthene	-	-	-	Moderately toxic
Benzo(k)fluoranthene	-	-	-	Moderately toxic
Benzo(g,h,i)perylene	-	-	-	-
Benzo(a)pyrene	-	-	Inh	Toxic; suspected carcinogen
Chrysene	-	-	-	Toxic; carcinogenic agent
Dibenzo(a,h)anthracene	-	-	-	-
Fluoranthene	-	-	-	Moderately toxic
Fluorene	-	-	-	-
Indeno(1,2,3-cd)pyrene	-	-	-	-
Naphthalene	0.038	Tarry, creosote, mothballs	Inh, Abs, Ing, Con	Eye irrit; head; conf, excitement, mal; nau, vomit, abdom pain; irrit bladder; profuse sweat; jaun; hema, hemog, renal shutdown; derm
Phenanthrene	-	-	-	Mod toxic by ing; skin photosensitizer; [carc]
Pyrene	-	-	Inh, Abs, Ing, Con	A carcinogenic agent

TABLE (CONTINUED)
ODOR AND EXPOSURE CHARACTERISTICS

Contaminant	Odor Threshold (ppm)	Description of Odor	Route of Exposure ^a	Symptomology ^b
<u>Others</u>				
Chlorodiphenyl (Aroclor 1242) (PCB)	-	Mild hydrocarbon odor	Inh, Abs, Ing, Con	Irrit eyes; chloracne; liver damage; repro effects; [carc]
Chlorodiphenyl (Aroclor 1254) (PCB)	-	Mild hydrocarbon odor	Inh, Abs, Ing, Con	Irrit eyes; chloracne; liver damage; repro effects; [carc]

^a Route of exposure key: Inh = Inhalation; Ing = Ingestion; Con = Skin and/or Eye Contact; Abs = Skin Absorption.

^b Symptoms of exposure abbreviations key is presented in Table 2-3.

- Indicates no information available.

NA = Not applicable.

ppm = Parts per million.

Reference and Sources of Information:

2003 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices.

The Condensed Chemical Dictionary 10th Ed., 1981.

NIOSH Pocket Guide to Chemical Hazards, June 1997.

Personnel Protection and Safety, EPA Course 165.2 (manual).

Photovac Incorporated Technical Bulletin No. 11.

Sax's Dangerous Properties of Industrial Materials, 8th Ed.

TABLE 2-3

ABBREVIATIONS FOR SYMPTOMS OF EXPOSURE

Abbreviation	Symptom	Abbreviation	Symptom	Abbreviation	Symptom
abdom	abdominal	constip	constipation	fasc	fasciculation
album	albuminuria	constric	constriction	FEV	forced expiratory volume
anem	anemia	convuls	convulsions	fib	fibrosis
anes	anesthesia	cor	acute right heart strain or chronic right ventricular pulmonale, hypertrophy	fibr	fibrillation
anor	anorexia			frost	frostbite
anos	anosmia			ftg	fatigue
ANS	automatic nervous system			func	function
apat	apathy	corn	cornea	fvr	fever
appre	apprehension	CVS	cardiovascular system	gasp	gasping
arrhy	arrhythmias	cyan	cyanosis	GI	gastrointestinal
asphy	asphyxia	defat	defatting	gidd	giddiness
asth	asthma	deg	degeneration	glau	glaucoma
atax	ataxia	dent	dental	glu	glucose
biliru	bilirubinuria	depres	depressant/depression	halu	hallucinations
blur	blurred	derm	dermatitis	head	headache
BP	blood pressure	diarr	diarrhea	hema	hematuria
breath	breathing	dil	dilated	hemat	hematoma
bron	bronchitis	dist	disturbance	hemato	hematopoietic
broncopneu	bronchopneumonia	dizz	dizziness	hemog	hemoglobinuria
bronspas	bronchospasm	drow	drowsiness	hemorr	hemorrhage
BUN	blood urea nitrogen	dys	dysuria	hep	hepatic
ca	cancer	dysart	dysarthria	hyper	hyperemia
cachexia	severe generalized weakness, emaciation	dysp	dyspnea	hypox	hypoxemia
[carc]	carcinogenic/carcinogen	ecz	eczema	ict	icterus
card	cardiac	emphy	emphysema	inco	incoordination
cere	cerebral	enl	enlargement	incr	increase(d)
chol	cholinesterase	eosin	eosinophilia	inflamm	inflammation
chor	chorea	epis	epistaxis	inj	injury
cirr	cirrhosis	epit	epithelium	insom	insomnia
CNS	central nervous system	equi	equilibrium	intox	intoxication
coll	collapse	ery chol	erythrocyte cholinesterase	irreg	irregular
conf	confusion	eryt	erythema	irrit	irritation
conj	conjunctivitis	euph	euphoria	irrity	irritability
		extrem	extremities	jaun	jaundice
		fail	failure		

TABLE 2-3 (CONTINUED)

ABBREVIATIONS FOR SYMPTOMS OF EXPOSURE

Abbreviation	Symptom	Abbreviation	Symptom	Abbreviation	Symptom
ker	keratitis	palp	palpitations	retster	retrosternal
kid	kidney	para	paralysis	rhin	rhinorrhea
lab	labored	pares	paresthesia	salv	salivation
lac	lacrimation	paresis	incomplete loss of muscular power; weakness of a limb	scotoma	an area of absent or depressed vision in the visual field
lar	laryngeal	parox	paroxysmal	sens	sensitization
lass	lassitude	perf	perforation	sez	seizure
leucyt	leukocytosis	peri neur	peripheral neuropathy	sleep	sleepiness
leuk	leukemia	perineurit	peripheral neuritis	sneez	sneezing
leupen	leukopenia	periorb	periorbital	som	somnolence
li-head	lightheadedness	phar	pharyngeal	spas	spasm
liv	liver	photo	photophobia	strabismus	abnormality of the eyes in which the visual axes do not meet at the desired point
lo-ap	appetite loss	pig	pigmentation	subs	substernal
low-wgt	weight loss	plas	plasma	sweat	sweating
lymp	lymphocytosis	pleur	pleurisy	swell	swelling
mal	malaise	pneu	pneumonia	sys	system
malnut	malnutrition	pneuitis	pneumonitis	tacar	tachycardia
monocy	monocytosis	PNS	peripheral nervous system	tend	tenderness
muc memb	mucous membrane	polyneur	polyneuropathy	trachbronc	tracheobronchitis
musc	muscle	pros	prostration	vasconst	vasoconstriction
myo	myotonia	prot	proteinuria	venfib	ventricular fibrillation
narc	narcotic	psypec	psychialopecia	verti	vertigo
narco	narcosis	pulm	pulmonary	vesic	vesiculation
nas	nose/nasal	pulsus altenans	a pulse pattern in which beats occur at regular intervals, but with alternating weak and strong beats	vis dist	visual disturbance
nau	nausea	pup	pupil	vomit	vomiting
nec	necrosis	RBC	red blood cell	weak	weakness
neph	nephritis	resp	respiratory	wheez	wheezing
ner	nervousness	respar	respiratory arrest		
neur	neurologic				
numb	numbness				
opac	opacity				
pal	pallor				

Reference: U.S. Department of Health and Human Services, June 1997. NIOSH Pocket Guide to Chemical Hazards, Department of Health and Human Services (National Institute for Occupational Safety and Health), Publication No. 97-140.

2.4.3 - Levels of Personal Protection. Work will commence in Level D personal protective equipment (PPE), as described in Section 6. However, due to the potential for adverse employee exposure, the contingency to upgrade to Level C protection is included. The upgrade will occur in the event that dust and/or atmospheric concentrations monitored during specific site activities meet or exceed predetermined levels of dust and/or toxic air contaminants established for upgrading protective equipment. Further explanation and criteria for upgrading the level of protection are provided in Section 7.

If monitoring indicates an upgrade to Level C protection is warranted, it will be the responsibility of the MWH On-Site Safety Officer (OSO) to stop field activities until air-purifying respirators equipped with the appropriate cartridges are donned by personnel working in the exclusion zone. A record of the contaminant that resulted in the upgrade; personnel wearing respirators; cartridges used; and the duration of Level C work activities will be maintained in the field logbook by the OSO. If the upgrade is not covered in this site-specific SSP addendum, the OSO will suspend work until the MWH HSC and MWH Project Manager (PM) have been consulted.

2.5 - Activity Hazard Analysis

2.5.1 – IPL Portion of Site.

2.5.1.1 – PCB- and Lead-Impacted Soil Removal

Hazards associated with PCB- and lead-impacted soil removal activities include equipment dangers; soil collapse; pinch, slip, trip, and fall hazards; potential skin contact or ingestion of impacted soils; utility contact; heat/cold stress; and noise.

While completing open excavations, personnel will maintain a minimum 3-foot separation from the edge of an open hole. The area around the excavation will be kept clean and void of unnecessary equipment and debris. When working near heavy equipment, eye contact should be made to ensure the operator is aware of your presence. The work area should be well defined and any potential traffic hazards identified and addressed. Ongoing air monitoring will be completed to verify air quality parameters specified in this plan are within acceptable ranges for the PPE being used. Prior to initiating any excavation activity, all utilities, both above and below ground, will be identified by contacting Iowa One Call and IPL any other responsible parties not addressed by the Iowa One Call system.

The planned excavation in the PCB- and lead-impacted areas is anticipated to be less than 2 feet in depth. Therefore, it is not anticipated that a confined space entry will occur. Sampling will be conducted using the heavy equipment or hand-held sampling tools. Personnel entering the excavations should be kept to a minimum.

MWH field personnel will be required to wear at a minimum, hearing and eye protection, steel-toed boots (i.e., made of rubber or with outer disposable covers), hard hats, nitrile gloves (4-mil inner and outer), and Tyvek[®] outer protective clothing. Abrasion resistant outer gloves may be used, as necessary, based upon activity being performed. When working near active roadways, railroad tracks, or around operating equipment, high

visibility vests shall be worn. Personnel assigned to the decontamination of equipment, using high-pressure spray equipment, must also wear a face shield and polycoated or SARANEX[®]-laminated Tyvek[®] protective clothing while completing decontamination activities.

Monitoring for dust conditions and some of the potential gases listed in Table 2-1 (yellow paper insert) will be conducted to minimize exposure by early detection. If necessary, based on visual and instrumentation monitoring, the site will be upgraded to Level C, or personnel will move away from the site until levels drop to acceptable working levels. Heat/cold stress will be monitored depending upon ambient conditions.

Additionally, the following heavy equipment operation procedures will be followed:

- Before operating equipment in the vicinity of electrical power lines, the equipment operator will walk completely around the equipment to be used to determine the distance from the equipment to the nearest overhead power line. Generally, the distance should be greater than 20 feet.
- Before conducting an intrusive activity, the location will be adequately cleaned and leveled to accommodate the equipment to be used.
- Suitable storage for all tools, materials, and supplies will be provided.
- Work areas and equipment platforms will be kept free of materials, obstructions, and substances that could cause a surface to become slick or otherwise hazardous.
- All unnecessary personnel will be cleared from the area.
- Heavy equipment that is running will be not be left unattended.
- All heavy equipment scheduled for use at the site will be inspected by a qualified individual familiar with the equipment and potential points of failure prior to use on the site. The equipment will be delivered to the site in compliance with Iowa Department of Natural Resources (IDOT) requirements for shipping and must be in safe operating condition.

2.5.1.2 – FMGP-Impacted Soil Removal

Many of the same hazards exists for FMGP-impacted soil removal as for the PCB- and lead-impacted soil removal, except the FMGP area will be excavated to greater depths, and will involve concrete removal and a different list of contaminants, and potential handling and decontamination of excavated metal and concrete debris.

All excavation activities must be performed in accordance with the applicable requirements of 29 CFR §1926.650 for slope stability and worker safety. While completing open excavations, personnel will maintain a minimum 3-foot separation from the edge of an open hole. The area around the excavation will be kept clean and void of unnecessary equipment and debris. When working near heavy equipment, eye contact should be made to ensure the operator is aware of your presence. The work area should be well defined and any potential traffic hazards identified and addressed. Soil

transported from the site will be covered and accompanied with appropriated IDOT documentation. Ongoing air monitoring will be completed to verify air quality parameters specified in this plan are within acceptable ranges for the PPE being used. Prior to initiating any excavation activity, all utilities, both above and below ground, will be identified by contacting Iowa One Call and other responsible parties not addressed by the Iowa One Call system.

The planned excavation in the FMGP-impacted area, located on the IPL portion of the site, is anticipated to exceed 10 feet in depth. Every effort should be made to restrict personnel from entering an excavation. Proper shoring, benching, or sidewall sloping should be maintained if personnel must enter the excavation. However, to the extent possible, sampling should be conducted using the heavy equipment or hand-held sampling tools capable of extending into the excavation with out personnel entering the excavations. If it becomes necessary to enter the excavation, the activity will be evaluated to determine if the entry is a confined space entry as described in Attachment A of this site-specific SSP addendum.

MWH field personnel will be required to wear at a minimum, hearing and eye protection, steel-toed boots (i.e., made of rubber or with outer disposable covers), hard hats, and nitrile gloves (4-mil inner and outer), and Tyvek[®] outer protective clothing. If anticipated (based on planned activities) that free product might be encountered, polycoated or SARANEX[®]-laminated outer protective clothing and 22-mil outer nitrile gloves shall be worn. Abrasion-resistant outer gloves may be used, as necessary, based upon activity being performed. When working near active roadways, railroad tracks, or around operating equipment, high visibility vests shall be worn. Personnel assigned to the decontamination of equipment, using high-pressure spray equipment, must also wear a face shield and polycoated or SARANEX[®]-laminated Tyvek[®] protective clothing while completing decontamination activities.

Monitoring for dust conditions and some of the potential gases listed in Table 2-1 (yellow paper insert) will be conducted to minimize exposure by early detection. If necessary, based on visual and instrumentation monitoring, the site will be upgraded to Level C, or personnel will move away from the site until levels drop to acceptable working levels. Heat/cold stress will be monitored depending upon ambient conditions.

Heavy equipment operation procedures described in subsection 2.5.1.1 will be adhered to while completing soil removal activities in the FMGP-impacted area.

2.5.1.3 - Demolition of Metal Building

MWH will only provide oversight of demolition activities; therefore, the following procedures are to be used as general guidelines for the demolition contractor. Hazards associated with demolition of the metal building include equipment dangers; pinch, slip, trip, and fall hazards; small power tool hazards; working at elevated heights; electrical hazards; cuts from sharp metal pieces; utility contact; heat/cold stress; and noise. To reduce the risk of these hazards, applicable portions of the Code of Safe Working Practices provided in Attachment B of this site-specific SSP addendum will be followed during completion of the demolition activities.

Prior to beginning demolition, all utility sources (gas/electric/water) will be physically disconnected from the structure by qualified personnel. Heavy equipment operation procedures described in subsection 2.5.1.1 will be adhered to while completing these activities. All electrical hand-held power tools will be supplied power through ground fault interrupter (GFI) protection and in good working order with grounded connections. The demolition area will be secured, and only necessary personnel will be allowed in the work area.

MWH field personnel will be required to wear at a minimum, long-sleeve shirts, full-length pants, hearing and eye protection, steel-toed boots, hard hats, high-visibility outer vests, and nitrile gloves (4-mil inner and outer). Abrasion-resistant outer gloves may be used, as necessary, based upon the activity being performed. Tyvek[®] outer protective clothing is recommended if excavation activities are occurring simultaneously on other portions of the site.

2.5.1.4 - Site Restoration

Site restoration activities will include paving, fencing, placement of cover soil, seeding, and other general activities to restore the site. Many of the same hazards previously discussed for site excavations apply to site restoration, except the significantly impacted soils will have been removed and a clean fill will have been placed in the excavated areas. While completing these activities, personnel will wear, at a minimum, long-sleeve shirts, full-length pants, steel-toed boots, and work gloves, depending upon the activity being completed. Safety glasses and hard hats are recommended while pouring concrete and completing fencing activities. High-visibility outer vests will be worn when completing activities near active roadways, railroad tracks, or heavy equipment.

2.5.2 - Former Allied Steel Portion of Site.

2.5.2.1 – FMGP-Impacted Soil Removal

The same hazards and requirements described in subsection 2.5.1.2 apply to this activity. All MWH field personnel will be required to wear, at a minimum, hearing and eye protection, steel-toed boots (rubber or with outer disposable covers), hard hats, and nitrile gloves (4-mil inner and outer) and Tyvek[®] outer protective clothing. Abrasion resistant outer gloves may be used, as necessary, based upon activity being performed. When working near active roadways, railroad tracks, or around operating equipment, high visibility vests shall be worn. Personnel assigned to the decontamination of equipment, using high-pressure spray equipment, must also wear a face shield and, polycoated or SARANEX[®]-laminated Tyvek[®] protective clothing while completing decontamination activities.

2.5.2.2 - Storm Sewer Cleaning and Abandonment

The same hazards and requirements described in subsection 2.5.1.2 apply to this activity. However, there is a greater likely hood that a potential confined space entry may be required to complete the specified activities. Attachment A, "Confined Space Entry Procedures," will be referenced and applied as necessary. The excavation to obtain

access to the storm sewer must be performed in accordance with the applicable requirements of 29 CFR §1926.650 for slope stability and worker safety.

At a minimum, personnel directly involved in the cleaning and abandonment activities will be required to wear hearing protection (while working near heavy equipment) and eye protection, steel-toed boots (i.e., made of rubber or with outer disposable covers), hard hats, nitrile gloves (4-mil inner and outer), and polycoated or SARANEX®-laminated Tyvek® outer protective clothing. Abrasion-resistant outer gloves may be used, as necessary, based upon the activity being performed. When working near roadways, railroad tracks, or equipment that is operating, high-visibility outer vests shall be worn. Personnel assigned to the decontamination of equipment or cleaning of the sewer lines, using high-pressure spray equipment, must also wear a face shield.

2.5.2.3 - Construction of Storm Sewer Extension

The same hazards and requirements described in subsection 2.5.2.1 apply to this activity, with the exception of sewer line cleaning operations. Confined space entry may be required to complete the specified activities. Attachment A, "Confined Space Entry Procedures," will be referenced and applied as necessary. Excavation to obtain access to the storm sewer must be performed in accordance with the applicable requirements of 29 CFR §1926.650 for slope stability and worker safety.

At a minimum, personnel directly involved in the storm sewer extension activities will be required to wear hearing protection (while working near heavy equipment), eye protection, steel-toed boots (i.e., made of rubber or with outer disposable covers), hard hats, nitrile gloves (4-mil inner and outer), and Tyvek® outer protective clothing. Abrasion-resistant outer gloves may be used, as necessary, based upon activity being performed. When working near operating equipment, roadways, or railroad tracks, high-visibility outer vests shall be worn. Personnel assigned to the decontamination of equipment, using high-pressure spray equipment, must also wear a face shield and polycoated or SARANEX®-laminated Tyvek® protective clothing while completing these activities.

2.5.2.4 - Site Restoration

Site restoration activities will placement of cover soil, seeding, and other general activities to restore the site. Many of the same hazards previously discussed for site excavations apply to site restoration, except the significantly impacted soils, sewer line sediments, and water will have been removed and a clean fill will have been placed in the excavated areas. While completing these activities, personnel will wear at a minimum, long-sleeve shirts, full-length pants, steel-toed boots and, work gloves depending upon the activity being completed. Safety glasses and hard hats are recommended.

2.5.3 - Soil Sampling/Field Screening. The same potential hazards exist for soil sampling/field screening as described for excavation activities. Nitrile gloves (4-mil inner and outer), safety glasses, hard hats, rubber steel-toed boots or steel-toed boots with disposable over boot covers,

and Tyvek® outer protective clothing will be worn during all soil sampling activities. When working near heavy equipment, hearing protection and high-visibility outer vests will be worn. Nitrile gloves (4-mil inner and 22-mil outer) and polycoated or SARANEX®-laminated Tyvek® protective clothing will be worn when contact with free product or liquids is anticipated. When working near heavy equipment, roadways, or railroad tracks, high-visibility outer vests shall be worn.

2.5.4 - Surveying and Mapping. Hazards associated with this field activity includes pinch, slip, trip, and fall hazards. Field personnel will wear steel-toed boots, hard hats, and safety glasses when conducting surveying activities in restored areas. If completing these activities during the soil removals or in areas still impacted with FMGP or PCB contamination, the following PPE will be required: hearing and eye protection (while working near heavy equipment), steel-toed boots (i.e., made of rubber or with outer disposable covers), hard hats, nitrile gloves (4-mil inner and outer) and Tyvek® outer protective clothing. When working near heavy equipment, railroad tracks, or roadways, high-visibility outer vests shall also be worn.

3.0 - ASSIGNMENT OF RESPONSIBILITIES

Assignment of responsibilities for development, coordination, and implementation of the Standard SSP and site-specific SSP addendum is essential for proper administration of the plan's requirements. Implementation of the Standard SSP and site-specific SSP addendum will be accomplished through an integrated effort of the following MWH personnel:

<u>Team Member</u>	<u>Work Assignment</u>	<u>Safety Training</u>
Michael D. Geringer	HSC	40-Hr Health and Safety 8-Hr First Aid, CPR 8-Hr Supervisory Training
Randy J. Kroneman	PM	40-Hr Health and Safety 8-Hr First Aid, CPR 8-Hr Supervisory Training
Ryan G. Wyllie	Field Supervisor/OSO	40-Hr Health and Safety 8-Hr First Aid, CPR

CPR = cardiopulmonary resuscitation

3.1 - HSC

The HSC is responsible for preparation of the Standard SSP and site-specific SSP addendum. The HSC will ensure the Standard SSP and site-specific SSP addenda comply with OSHA standards and site-specific health and safety requirements based on known or anticipated health and safety concerns. The HSC will be available for consultation when required. The HSC may visit the site during field activities to perform a site safety audit, but will not remain on site throughout the investigation. A copy of the Site Safety Checklist is included as Attachment C of the Standard SSP for the HSC to use during an on-site safety audit.

3.2 - PM

The PM is primarily responsible for safe performance of the project and is the central point of contact with IPL personnel. Should a health and safety issue develop during the performance of field activities, the PM will contact the MWH HSC and the IPL personnel assigned to the project.

3.3 - On-Site Safety Officer (OSO)

The OSO is responsible for implementation of the Standard SSP and site-specific SSP addendum. The OSO has the responsibility and authority to halt or modify any work condition or to remove personnel from the site if he/she considers conditions unsafe. The OSO will be the main contact in any on-site emergency situation and will direct all field activities. The OSO will ensure all on-site MWH personnel understand and comply with site safety requirements. If the OSO observes MWH or contractor personnel deviating from standard health and safety practices, an "Incident Report" form (Attachment D of the Standard SSP) will be completed. A copy of the report will be submitted to the HSC and, if applicable, the contractor's company. Except for minor changes or emergencies, the OSO can modify the site-specific SSP addendum requirements only after consultation with and approval by the HSC. The OSO or an assigned designee will be on site at all times during field activities to observe and audit the various field work zones throughout the investigation. The OSO will also be responsible for placing a current OSHA job poster in the MWH command center prior to initiation of on-site restoration activities.

3.4 - Field Staff

All MWH field staff members are responsible for understanding and complying with all requirements of the Standard SSP and site-specific SSP addendum. Each worker must sign and date a "Personal Acknowledgment" form (Attachment C of this site-specific SSP addendum) stating that he/she understands the contents of the site-specific SSP addendum. Every morning before the start of field activities, a tailgate safety meeting will be conducted to instruct MWH field staff on Standard SSP and site-specific SSP addendum requirements. During this meeting, site safety concerns and questions can be directed to the OSO by field staff.

3.5 - Notification Requirements

Unanticipated field conditions will occasionally require modifications to the site-specific SSP addendum. Notification and/or approval procedures will be dependent on actual field conditions. Conditions that require an upgrade of one level of PPE should be reported to the HSC and recorded on the "Tailgate Safety Meeting Form" (Attachment D of this site-specific SSP addendum) and in the field logbook, along with information pertaining to duration, personnel involved, and equipment used. Minor changes not affecting the degree of protection can be implemented by the OSO. These changes will be documented and sufficiently justified in the field logbook.

The OSO will stop all field activities and contact the HSC under the following conditions:

1. Any activity requiring an upgrade to Level B protection.
2. Any IDLH activity, as defined by NIOSH.

3. Any proposed entry by MWH personnel into a confined space if this activity is not specifically addressed in this SSP addendum.
4. Any physical hazard where an exposure under reasonable circumstances could lead to possible death or permanent injury.

4.0 - MEDICAL SURVEILLANCE AND TRAINING

4.1 - Emergency Medical Assistance and First-Aid Equipment

Prior to work start-up, the OSO will discuss the emergency medical assistance network that has been established for the Clinton FMGP site with all personnel assigned to work at the site. Locations of phones, fire extinguishers, first-aid kits, and emergency telephone numbers are identified in the "Emergency Assistance Information" form, which is located in Attachment E of this site-specific SSP addendum (pink card stock). A map showing directions to the nearest hospital location will be provided to all field personnel. A map to the hospital is included as Figure 4-1 (blue card stock insert). Attachment C and the emergency route map will be clearly posted at each work site. A designated safety vehicle will be on site and available at all times for a medical or safety emergency. The OSO or his/her designee will be responsible for the availability and use of the safety vehicle.

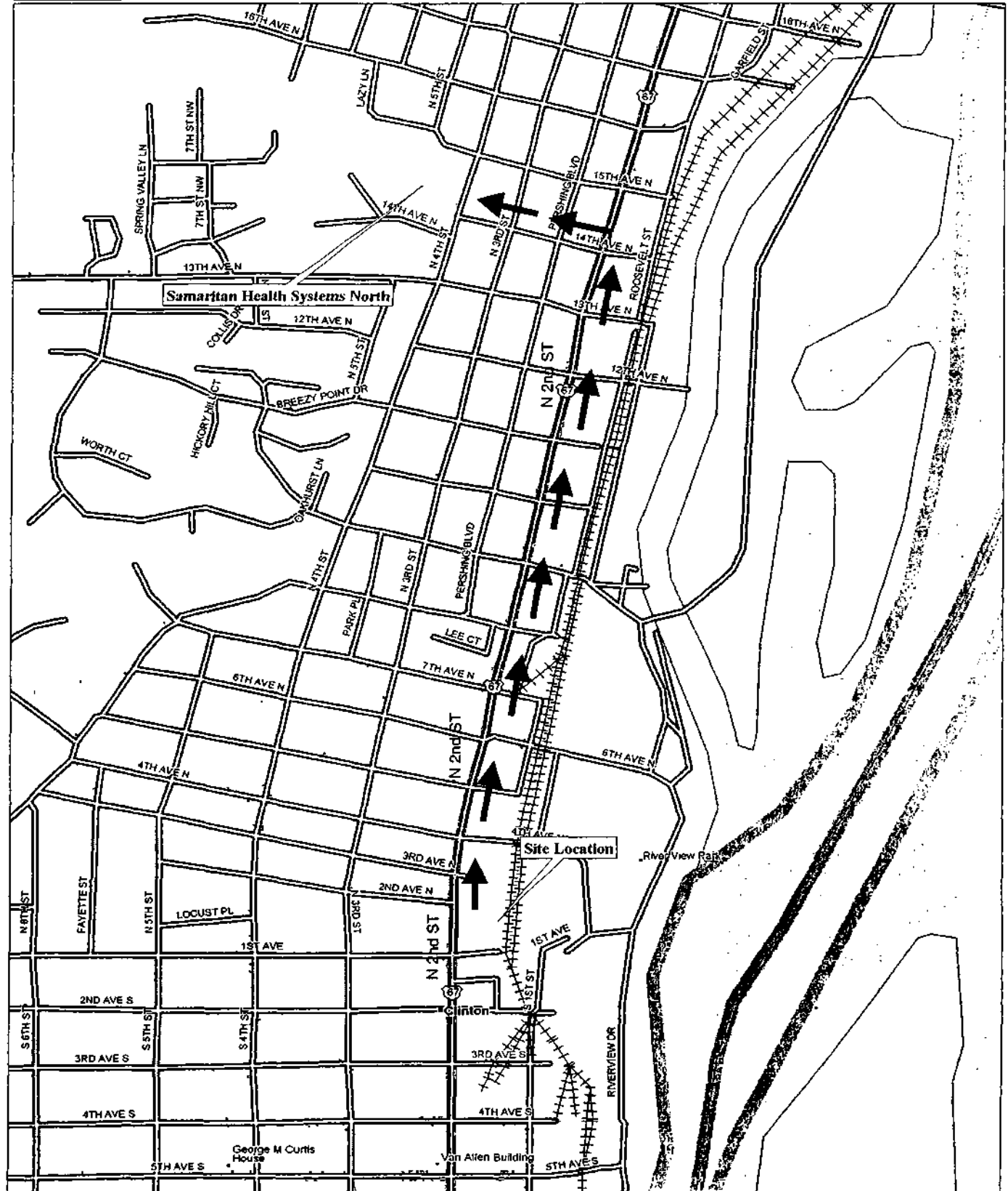
The OSO and key field staff will be certified to render first aid and CPR prior to the initiation of field activities. A first-aid kit will be available at the site for use by trained personnel. An adequate supply of fresh water or a portable emergency eye wash will be available at the work site.

5.0 - SITE CONTROL

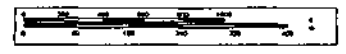
Site control requires the establishment of a regulated area, designated work zones, evacuation protocol, and site security. Exclusion zones will be established in each work area. Access to the exclusion zone will be limited to a designated entrance and exit point. At times when the site is unattended, access to the exclusion zone will be restricted by placing caution tape or plastic fencing across the access point. Only persons with the required appropriate health and safety training and an active role in the remedial activities will be allowed in the exclusion zones. All on-site personnel will monitor access to the exclusion zones.

The proposed work locations are located within fenced areas on the IPL and Allied Steel portions of the site. The gates to the fenced areas on the IPL portion are generally closed 24 hours a day and require an electronic key for entrance. Onlookers and the general public are not allowed within the fenced areas. However, IPL employees will have free access to the equipment and maintenance buildings, but will not be allowed in the exclusion zone.

While working within the fenced area of the Allied Steel portion of the site, gates will remain closed to limit unauthorized access. Selected gates may remain unlocked while the site is attended to provide an emergency egress point. Gates on the Allied Steel portion of the site will be closed and locked when the site is unattended. Access within the fenced area will be limited to current site owners and those with an active role in the project.



©2002 DeLorme, Street Atlas USA © 2003. www.delorme.com



Des Moines Iowa

INTERSTATE POWER AND LIGHT COMPANY
CLINTON FMGP SITE
CLINTON, IOWA

EMERGENCY ROUTE TO HOSPITAL

FIGURE

4-1

6.0 - PPE

PPE will be required during the course of the work at the Clinton FMGP site. PPE selection will be based primarily on hazard assessment data and work task requirements. Each working zone will be monitored for potentially hazardous contaminants using a variety of direct-read instruments (DRIs), including a PID, benzene-specific analyzer, HCN meter, and dust monitor. The PID should be equipped with an 11.0- or 11.7-electron-volt (eV) lamp to detect all of the potential VOCs and/or semivolatile organic compounds (SVOCs) suspected to be present at this site. However, a PID equipped with a 10.2- or 10.6-eV lamp may be used at this site because the major volatile/semivolatile contaminants of concern are benzene, naphthalene, toluene, and total xylenes, which would be detected by the lower-eV lamps.

The PID will be calibrated with the appropriate calibration span gas at the beginning of each work day according to the manufacturer's instructions. Following calibration, readings will be recorded using upwind background measurements. At the end of each work day, readings will be taken using upwind background measurements to determine calibration variations. All calibration information will be recorded on an "Equipment Calibration" form (Attachment E of the Standard SSP).

A Dräger Chip Measurement System (CMS) equipped with benzene chips will also be used to monitor the site. During intrusive work, the breathing zone of site workers (2 to 5 feet above the ground) will be monitored with the Dräger CMS. Benzene readings will only be required if PID readings above background concentrations are encountered. If required, benzene readings should be taken routinely during intrusive work activities in the unsaturated zone. MWH personnel will also visually monitor dust conditions.

A Compur Monitox or equivalent HCN meter will be used to monitor for potential exposure to HCN gas. Readings in the breathing zone of site workers (2 to 5 feet above the ground) will be taken during intrusive activities in the unsaturated zone on site. All readings will be recorded in a field logbook or a table of recorded readings by the MWH OSO or designated MWH personnel.

Airborne particulates will be both visually monitored and measured with a MINIRAM by MWH personnel on a continual basis. Visual observations and end of the day time weighted averages obtained from the MINIRAM will be logged in the field logbook by the MWH OSO or his/her designee.

If confined space entry is conducted by MWH personnel during the course of field at the Clinton FMGP site, a four-gas meter will be used in addition to previously discussed DRIs to determine if entry can be performed, and, if so, under what level of protection. Appropriate forms must be completed and procedures outlined in Federal OSHA Standard: 29 CFR §1910.146 must be followed for approved entry.

Explosive vapors will be measured periodically in the exclusion zone during the sewer line cleaning and abandonment by MWH using a four-gas meter which measures Lower Explosive Limit (LEL), H₂S, oxygen, and carbon monoxide (CO).

Based on the site history, the initial level of protection for all field activities will be Level D. Provisions are made in Section 6.2 for upgrading the level of protection to Level C or evacuating the site based upon dust conditions or high levels of organic vapors.

6.1 - Level D PPE

MWH personnel working in the exclusion zone shall wear, at a minimum:

- Long-sleeve shirts, full-length pants or coveralls made of cotton or disposable, chemical-resistant Tyvek®. Where the potential for contact with contaminated liquids exists, polycoated or SARANEX®-laminated Tyvek® coveralls will be worn (seams, arms, and leg openings will be secured with duct tape). Protective aprons may be allowed for sampling purposes once sufficient sampling has occurred to evaluate the potential for contaminant exposure. The HSC should be consulted before implementing the use of aprons for sampling.
- Gloves (outer): chemical-resistant, 4-mil, nitrile. When contact with free product or liquid is anticipated, chemical-resistant, 22-mil, nitrile gloves will be worn. Based upon the activity, abrasion-resistant outer gloves may also be used.
- Gloves (inner): chemical-resistant, 4-mil, nitrile.
- Steel-toed boots: leather or chemical-resistant (all field activities).
- Hard hat (all field activities).
- Hearing protection when working near heavy equipment.
- Safety glasses or goggles (all field activities).
- High-visibility outer vests when working near heavy equipment or roadways.

6.2 - Level C PPE

When air monitoring information, dust conditions, or previously obtained site information dictates that a particular site be upgraded to a Level C protection area, Montgomery Watson personnel shall wear, at a minimum:

- Full-face or half-face air-purifying respirator equipped with Mine Safety and Health Administration/National Institute for Occupational Safety and Health (MSHA/NIOSH)-approved organic vapor cartridges if organic vapors are encountered or ammonia cartridges if ammonia vapors are encountered. High-efficiency particulate air (HEPA) cartridges (MSHA/NIOSH approved) will be used in conjunction with the respirators if sufficient dust levels are encountered. Safety glasses or goggles will be worn during all field activities when half-face respirators are used.

- Coveralls made of cotton or disposable, chemical-resistant Tyvek®. Where the potential for contact with contaminated liquids exists, polycoated or SARANEX®-laminated Tyvek® coveralls will be worn (seams, arm, and leg openings will be secured with duct tape). Protective aprons may be allowed for sampling purposes once sufficient sampling has occurred to evaluate the potential for contaminant exposure. The HSC should be consulted before implementing the use of aprons for sampling.
- Gloves (outer): chemical-resistant, 4-mil, nitrile. When contact with free product or liquid is anticipated, chemical-resistant, 22-mil, nitrile gloves will be worn. Based upon the activity, abrasion-resistant outer gloves may also be used.
- Gloves (inner): chemical-resistant, 4-mil, nitrile.
- Steel-toed boots: leather or chemical-resistant (all field activities).
- Hard hat (all field activities).
- Hearing protection when working near heavy equipment.
- Safety glasses or goggles (all field activities).

6.3 - Respirator Selection and Fit Test

The OSO is responsible for verifying all on-site MWH field personnel have been fit-tested for the applicable respirators prior to working in Level C protection at the Clinton FMGP site. MWH air-purifying respirator fit-test protocol is presented in Attachment F of the Standard SSP. A record documenting the date, size, brand, and model number of the air-purifying respirator for each site worker will be maintained by the OSO or HSC. Contact lenses can be worn when using a full-face respirator in the exclusion zone if they are gas permeable or soft lenses. Site workers who wear spectacles and are working in Level C PPE in the exclusion zone will be supplied with spectacles specially designed for respirators. If respirators are required, a record of the personnel involved, duration in level C, chemical being addressed and change out frequency of the cartridges will be maintained by the OSO.

7.0 - HAZARD ASSESSMENT

Hazard assessment is essential in determining the hazard control measures that need to be implemented during site activities. Hazard assessment is an ongoing process and involves characterization of the chemical, physical, biological, and other safety hazards at the site.

7.1 - Site Survey

Prior to initiation of work activities, the OSO shall conduct a site survey to identify safety hazards and determine appropriate control measures. Hazards may include, but are not limited to, underground utilities or storage tanks, product transfer lines, ground traffic, overhead power lines, and current weather conditions (such as excessive heat or cold conditions, lightning, etc.).

Site specific hazards for the Clinton FMGP site include the chemicals of concern, underground and aboveground utilities, automobile and train traffic, equipment dangers, the Mississippi River, heat and cold stress, possible vagrants living in on-site structures and/or nearby wooded areas, and insects.

7.2 - Air Monitoring in Exclusion Zone

This section provides a discussion of the ambient air monitoring program which will be implemented during remedial activities at the FMGP site. The monitoring plan has been established to protect on-site workers and the general public located outside the site boundaries.

Perimeter air monitoring using mobile air monitoring stations will be undertaken to monitor ambient air near the site boundaries of the FMGP site, both upwind and downwind, during soil excavation and handling activities. The analytical results will be used to evaluate potential impacts to personnel located on or adjacent to the sites as a result of on-site activities. This perimeter air monitoring plan is presented in detail in the RAWP.

The main objective of air monitoring in the exclusion zone is to assess the inhalation and explosion hazards presented to site personnel. During site activities, air monitoring will be conducted using DRI and personal samplers. The DRIs will include a PID, a Dräger CMS (benzene chips), and an HCN meter (Monitox or equivalent) for all field activities. If confined space entry is necessary by MWH personnel, a combination oxygen, LEL, CO, and H₂S meter (EXOTOX 50 gas monitor or equivalent) will be used. Airborne particulates will be both visually and electronically monitored using an aerosol/dust monitor (MINIRAM) or equivalent. To the extent possible, airborne particulates will be kept to a minimum during all field activities. This will be accomplished by wetting down work areas with water, keeping soil piles covered if there is no activity, and curtailing work if windy conditions prevail.

In addition to DRIs, passive sampler badges and/or personal sampling pumps will be used to provide TWAs for air particulates and to collect samples for PAH; lead, HCN; and benzene, toluene, ethylbenzene, and total xylenes (BTEX) analyses. This data will be used to verify the accuracy of the DRIs.

The passive sampler badges will be worn by the maximally exposed worker and submitted for rapid turn-around chemical analysis on a daily basis for the first three days of soil handling activities. If the analytical results are in close agreement with the DRI measurements, additional use of the passive sampler badges and personal sampling pumps may not be required. The MWH OSO will confer with the MWH HSC prior to modifying the personal air sampling requirements.

7.2.1- DRIs

7.2.1.1 - PID

Each work site shall be monitored for organic vapors using a PID equipped with a 10.2 eV or greater lamp and calibrated to the benzene response factor. The PID will be calibrated to benzene using isobutylene calibration span gas at the beginning of each work day according to the manufacturer's instructions. Following calibration, readings

will be recorded using upwind background measurements. At the end of each work day, readings will be taken using the calibration span gas to determine calibration variations. All calibration information will be recorded on an "Equipment Calibration" form (Attachment E of the Standard SSP). Readings in the breathing zone of site workers (2 to 5 feet above the ground) will be taken at 30-minute intervals, at a minimum. More frequent monitoring will be conducted if elevated readings are recorded. All PID readings will be recorded in a field logbook by the MWH OSO or designated MWH personnel.

7.2.1.2 – Dräger CMS

Benzene and NH₃ Dräger CMS chips will be used in addition to PID air monitoring at this site. Chips for each of these potential contaminants will be pulled at regular intervals during intrusive field activities conducted in the unsaturated zone. However, benzene chips will only be required if PID readings above background concentrations are encountered. NH₃ Dräger chips will be used when exposure to NH₃ is suspected. Benzene Dräger chips that read in the 0.5 to 10 parts per million (ppm) range should be used on site. All Dräger CMS readings will be taken in the breathing zone near the potential point of exposure (2 to 5 feet above the ground surface) and recorded in the field logbook by the MWH OSO or his/her designee.

7.2.1.3 - HCN Meter

Compur Monitox or equivalent HCN meter will be used to monitor potential exposure to HCN gas. Readings in the breathing zone of site workers (2 to 5 feet above the ground) will be taken initially at 30-minute intervals. More frequent monitoring will be conducted if readings above background are recorded. All readings will be recorded in a field logbook by the MWH OSO or designated MWH personnel.

7.2.1.4 – MINIRAM

Airborne particulates will be both visually monitored and measured with a MINIRAM by MWH personnel on a continual basis. Visual observations and end of the day time weighted averages obtained from the MINIRAM will be logged in the field logbook by the MWH OSO or his/her designee.

7.2.1.5 – Four-Gas Meter

If confined space entry is conducted by MWH personnel during the course of field activities at the Clinton FMGP site, a four-gas meter will be used in addition to previously discussed DRIs to determine if entry can be performed, and, if so, under what level of protection. Appropriate forms must be completed and procedures outlined in Federal OSHA Standard: 29 CFR §1910.146 must be followed for approved entry.

Readings of LEL, H₂S, oxygen, and CO will be taken before and during confined space entry activities.

7.2.2 - Integrated Air Sampling Instruments.

7.2.2.1 - Integrated Organic Vapor Monitoring Badge

An SKC Model 575-001 or equivalent monitor will be used to monitor VOC (i.e., BTEX) exposure to personnel in the exclusion zone. The badge will be worn by an individual in the exclusion zone who would, by the nature of his/her activities, be expected to receive the highest exposure if VOCs are present. A summary of personal sampling and analytical methods is presented in Table 7-1.

7.2.2.2 - Personal Pumps

Lead, PAH, and HCN concentrations in the breathing zone will be determined by placing low-flow personal pumps for PAHs and HCN and high-flow personal pumps for lead on a worker in the exclusion zone. The pumps will be worn by an individual in the exclusion zone who would, by the nature of his/her activities, be expected to receive the highest exposure to lead, PAHs, and HCN. A summary of personal sampling and analytical methods is presented in Table 7-1.

Because lead and, for the most part, PAHs are nonvolatile, and exposure would be through inhalation of airborne particulates; TWA airborne particulate readings from the MINIRAM will be compared to the analytical results for PAHs and lead obtained from the personal sampling pumps. This information will be used to determine if exposure to lead and PAH contaminants in the work zone can be adequately determined by monitoring airborne particulate concentrations with the MINIRAM.

7.3 - Soil Screening

The main objective of soil screening is to provide both quantitative and qualitative on site information about selected SVOCs and non-volatile contaminants suspected to be encountered during the course of the investigation.

7.3.1 - PID. PID is a field screening method used to detect the presence of photoionizable compounds in soil, such as VOCs. The PID gives headspace readings of total photoionizable compounds from soil samples. The Material Safety Data Sheet (MSDS) for the isobutylene calibration gas is included in Attachment F.

7.3.2 - UVF. UVF is a qualitative field screening method used to detect the presence of PAH compounds. The method involves the use of hexane to extract PAH compounds from soil. The MSDS for hexane is included in Attachment F of this site-specific SSP addendum. The extract is then irradiated with ultraviolet light. If PAH compounds are present, the extract will fluoresce.

7.4 - Action Levels for Upgrading Protection

- **7.4.1 - Action Levels for Upgrade to Level C.** The decision to upgrade the level of protection will be based on elevated readings of organic vapor, NH₃, and dust

TABLE 7-1

PERSONAL SAMPLING AND ANALYTICAL METHODS

Location	Analyte	Sampling Method	Analytical Method	Frequency ^a
Maximally Exposed Worker ^b	PAHs	Teflon [®] filter cassette and XAD-2 in-line using low volume personal sampling pump.	NIOSH 5515	Daily for first 3 days of intrusive work
	Lead	0.8 μ MCE filter cassette using high volume personal sampling pump.	NIOSH 7082	Daily for first 3 days of intrusive work
	Cyanide	Soda lime sorbent tube using low volume personal sampling pump.	NIOSH 6010	Daily for first 3 days of intrusive work
	VOC	Passive sampler (Badge) SKC Model 575-001.	GC-PID	Daily for first 3 days of intrusive work

Notes:

^a = If direct-read instrument results do not correlate to analytical results, personal sampling will be conducted daily for the duration of intrusive work.

^b = All sampling equipment will be worn by one maximally exposed worker such as an excavator operator or individual working near excavator.

μ = Microgram.

GC-PID = Gas chromatograph/photoionization detector.

MCE = Mixed cellulose ester.

NIOSH = National Institute of Occupational Safety and Health.

PAH = Polynuclear aromatic hydrocarbons.

VOC = Volatile organic compounds.

conditions. Situations dictating selection of these upgrade levels and the corresponding actions must be taken are as follows:

- When the PID indicates sustained (15 minutes) breathing zone organic vapor concentrations in excess of 5 meter units, the MWH OSO will require the use of air-purifying respirators equipped with organic vapor/dust filter cartridges until readings in the work zone drop and maintain a level below 5 meter units.
- If the Dräger CMS chip readings exceed 1 ppm benzene or 25 ppm NH₃, field work will be suspended until the following measures have been taken to ensure worker safety:
 - If the TWA for benzene (1 ppm) is exceeded, respirators equipped with organic vapor cartridges will be donned.
 - If the TWA for NH₃ (25 ppm) is exceeded, respirators equipped with NH₃ cartridges will be donned.
- If lead or PAH concentrations exceed 0.05 milligram per cubic meter (mg/m³) respirators equipped with HEPA cartridges will be donned.
- Respirators equipped with HEPA cartridges will be donned if air particulate conditions that exceed 5 mg/m³ or are irritating to the eyes, nose, or throat and cannot be controlled with water spray prevail during field activities.

7.4.2 - Action Levels for Ceasing Operations. Situations dictating the ceasing of operations include:

- When the PID indicates sustained (15 minutes) breathing zone organic vapor concentrations exceeding 25 meter units, the designated work zone (exclusion zone) shall be evacuated until the vapor levels have subsided.
- If HCN readings equal or exceed the STEL, 4.7 ppm, field activities must stop immediately and the MWH HSC should be notified.
- If the TWA of a contaminant exceeds the maximum use concentration (MUC) of the air-purifying respirator cartridge, operations will cease and the work zone will be evacuated. The MUC for organic vapor cartridges is 1,000 ppm.
- If the four-gas meter indicates percent LELs of flammables in excess of 25 percent, operations will cease, and the work zone will be evacuated.
- If the oxygen concentration, as measured by the four-gas meter, falls below 19.5 percent or exceeds 23.5 percent, operations will cease and the work zone will be evacuated until the oxygen concentration returns to the 19.5 to 23.5 percent range.

- If no air-purifying respirator cartridge is available or protection greater than an air-purifying respirator is recommended by the respirator manufacturer or recognized publications or authorities, operations will cease and the work zone will be evacuated.
- If contaminant levels, as measured by the PID, reach their corresponding IDLH values, operations will cease and the work zone will be evacuated.
- If lead concentration exceeds 10 mg/m³ or PAH concentrations exceed 0.5 mg/m³, operations will cease and the work zone will be evacuated.

The MWH HSC will be notified of any upgrade in PPE in accordance with Section 3. For quick reference, Table D-1 in Appendix D of this site-specific SSP addendum shows the specific action levels for upgrading to Level C PPE and ceasing operations.

8.0 - SITE EVACUATION PROCEDURES

Prior to beginning work, the OSO will brief all MWH and subcontractor employees on what the evacuation signal should be. The signal may be a verbal command or an audible alarm, such as a bell or horn.

Prior to work, the OSO will determine a meeting place if evacuation is necessary. Preferably, the meeting place should be upwind of the work activities and at a safe distance. All MWH and subcontractor employees should be informed of the meeting location.

If evacuation is necessary, everyone should go directly to the meeting area. The OSO should account all personnel (MWH and subcontractor). This will mean checking the sign-off documentation on this SSP addendum or the daily sign-in roster. The local IPL site contact should immediately be notified of any missing personnel as well as their last known whereabouts.

8.1 - Site Evacuation

If an evacuation of the site is necessary, certain rules must be strictly followed:

- Employees in the vicinity should immediately shut down all equipment and disconnect electrical or flammable power sources to machinery.
- Immediately after personnel are alerted, they will evacuate the facility via the nearest escape route.
- All evacuated personnel will assemble at the predetermined meeting place.
- Employees should not wait for friends; the OSO will ensure all personnel have evacuated before departing.
- Employees should move quickly and calmly without panic.
- Employees should not smoke.

- Once assembled, employees should remain calm and quiet while the OSO takes roll call and assesses the situation. Each employee must report to the OSO until everyone is accounted for and evacuation is complete.

8.2 - Off-Site Evacuation

If an incident is large enough, evacuation of off-site personnel may be required. If off-site evacuation is necessary, appropriate local notification procedures must be followed, usually by notifying the local fire department. MWH personnel should not attempt to evacuate off-site personnel; local authorities shall be responsible for any off-site evacuation. All MWH employees should follow the evacuation directions given by the local authorities. The OSO should offer to remain at the command post to supply information. If told to leave, the OSO should leave.

Local authorities will have present an on-scene commander. The on-scene commander will direct emergency operations and will have assistance from the local fire department, police department, and emergency government.

After evacuating to a safe area, the PM should be contacted; or, in the PM's absence, the HSC Office Supervisor should be contacted.

9.0 - GENERAL SITE SAFETY REQUIREMENTS

The following practices are expressly forbidden during on-site activities:

- Smoking, eating, drinking, or chewing gum or tobacco while in the work zone or any potentially contaminated area.
- Igniting flammable materials in the work zone. Equipment shall be bonded and grounded, sparkproof, and explosion-resistant, as appropriate.
- Making contact with potentially contaminated substances. Walking through puddles or pools of liquid; kneeling on the ground; and leaning, sitting, or placing equipment on the contaminated soil shall be avoided.
- Performing tasks in the exclusion zone individually. Personnel shall work using the "buddy system" at all times.
- Sampling from a boat without Coast-Guard-approved life jacket.

Personnel should keep the following rules in mind when working in the exclusion zone:

- Hazard assessment is a continual process; personnel must be constantly aware of their surroundings, the chemical/physical hazards that are present, and the limitations of PPE.

- The number of personnel working in the exclusion zone shall not exceed the minimum number necessary to perform work tasks in a safe and efficient manner.
- Team members will be familiar with the physical characteristics of each investigation site, including wind direction, site access, location of communication devices, and safety equipment.
- Prior to initiating intrusive activities, the locations of overhead power lines and underground utilities must be established.

Team members will be familiar with the emergency hand signals specified in the table below:

Emergency Hand Signals

SIGNAL	INDICATION
¥ Hand gripping throat	¥ Respirator problems, can't breathe
¥ Grip team member's wrist or place both hands around waist	¥ Leave site immediately, no debate!
¥ Thumbs up	¥ OK, I'm all right, I understand
¥ Thumbs down	¥ No, negative

MSDSs shall be maintained on site for any chemical brought on site for use during the removal action. MSDSs for Alconox[®], methanol, hexane, isobutylene, and gasoline are provided in Attachment F.

ATTACHMENT A

ATTACHMENT A

Environmental/Occupational Health & Safety Manual

SUBJECT: PERMIT REQUIRED CONFINED SPACES

I. PURPOSE

To set forth minimum requirements and procedures for the safety and health of Montgomery Watson employees who work in and about confined spaces.

II. REFERENCES

- A. Federal Occupational Safety and Health Agency (OSHA) Standard: Title 29, Code of Federal Regulations, Part 1910.146 "Permit Required Confined Spaces" 1993.
- B. Corresponding requirements from various State-administered OSHA programs.
- C. American National Standards Institute, ANSIZ117.1-1977.
- D. National Institute for Occupational Safety and Health (NIOSH) Criteria Document, "Working in Confined Spaces," December 1979.
- E. NIOSH Alert, "Request for Assistance in Preventing Occupational Fatalities in Confined Spaces," January 1986.

III. ATTACHMENTS

- A. Entry Permit, "Inspection and Testing for Confined Space Entry"
- B. Area Danger Sign
- C. Simplified Permit (Ventilation Control)
- D. Sewer Entry Procedure
- E. Tank Entry Procedure

IV. DISCUSSION

Confined spaces are normally considered to be enclosures having limited means for personnel entry and exit, by reason of location, size or number of openings; and,

Environmental/Occupational Health & Safety Manual

unfavorable natural ventilation which could contain or produce dangerous air contaminants, flammable or explosive atmospheres, and/or oxygen deficiency.

Confined spaces include, but are not limited to, storage tanks, process or reaction vessels, boilers, pits, silos, vats, degreasers, ventilation and exhaust ducts, sewers, tunnels, underground utility vaults, trenches, excavations, pumping/lift stations and pipelines.

The multiple hazards associated with entrance and work in confined spaces are capable of causing bodily injury, illness, or death to Montgomery Watson employees. Confined spaces can become unsafe as a result of: (1) possible atmospheric contamination by toxic or flammable vapors; (2) oxygen deficiency (i.e. less than 19.5%); (3) the possibility of liquids, gases, vapors or solids being admitted during occupancy; or (4) physical isolation and engulfment of employees in need of rescue.

This procedure prescribes minimum requirements for safe entry, continued work in, and exit from confined spaces. Additionally, it describes the steps necessary to protect Montgomery Watson personnel from exposure to dangerous air contaminants, explosive atmospheres, and/or oxygen deficiency.

V. DEFINITIONS

- A. **Atmosphere** - Gases, vapors, mists, fumes and dusts present within the confined space.
- B. **Attendant** - A standby employee who is stationed nearby to the confined space operation. The attendant is familiar with confined space procedures, in recognizing signs of fatigue or overexposures, is in frequent communication with entrants, insures the security of the work site, is authorized to terminate any operations, and is prepared to summon rescue & emergency services.
- C. **Authorized Entrants** - An employee who has received special training in confined space procedures, specialized equipment, hazard recognition, and is authorized by the company to enter a permit space.
- D. **Confined Space** - A space that
 - 1. Is large enough and so configured that an employee can bodily enter and perform assigned work; AND
 - 2. Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits); AND
 - 3. Is not designed for continuous employee occupancy.

Environmental/Occupational Health & Safety Manual

- E. **Hazardous Atmosphere** - An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability of self-rescue, injury, or acute illness. This would include:
1. The presence of a flammable gas, vapor, or mist in excess of 10% of the lower explosive level (LEL).
 2. Airborne combustible dust at a concentration that exceeds its LEL. (Note: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less.)
 3. Any oxygen concentration below 19.5% or above 23.5%.
 4. Any atmospheric condition recognized as immediately dangerous to life and health (IDLH).
 5. An atmospheric concentration of any substance above its permissible exposure limit (PEL).
- F. **Entry** - Passing through an opening into a permit-required confined space. Entry is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.
- G. **Entry Supervisor** - The employee assigned the overall responsibility for the safe confined space operation. The entry supervisor must be familiar with the operation and its hazards, must insure that all appropriate tests have been conducted before endorsing the entry form, verify availability of rescue services, control access to the space during operations, and insure continued operational compliance during any transfer of responsibilities/personnel.
- H. **Hot Work** - Any work involving burning, welding, or similar fire producing operations, as well as work that produces a source of ignition such as drilling, abrasive blasting and space heating.
1. **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.
 - J. **Inerting** - Displacement of the atmosphere by a nonreactive gas (such as nitrogen or carbon dioxide) so that the resultant atmosphere is noncombustible. (Note: This procedure produces an IDLH oxygen-deficient atmosphere.)

Environmental/Occupational Health & Safety Manual

- K. **LEL** - Minimum concentration of a combustible gas, vapor, or mist in air that will ignite if an ignition source is present.
- L. **Material Safety Data Sheet (MSDS)** - A document prepared by the manufacturer or importer of a chemical material which lists its fire, physical and health hazards, as well as, recommended workplace controls and personal protective equipment.
- M. **Non-Permit Confined Space** - A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.
- N. **Oxygen Deficiency** - An atmosphere containing less than 19.5 percent oxygen by volume. Normal air contains approximately 21% oxygen. For the purpose of this procedure, any atmosphere containing less than 19.5% oxygen by volume shall be considered oxygen deficient and IDLH.
- O. **PEL** - The maximum time weighted average concentration of a substance to which an employee can be exposed 8 hours a day, 5 days a week for a working lifetime, without harmful effects. PELs are established by OSHA.
- P. **Permit-Required Confined Space** - A confined space that has one or more of the following characteristics:
 - 1. Contains or has a potential to contain a hazardous atmosphere;
 - 2. Contains a material that has the potential for engulfing an entrant;
 - 3. 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
 - 4. Contains any other recognized serious safety or health hazard.
- Q. **Purging** - Method by which gases, vapors, or other airborne contaminants are displaced from a confined space.

VI. PROCEDURE

- A. The entry supervisor shall evaluate the workplace for "confined spaces."
 - 1. The permit-required confined spaces (PRCSs) shall be identified.

Environmental/Occupational Health & Safety Manual

2. All PRCSSs shall be identified with a sign reading: DANGER -- Permit-Required Confined Space, Do Not Enter (Attachment B), or any other method, such as training, or a site identification map.
- B. If entry is required into a PRCSS, the entry supervisor must insure that the following requirements are met:
1. Written procedure for safe entry must be established. (Refer to Attachment D "Sewer Entry Procedure" and Attachment E "Tank Entry Procedure" for two typical entries at Montgomery Watson.)
 2. All equipment referenced in the appropriate written procedures must be provided.
 3. Perform the air testing and monitoring.
 4. Provide at least one attendant (or as many as needed to adequately cover multiple entry operations).
 5. Designate in writing the names of the authorized entrants, attendants, and entry supervisors.
 6. Establish a plan for providing rescue and emergency services.
 7. Establish an expiration time/date for the PRCSS operation.
 8. Complete and issue the Entry Permit, and maintain a copy for future reference.
 9. Conduct an annual review of the PRCSS program, using past completed Entry Permits. Maintain a written record of this.
- C. A simplified entry may be employed provided that the entry supervisor determines that the following two conditions are met:
1. Identified hazards are exclusively atmospheric (for example, no direct contact hazards with corrosive liquids, no radiation, mechanical or electrical hazards); AND
 2. The atmospheric hazards (actual or potential) can be eliminated by continuous forced air ventilation, as measured from outside the PRCSS.

Environmental/Occupational Health & Safety Manual

- D. The simplified entries into a PRCs noted in "C" above involve the following steps (which require verification from the entry supervisor):
1. Completion of employee training.
 2. Removal of entry cover safely, e.g., watch for pressure and explosive potential.
 3. Guard opening created by removal of the cover promptly.
 4. Test space for oxygen content, LEL, and toxic air contaminants to PEL levels.
 5. Provide continuous forced air ventilation insuring a non-hazardous atmosphere.
 6. Retest periodically for oxygen content, LEL, and toxic air contaminants.
 7. When a hazard is detected:
 - a. Leave the confined space.
 - b. Reevaluate the site.
 - c. Correct any deficiencies.
 8. Maintain written documentation of the entry (See Attachment C, "Simplified Permit") and include:
 - a. Date
 - b. Location
 - c. Signature
- E. If any entry will be made into a PRCs by a contractor employee, a visitor, official, or any regulatory personnel, the entry supervisor must notify that person of the procedures, hazards, and general precautions of the entry.
- F. Employee Training
1. Employees assigned to work in or about PRCs shall have documented training proficiency that includes:
 - a. Chemical and physical hazards

Environmental/Occupational Health & Safety Manual

- b. Safe work practices and techniques
 - c. Testing requirements/Instrumentation
 - d. Safety Equipment, including:
 - (1) Respiratory protection
 - (2) Protective clothing
 - (3) Lifelines, harnesses, extraction devices, etc.
 - e. Emergency first aid and rescue procedures
 - f. Applicable Federal, state and local regulations
 - g. This Permit Required Confined Space Procedure
2. A written record will be maintained of the employee's training, including the name of the trainer.

G. Personal Protective Devices

1. Respirators may be required by the entry supervisor to provide protection against varying concentration levels of toxic air contaminants.
 - a. All users must be trained as regards the use/limitations of the specific respirator, and be medically qualified as noted in Bulletin VIII-2 ("Respiratory Protection Equipment"), H&S Manual.
 - b. All respirators have use limitations; use of the wrong respirator can result in serious injury or death.
2. Hand & Body Protection may be required by the entry supervisor if the PRCS contains any potential chemical, mechanical, or abrasive hazards.
 - a. Protective gloves and coveralls must provide chemical resistance from hazardous materials. Refer to Bulletin VIII-5 ("Hand & Body Protection"), H&S Manual.
 - b. Secondary exposures to chemicals can occur by use of improperly rated materials, i.e., chemical permeation through glove material.

Environmental/Occupational Health & Safety Manual

3. Fall Protection is required during ALL PRCS operations as part of the Non-Entry Rescue Requirements. (Refer to next section, H.4.)
 - a. Full-body harness must meet the Class III requirements of OSHA 1926.104 and ANSI A10.14.
 - b. Nylon lifeline at least 1/2" in diameter and a minimum breaking strength of 2,650 pounds.
 - c. Careful inspection of equipment before and after use is required.
4. Eye & Face Protection may be required by the entry supervisor to protect against chemical, splashing, or mechanical hazards.
 - a. Protective glasses, goggles, or face shields must be used within their design limitations. See Bulletin VIII-1 ("Eye & Face Protection"), H&S Manual.
 - b. The potential hazard will determine the type of protection to be worn.

H. PRCS Rescue

1. A rescue team must be designated and available for all PRCS entries. The rescue team can be either in-house employees or from an outside service.
2. If in-house employees,
 - a. Employees must be trained and provided all protective and rescue equipment.
 - b. Employees must be trained to perform all duties, and receive same training as authorized entrants.
 - c. Must complete a yearly practice exercise in a simulated/actual PRCS using mannequins or actual persons.
 - d. Each team member shall have received basic first aid and CPR training in the past. One of the members must be currently certified and available.
3. If outside service,
 - a. Entry supervisor must inform rescue service of hazards they may encounter if called.

Environmental/Occupational Health & Safety Manual

- b. Entry service must provide rescue service with access to all permit spaces for planning and practice.

4. Non-Entry Rescue Requirements

Systems or methods to provide non-entry rescue must be in place during all PRCS entries, unless the entry supervisor determines that such systems would increase risks to entrants.

- a. Each entrant must wear a chest or full body harness, with a lifeline attached to a "D" ring located at the center of the entrant's back or above the entrant's head. (Wristlets may be used if the entry supervisor determines that this is the most effective alternative.)
- b. The other end of the lifeline shall be attached to a mechanical device (such as a winch) or fixed point outside the PRCS to begin immediate rescue.

Mechanical devices are required for entry into vertical permit spaces more than 5 feet deep.

- 5. MSDSs or similar material must be kept at the worksite and made available to the medical facility treating any exposed entrant.

VII. SUMMARY

Entry into Permit-Required Confined Spaces entails extensive training, specific monitoring, following detailed procedures, and keeping accurate records. This is reflective of the potentially serious exposure hazards, and even fatalities, that can occur during an improper entry.

Therefore, the company requires full compliance with these provisions during all entries into PRCSs. If you have any further questions, or need technical support and training, please contact the Corporate Health & Safety Office at (818)568-6678 in Pasadena.

Environmental/Occupational Health & Safety Manual

ENTRY PERMIT
INSPECTIONS AND TESTS FOR ENTRY
INTO PERMIT REQUIRED CONFINED SPACES

Date: _____
Job Number: _____

Client Name/Address: _____
Space to be Entered: _____
Identified Hazards: _____
Authorized Entrants (By Name): _____
Attendants (By Name): _____
Rescue & Emergency Services Provided By: _____
Telephone: _____

PERMIT EXPIRATION

This permit EXPIRES: _____ Time/Date: _____

MONITORING DATA
(Monitor in this order: Oxygen, LEL, Toxicity)

TIME	% OXYGEN (19.5% to 23.5%)	% LEL (<10%)	TOXICITY e.g., hydrogen sulfide 10 ppm; carbon monoxide 35 ppm. (Others in PEL Tables.)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Instrumentation (Serial No./Calibration Date): _____

Environmental/Occupational Health & Safety Manual

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE

- Chemical Goggles
- Face Shield
- Safety Glasses

EXTREMITIES

- Hard Hat
- Gloves (TYPE: _____)
- Rubber Boots
- Safety Shoes

BODY

- Cotton Coveralls
- Tyvek® Suite
- Coated Tyvek® Suit
- Other (_____)

RESPIRATORY

- SCBA
- Airline (Supplied Air)
- Air Supplied w/Egress
- Air Purifying, Model: _____
Cartridge Type: _____
- Disposable (Brand/Type: _____)

OTHER

- Hearing Protection
- Full Body Harness w/"D" ring and Lifeline

EMERGENCY EQUIPMENT

- Fire Extinguisher. Type: _____ Location: _____
- Emergency Eyewash/Shower Facility. Location: _____
- Emergency Telephone. Location: _____
- Fire/Emergency Alarm. Location: _____

CHECKLIST

	YES	N/A
All lines leading to and from permit required confined space have been blinded or disconnected.	_____	_____
Electrical service disconnected or locked out.	_____	_____
Grounding and bonding wire in place.	_____	_____
Breathing supply and alarms checked and are in proper condition.	_____	_____
The complete respiratory supply system has been checked and is in proper condition.	_____	_____

Environmental/Occupational Health & Safety Manual

All safety harnesses and life lines checked and in proper condition. (Mechanical hoisting device required for vertical entries greater than 5 feet deep.)

Required protective clothing (gloves, boots, etc.) being used.

Employees have been trained in the use, care, and limitations of their respiratory protective equipment.

Outside attendant trained in emergency procedures.

All emergency systems such as air packs, fire extinguishers, backup breathing supply, alarms, etc., ready for use.

Danger sign posted.

Ventilation equipment in use.

All electrical equipment listed Class 1, Division 1, Group D and non-sparking tools.

SPECIAL INSTRUCTIONS

Completed By: _____ Signature: _____
(Print Name) Date: _____

Entry Supervisor Approval: _____
(If different than above.) (Print Name) (Date)

(Signature)

Environmental/Occupational Health & Safety Manual

SIMPLIFIED PERMIT
FOR
PERMIT REQUIRED CONFINED SPACES

Date: _____
Job Number: _____

Client Name/Site Address: _____
Space to be Entered: _____
Identified Hazards: _____

MONITORING DATA
(Monitor in this order: Oxygen, LEL, Toxicity)

TIME	% OXYGEN (19.5% to 23.5%)	% LEL (<10%)	TOXICITY e.g., hydrogen sulfide 10 ppm; carbon monoxide 35 ppm. (Others in PEL Tables.)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

PERSONAL PROTECTIVE EQUIPMENT

List: _____

CHECKLIST

	YES	N/A
Safe to remove cover.	_____	_____
Opening guarded.	_____	_____
Space tested for oxygen, LEL, and toxic contaminants.	_____	_____
Provide continuous forced air ventilation.	_____	_____
Retest after ventilation, but prior to entry. (Periodically, as appropriate.)	_____	_____

Environmental/Occupational Health & Safety Manual

HAZARD DETECTION

If a hazard is detected: Leave the confined space. Reevaluate the site. Correct any deficiencies.

APPROVAL

Completed By: _____ Signature: _____
(Print Name) Date: _____

Entry Supervisor Approval: _____
(If different than above.) (Print Name) (Date)

(Signature)

SEWER ENTRY PROCEDURE

I. GENERAL DISCUSSION

Sewer entry differs in two vital respects from other permit entries; first, there rarely exists any way to completely isolate the space (a section of a continuous system) to be entered; second, because isolation is not complete, the atmosphere may suddenly and unpredictably become lethally hazardous (toxic, flammable or explosive) from causes beyond the control of the entrant or employer.

A. *Adherence to procedure.*

Montgomery Watson designates as entrants only employees who are thoroughly trained in these sewer entry procedures and who demonstrate that they follow these entry procedures exactly as prescribed when performing sewer entries.

B. *Atmospheric monitoring.*

Entrants should be trained in the use of, and be equipped with, atmospheric monitoring equipment which sounds an audible alarm, in addition to its visual readout, whenever one of the following conditions is encountered: oxygen concentration less than 19.5 percent; flammable gas or vapor at 10 percent or more of the lower explosive limit (LEL); or hydrogen sulfide or carbon monoxide at or above their PEL (10 ppm or 35 ppm, respectively); or, if a broad range sensor device is used, at 100 ppm as characterized by its response to its hydrocarbon calibration source. While the oxygen sensor/broad range sensor instrument can be used for sewer entry, substance specific devices should be used whenever actual contaminants have been identified. The instrument should be carried and used by the entrant in sewer line work to monitor the atmosphere in the entrant's environment, and in advance of the entrants' direction of movement, to warn the entrant of any deterioration in atmospheric conditions. Where several entrants are working together in the same immediate location, one instrument, used by the lead entrant, is acceptable.

C. *Entry Coordination.*

Sewer crews should develop and maintain liaison, to the extent possible, with the local weather bureau and fire and emergency services in their area so that sewer work may be delayed or interrupted and entrants withdrawn whenever flammable or other hazardous materials are released into sewers during emergencies by industrial or transportation accidents.

Environmental/Occupational Health & Safety Manual

D. *Special Equipment.*

Entry into large bore sewers may require the use of special equipment. Such equipment might include such items as atmosphere monitoring devices with automatic audible alarms, escape self-contained breathing apparatus (ESCBA) with 5 to 10 minutes air supply (or other NIOSH approved self-rescuer), and waterproof flashlights, and may also include boats and rafts, radios and rope stand-offs for pulling around bends and corners as needed.

II. POTENTIAL HAZARDS

The employees could be exposed to the following:

A. *Engulfment.*

B. *Presence of toxic gases.*

Equal to or more than 10 ppm hydrogen sulfide. If the presence of other toxic contaminants is suspected, specific monitoring to its PEL will be conducted.

C. *Presence of explosive/flammable gases.*

Equal to or greater than 10% of the lower explosive limit (LEL).

D. *Oxygen Deficiency.*

A concentration of oxygen in the atmosphere equal to or less than 19.5% by volume.

III. SIMPLIFIED ENTRY REQUIREMENTS

A permit required confined space may be entered without the need for completing an entry permit (Attachment A) or assigning an attendant, if: 1) the space is determined *not* to be a permit required confined space, or 2) the space can be maintained in a safe condition for entry by mechanical ventilation alone. All spaces shall be considered permit-required confined spaces until a pre-entry evaluation demonstrates otherwise.

A Simplified Permit (Attachment C) must be completed by the entry supervisor before entry into these spaces. This simplified permit verifies completion of minimum safety guidelines. If problems are encountered, however, the entrants must be removed, and the permit space re-evaluated.

A. *Pumps and Lines.*

All pumps and lines which may reasonably cause contaminants to flow into the space shall be disconnected, blinded and locked out, or effectively isolated by other means to prevent development of dangerous air contamination or engulfment. Not all

Environmental/Occupational Health & Safety Manual

laterals to sewers or storm drains require blocking. However, where experience or knowledge of industrial use indicates there is a reasonable potential for contamination of air or engulfment into an occupied sewer, then all affected laterals shall be blocked. If blocking and/or isolation requires entry into the space, the provisions for entry into a permit-required confined space must be implemented.

B. *Surveillance.*

The surrounding area shall be surveyed to avoid hazards such as drifting vapors from the tanks, piping, or sewers.

C. *Testing.*

The atmosphere within the space will be tested to determine whether dangerous air contamination and/or oxygen deficiency exists. An alarm only type gas monitor may be used. Testing shall be performed by the entry supervisor who has successfully completed training for the monitor he/she will use. The minimum parameters to be monitored are oxygen deficiency, LEL, and hydrogen sulfide concentration. The test results shall be recorded on the Simplified Permit and kept at the work site for the duration of the job. The supervisor will certify in writing, based upon the results of the pre-entry testing, that all hazards have been eliminated. Affected employees shall be able to review the testing results. The most hazardous conditions shall govern when work is being performed in two adjoining, connecting spaces.

D. *Entry Procedures.*

If there are no non-atmospheric hazards present and if the pre-entry tests show there is no dangerous air contamination and/or oxygen deficiency within the space and there is no reason to believe that any is likely to develop, entry into and work within may proceed. Continuous testing of the atmosphere in the immediate vicinity of the workers within the space shall be accomplished. Forced air ventilation into the confined space shall be provided at all times during the entry operation. The workers will immediately leave the permit space when any of the gas monitor alarm set points are reached as defined. Workers will not return to the area until the entry supervisor, who has completed the gas detector training, has used a direct reading gas detector to evaluate the situation and has determined that it is safe to enter.

E. *Rescue.*

Arrangements for rescue services are not required for entry into simplified permit spaces.

Environmental/Occupational Health & Safety Manual

D. *Space Ventilation.*

Mechanical ventilation systems, where applicable, shall be set at 100% outside air. Where possible, open additional manholes to increase air circulation. Use portable blowers to augment natural circulation if needed. After a suitable ventilating period, repeat the testing.

Entry may not begin until testing has demonstrated that the hazardous atmosphere has been eliminated.

E. *Entry Procedures.*

The following procedure shall be observed under any of the following conditions:

- Testing demonstrated the existence of dangerous or deficient conditions and additional ventilation cannot reduce concentrations to safe levels;
 - The atmosphere tests as safe but unsafe conditions can reasonably be expected to develop;
 - It is not feasible to provide for ready exit from spaces equipped with automatic fire suppression systems and it is not practical or safe to deactivate such systems; or
 - An emergency exists and it is not feasible to wait for pre-entry procedures to take effect.
1. All personnel must be trained.
 2. A self contained breathing apparatus shall be worn by any person entering the space.
 3. At least one worker shall stand by the outside of the space ready to give assistance in case of emergency.
 4. The standby worker shall have a self contained breathing apparatus available for immediate use.
 5. There shall be a least one additional worker within sight or call of the standby worker. Continuous powered communications shall be maintained between the worker within the confined space and standby personnel.

Environmental/Occupational Health & Safety Manual

6. If at any time there is any questionable action or non-movement by the worker inside, a verbal check will be made. If there is no response, the worker will be moved immediately. Exception: If the worker is disabled due to falling or impact, he/she shall not be removed from the confined space unless there is immediate danger to his/her life.

Local fire department rescue personnel shall be notified immediately.

7. The standby worker may only enter the confined space in case of an emergency (wearing the self contained breathing apparatus), if previously trained and qualified, and only after being relieved by another worker.

Safety belt or harness with attached lifeline shall be used by all workers entering the space with the free end of the line secured outside the entry opening.

The standby worker shall attempt to first remove a disabled worker via his lifeline before entering the space.

8. When practical, these spaces shall be entered through side openings--those within 3 1/2 feet (1.07 m) of the bottom. When entry must be through a top opening, the safety belt shall be of the harness type that suspends a person upright and a hoisting device or similar apparatus shall be available for lifting workers out of the space.
9. In any situation where their use may endanger the worker, use of a hoisting device or safety belt and attached lifeline may be discontinued, if approved by the entry supervisor.
10. When dangerous air contamination is attributable to flammable and/or explosive substances, lighting and electrical equipment shall be Class 1, Division 1 rated per National Electrical Code and no ignition sources shall be introduced into the area.
11. Continuous gas monitoring shall be performed during all confined space operations. If alarm conditions change adversely, entry personnel shall exit the confined space and a new confined space permit issued.

F. *Rescue.*

1. Call the fire department services for rescue.
2. Where immediate hazards to injured personnel are present, workers at the site shall implement emergency procedures to fit the situation.

TANK ENTRY PROCEDURE

I. GENERAL DISCUSSION

Workplaces where tank cars, trucks, and trailers, chemical storage tanks, dry bulk tanks and trailers, railroad tank cars and similar tanks are installed, inspected or serviced pose potential confined spaces hazards to employees.

A. Adherence to procedure

Montgomery Watson designates as entrants only employees who are thoroughly trained in these tank entry procedures and who demonstrate that they follow these entry procedures exactly as prescribed when performing tank entries.

B. Atmospheric monitoring

Entrants should be trained in the use of, and be equipped with, atmospheric monitoring equipment which sounds an audible alarm, in addition to its visual readout, whenever one of the following conditions is encountered: oxygen concentration less than 19.5 percent; flammable gas or vapor at 10 percent or more of the lower explosive limit (LEL); toxic air contaminant at or above its PEL; or, if a broad range sensor is used, at 100 ppm as characterized by its response to its hydrocarbon calibration source.

While the oxygen sensor/broad range sensor can be used for tank entry, substance specific devices should be used whenever actual contaminants have been identified. Monitoring should be repeated periodically as directed by the entry supervisor.

C. Sources of Hazards

New Tanks/Installations

In addition to the mechanical hazards arising from the risks that an entrant would be injured due to contact with components of the tank or the tools being used, there is also the risk that a worker could be injured by breathing fumes from welding materials or mists or vapors from materials used to coat or clean the tank interior. In addition, many of these vapors and mists are flammable, so the failure to properly ventilate a tank could lead to a fire or explosion.

Servicing/Inspection, Existing Tanks

Environmental/Occupational Health & Safety Manual

Tanks which have been in service may contain residues of dangerous materials, whether left over from previous cargoes or generated by chemical or bacterial action on residues of non-hazardous cargoes.

D. Control of Hazards

1. **Welding:** Local exhaust ventilation shall be used to remove welding fumes once the tank or carrier is completed to the point that workers may enter and exit only through a manhole. (Follow the requirements of 29 CFR 1910, Subpart Q, OSHA's welding standard, at all times.) Welding gas tanks may never be brought into a tank or carrier that is a permit entry confined space.

Surface materials shall be removed 4 inches or more from any surface area where welding or any torch work will be done and care taken that the atmosphere within the tank remains well below the LEL.

2. **Application of interior coatings/linings:** Atmospheric hazards shall be controlled by forced air ventilation sufficient to keep the atmospheric concentration of flammable materials below 10% of the lower explosive limit (LEL). The appropriate respirators are provided and shall be used in addition to providing forced ventilation if the forced ventilation does not maintain acceptable respiratory conditions.

II. SIMPLIFIED ENTRY REQUIREMENTS

A permit required confined space may be entered without the need for completing an Entry Permit (Attachment A), or to have an attendant assigned, if: 1) the space is determined not to be a permit required confined space, or 2) the space can be maintained in a safe condition for entry by mechanical ventilation alone. All spaces shall be considered permit required confined spaces until a pre-entry evaluation demonstrates otherwise.

- A. A Simplified Permit (Attachment C) must be completed by the entry supervisor before entry into these spaces. This Simplified Permit verifies completion of minimum safety guidelines. If problems are encountered, however, the entrants must be removed, and the space evaluated.

1. All pumps and lines which may reasonably cause contaminants to flow into the space shall be disconnected, blinded and locked out, or effectively isolated by other means to prevent development of dangerous air contaminants or engulfment. If blocking and/or isolation requires entry into the space, the provisions listed in the Entry Permit (Attachment A) must be followed.

Environmental/Occupational Health & Safety Manual

2. The atmosphere within the space will be tested to determine whether dangerous air contamination and/or oxygen concentration problems exist. Testing shall be performed by the entry supervisor who has successfully completed training for the monitor used. The minimum checks will be for oxygen deficiency/enrichment, LEL, and toxic gases. The test results shall be recorded on the Simplified Permit and kept at the work site for the duration of the job. Affected employees shall be able to review the testing results.
3. If there are no non-atmospheric hazards present and if the pre-entry tests show there is no dangerous air contamination and/or oxygen concentration problems within the space and there is no reason to believe that any is likely to develop, entry into and work within may proceed. Periodic testing, as determined by the entry supervisor, will be completed.

Forced air ventilation into the confined space shall be provided at all times during the entry operation. The workers will immediately leave the permit space when any of the gas monitor alarm set points are reached as defined. Workers will not return to the area until the entry supervisor determines it is safe to do so.

4. Arrangements for rescue services are not required for entry into simplified permit spaces.

III. ENTRY PERMIT REQUIREMENTS

A. Permits.

The entry supervisor must insure that an Entry Permit (Attachment A) is completed if the space has been classified as a permit required confined space, and cannot be entered using a Simplified Permit (Attachment C). If circumstances cause an interruption in the work or a change in the alarm conditions for which entry was approved, the employees must be removed immediately from the space, and a new Entry Permit completed.

B. Testing.

The confined space atmosphere shall be tested whether dangerous air contamination and/or oxygen concentration problems exist. A direct reading gas monitor shall be used. The test results shall be recorded on the Entry Permit, and kept at the work site for the duration of the job. Affected employees shall be able to review the testing results.

Environmental/Occupational Health & Safety Manual

C. Space Ventilation.

Mechanical ventilation systems, where applicable, shall be set at 100% outside air. After a suitable ventilating period, repeat air testing. Entry may not begin until testing has demonstrated that the hazardous atmosphere has been eliminated.

D. Entry Procedures.

The following procedures shall be observed under any of the following conditions:

- Testing demonstrated the existence of dangerous or deficient conditions and additional ventilation cannot reduce concentrations to safe levels;
 - The atmosphere tests as safe but unsafe conditions can reasonably be expected to develop;
 - It is not feasible to provide for ready exit from spaces equipped with automatic fire suppression systems and it is not practical or safe to deactivate such systems; or
 - An emergency exists and it is not feasible to wait for pre-entry procedures to take effect.
1. All personnel must be trained.
 2. A self contained breathing apparatus shall be worn by any person entering the space.
 3. At least one worker shall stand by on the outside of the space ready to give assistance in case of emergency.
 4. The standby worker shall have a self contained breathing apparatus available for immediate use.
 5. There shall be at least one additional worker within sight or call of the standby worker. Continuous communications shall be maintained between the worker in the confined space and standby personnel.
 6. If at any time there is any questionable action or non-movement by the worker inside, a verbal check will be made. If there is no response, the worker will be moved immediately. Exception: If the worker is disabled due to falling or impact, he/she shall not be removed from the confined

Environmental/Occupational Health & Safety Manual

space unless there is immediate danger to his/her life. Local fire department rescue personnel shall be notified immediately.

7. The standby worker may only enter the confined space in case of an emergency (wearing the self contained breathing apparatus), if previously trained and qualified, and only after being relieved by another worker. Safety belt or harness with attached lifeline shall be used by all workers entering the space with the free end of the line secured outside the entry opening. The standby worker shall attempt to first remove a disabled worker via his lifeline before entering the space.
8. When practical, these spaces shall be entered through side openings--those within 3 1/2 feet of the bottom. When entry must be through a top opening, the safety belt shall be of the harness type that suspends a person upright and a hoisting device or similar apparatus shall be available for lifting workers out of the place.
9. In any situation where their use may endanger the worker, use of a hoisting device or safety belt and attached lifeline may be discontinued, if approved by the entry supervisor. An alternate procedure must be instituted.
10. When dangerous air contamination is attributable to flammable and/or explosive substances, lighting and electrical equipment shall be Class 1, Division 1 rated per national Electrical Code and no ignition sources shall be introduced into the area.
11. Continuous gas monitoring shall be performed during all confined space operations. If alarm conditions change adversely, entry personnel shall exit the confined space and a new Entry Permit issued.

E. Rescue

1. Call the fire department services for rescue.
2. Where immediate hazards to injured personnel are present, workers at the site shall implement emergency procedures to fit the situation.

ATTACHMENT B

ATTACHMENT B

1200 CONSTRUCTION SITE - CODE OF SAFE PRACTICES

I. PURPOSE

To provide MWH employees with general rules for safe practices on construction sites.

II. REFERENCES

Title 29 Code of Federal Regulations, Part 1926

Title 8 California Code of Regulations, Subchapter 7, General Industry Safety Orders (GISO)

Title 8 California Code of Regulations, Subchapter 4, Construction Safety Orders (CSO)

III. DISCUSSION

MWH is concerned about the health and safety of its employees. For this reason, a code of safe work practices (Attachment A) has been developed to inform employees of important construction safety procedures and general safe work practices. It is impossible to anticipate every site situation, therefore, good judgment and common sense will be expected from every employee.

The code of safe practices provides brief and general information about safe procedures and practices for construction-related job hazards. MWH maintains a Corporate Health and Safety Manual (including this Code of Safe Practices) which contains detailed policies and procedures governing the types of projects (including construction) MWH performs. Together, the code and project related safety documents provide information for the safe performance of construction-related work. If in doubt about the manner in which to perform a job safely, contact the On-Site Safety Officer, Project Safety Officer, supervisor or superintendent. It is unacceptable to conduct a job in an unsafe manner and/or without sufficient knowledge of how to conduct the job safely.

IV. RESPONSIBILITIES

All management personnel shall follow the procedures contained herein and will fairly and consistently enforce these safe practices.

All employees shall follow the procedures contained herein and render every possible aid to safe operations, and report any infractions of these safe work practices to supervisory personnel.

A copy of this code of safe practices shall either be posted at each construction site or be maintained by the site supervision. Management shall ensure that the location of a copy of this code is known and accessible to all site employees.

All employees shall participate in accident prevention instructions. These instructions will take the form of tailgate safety meetings. These meetings will occur daily (5 minutes), and weekly (15 minutes).

V.

TABLE OF CONTENTS

Subject	Section #	Page
Compressed Gas Cylinders	26.0	09
Confined Space	22.0	08
Concrete Cutting	21.0	08
Cranes.....	19.0	07
Drill Rig Operation.....	20.0	08
Electrical work and Clearances	23.0	08
Excavations and Trenches	24.0	09
First Aid and Health	2.0	03
Fire Prevention	4.0	03
Forklift Safety.....	18.0	7
General Safety Rules	1.0	02
Handling Pipe.....	8.0	04
Hoses, Couplings and Connections.....	13.0	06
Housekeeping	3.0	03
Jackhammers and Chipping Guns	14.0	06
Ladder Safety.....	9.0	04
Machinery and Rotating Equipment.....	12.0	06
Manual Material Handling	7.0	04
Painting.....	27.0	09
Powder Actuated Tools	16.0	09
Personal Protection Equipment (PPE) Requirements	5.0	04
Scaffold Safety	10.0	05
Steamcleaning	15.0	16
Tools and Equipment	11.0	05
Trucks and Heavy Equipment	17.0	07
Welding and Grinding	25.0	09
Working at Elevations.....	6.0	04

VI. PROCEDURE

1.0 GENERAL SAFETY RULES

- 1.1 Anyone known to be under the influence of drugs or intoxicating substances which impair the employee's ability to safely perform the assigned duties shall not be allowed on the job.
- 1.2 No one shall knowingly be permitted or required to work while the employee's ability or alertness is so impaired by fatigue, illness or other causes that it might unnecessarily expose the employee or others to injury.
- 1.3 Employees shall never expose themselves to injury by taking unnecessary chances, rushing work, or by using unsafe methods.
- 1.4 Employees shall make sure their supervisor knows where they are working at all times.
- 1.5 Employees shall be concerned with the safety of others as well as their own.
- 1.2 Horseplay, scuffling, and other acts which tend to have an adverse influence on the safety or well-being of the employees shall be prohibited.

2.0 FIRST AID AND HEALTH

- 2.1 Report all injuries immediately, no matter how slight, to the site supervisor so that arrangements can be made for on-site or off-site medical or first aid treatment.
- 2.2 If an employee becomes too ill to work, he/she must not continue working. The supervisor shall be informed so that arrangements can be made to take care the employee's illness.

3.0 HOUSEKEEPING

- 3.1 Every job site shall be kept in a orderly manner with lumber and debris kept reasonably cleared from work surfaces, passageways, and stairs.
- 3.2 Lumber shall be stacked neatly with nails pulled. Lumber piles must not exceed 15 feet in height if the lumber is handled manually, or 20 feet when handled with equipment.
- 3.3 Lunch areas shall be kept clean. Trash, scrap iron, concrete, wood or other demolition materials shall be kept in proper receptacles for disposal. Trash containers are to be emptied when full.
- 3.4 Tools, materials, equipment or objects must never be placed within 15 feet of any emergency equipment such as a fire hydrant, fire hose reel, breathing air supply, or any other device used for emergency response.
- 3.5 Material lay down, storage areas, and walkways shall be kept neat with easy access, free of dangerous depressions, obstructions, and debris. Tool storage areas must be neat and orderly with adequate walk areas (two feet).

4.0 FIRE PREVENTION

- 4.1 Smoking or the use of open flame devices shall not be used around tanks, vessels, flammable liquids, gases, or containers storing such materials.
- 4.2 No burning, welding, or other source of ignition shall be applied to any enclosed tank or vessel, even if there are some openings, until it has first been determined that no possibility of explosion exists, and authority for the work is obtained from the foreman or site supervisor.
- 4.3 Make sure cigarettes, cigars, pipe embers, and matches are completely extinguished before discarding them.
- 4.4 Employees must never use water to extinguish an electrical fire.
- 4.5 Workers shall not attempt to fight a fire that is out of their ability to control. The local fire department shall be called immediately.
- 4.6 Employees must never use gasoline for cleaning purposes.

5.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

- 5.1 Appropriate PPE must be worn at all times during construction activities. Selected PPE shall conform to the standards approved by The American National Standards Institute (ANSI) and the American Society of Testing and Materials (ASTM), or other recognized authorities (site supervisors will inform employees what PPE is required).

6.0 WORKING AT ELEVATIONS

- 6.1 Employees working at an elevation of 6 feet or higher from any surface, or less if over a hazardous surface, must be protected against falling. Approved protection includes standard guardrails, safety nets and personal fall arrest systems (full body harness and shock absorbing lanyard).
- 6.2 Employees who are afraid to work in high places are instructed to inform their supervisor for reassignment.
- 6.3 When working on elevated areas where traffic or pedestrian will be passing underneath, traffic signs and/or barricade tape must be positioned below to warn of the overhead danger.

7.0 MANUAL MATERIAL HANDLING

- 7.1 Whenever manually lifting materials or equipment, follow these simple procedures:
 - using the large muscles of the legs instead of the smaller muscles of the back by bending at the knees and straddling the load;
 - sizing up a load before lifting, if it is too heavy, get help;
 - never twist when lifting;
 - hold the object close to the body;
 - ensure secure footing and safe path;
 - staying in shape and limber; and
 - using a stool or a step ladder to reach objects over shoulder height.

8.0 HANDLING PIPE

- 8.1 Employees shall keep fingers out of the open ends of pipe.
- 8.2 Employees shall not roll pipe towards people or objects.
- 8.3 When using skids or timber, employees shall make sure they are strong enough to support the load and are placed securely in place.
- 8.4 Employees shall chock all pipe to prevent unexpected movement. Employees shall not walk on pipe or stand on the downhill side of pipe that is not secured in place.

9.0 LADDER SAFETY

- 9.1 Ladders shall not be loaded in excess of the safe capacity for which they were designed.
- 9.2 Employees shall face the ladder while climbing and descending.
- 9.3 Employees shall not place planks on top of step ladders. This is not a safe working surface.
- 9.4 Employees shall not leave tools unattended on the top step of step ladders. They may fall and strike persons below.
- 9.5 Ladders shall not be spliced together.
- 9.6 Ladders shall be placed on secure footing and be protected from displacement by nailing a cleat to the floor in front of the ladder (when possible), fastening the feet firmly to the floor or lashing the ladder in place with rope or wire to the object on which it rests. Ladders used in trenches can be secured by driving a metal stake into the soil and lashing the ladder to it. The stake shall not protrude past the rail to the extreme that it becomes a hazard to persons using the ladder.
- 9.7 Ladders used for work near energized electrical conductors must have non-conductive side rails.
- 9.8 Employees shall not stand or work on the top three rungs of the ladder.
- 9.9 The top of a ladder shall be a minimum of 3 feet above the landing on which it rests.
- 9.10 When placing ladders close to a wall, the horizontal distance from the wall to the foot of the ladder must never be less than one-fourth of the length of the ladder.

10.0 SCAFFOLD SAFETY

- 10.1 Employees shall not climb on a scaffold unless they have been properly trained scaffold safety and are capable of recognizing if a scaffold is safe.
- 10.2 Slippery conditions on scaffolds shall be eliminated as soon as possible after they occur. Tools, materials, and debris shall not be allowed to accumulate in quantities to cause a hazard.

- 10.3 Materials being hoisted onto a scaffold shall have a tag line.
- 10.4 Employees shall not work on scaffolds during storms or high winds.
- 10.5 Scaffold planks must never be notched.

11.0 TOOLS SAFETY

- 11.1 Employees shall keep tools and equipment in good working order. Employees shall check tools for damage or defects before use. Tools that are in need of repair shall not be used.
- 11.2 Exhaust from gas operated machines produce carbon monoxide and shall not be allowed accumulate concentrated levels in work spaces.
- 11.3 Pipe or Stillson wrenches shall not be used as a substitute for other wrenches. Only appropriate tools shall be used for each job.
- 11.4 Wrenches shall not be altered by the addition of handle-extensions or "cheaters."
- 11.5 Wood or metal files shall be equipped with handles. Employees shall not use files or screwdrivers to pry, punch or chisel.
- 11.6 Employees shall not lift or lower electric tools by their power cord. The cord may come out of the tool or may cause damage to the cord. Employees shall carry the tool down or use a rope to lower it.
- 11.7 Electrical cords shall not be exposed to damage from vehicles.
- 11.8 Safety guards on tools that have rotating parts shall remain on the tool in the proper position as the manufacturer intended. The guard on a skill saw shall not be wedged in the "up" position. Guards on grinders shall not be cut or altered for any reason.
- 11.9 All electric tools shall be properly grounded with a Ground Fault Circuit Interrupter (GFCI).
- 11.10 Employees shall use properly rated extension cords. Cords that have ripped insulation, defects or a tag indicating that the cord is in need of repair shall not be used.

12.0 MACHINERY AND ROTATING EQUIPMENT

- 12.1 Workers shall not handle or tamper with any electrical equipment, machinery, or air or water lines in a manner not within the scope of their duties, unless they have received instruction from their foreman.
- 12.2 Employees shall not fuel equipment when it is running unless the manufacture has designed it this way. Employee shall never fuel any equipment near any source of ignition.
- 12.3 All equipment shall be checked for proper working order. Employees shall be aware of safety precautions, manufactures recommendations, and company procedures when using equipment. Faulty, or broken equipment shall be repaired promptly, and not used until properly repaired.

- 12.4 Machinery shall not be serviced, repaired or adjusted while in operation, nor shall oiling of moving parts be attempted, except on equipment that is designed or fitted with safeguards to protect the person performing the work.
- 12.5 Employees shall not work under heavy equipment that is being suspended with jacks or hoists unless cribbing or blocking is provided to support the equipment if the lifting devices fail.
- 12.6 Employees shall not wear loose clothing, rings, loose jewelry or long hair out where rotating equipment could grab hold.

13.0 HOSES, COUPLINGS AND CONNECTIONS

- 13.1 Employees shall ensure that air hoses are connected securely when pressurized so that hose sections do not come apart under pressure.
- 13.2 Employees shall not disconnect hoses connected to compressors until the hose line has been bled free of pressure.
- 13.3 If an employee is uncertain about the limitations and uses of certain hoses, and/or connectors, they shall check with their supervisor. Employees shall not take chances by using them when they are unsure.

14.0 JACKHAMMERS AND CHIPPING GUNS

- 14.1 Employees shall ensure that retaining pins and rings are in place to keep the point in the hammer while in use.

15.0 STEAM CLEANING

- 15.1 Employees shall not point the spray wand at themselves or other persons.
- 15.2 Employees shall be careful not to put any part of their body over the exhaust of the burner when the equipment is on.
- 15.3 The electrical supply shall not be allowed to lay in water or where it will get wet from the task being performed.

16.0 POWDER ACTUATED TOOLS

- 16.1 Employees must be trained, "certified," and authorized by Montgomery Watson to use powder actuated tools.

17.0 TRUCKS AND HEAVY EQUIPMENT

- 17.1 Safety devices such as back-up alarms, breaks and lights shall be in good working order at all times. Equipment shall be inspected before use to ensure it is working properly.
- 17.2 Employees shall not ride on the running board, hang on the side of or the back of a moving truck.
- 17.3 Employees shall not ride in the back of a truck that has loose materials. The material could suddenly shift and cause injury.
- 17.4 Employees shall not attempt to cross behind a vehicle that is backing up.

- 17.5 Employees shall be careful when exiting cabs of trucks and heavy equipment. Many injuries happen from slipping on or missing steps and running boards. A good practice is to keep at least three points of contact with one's body and the vehicle at all times when exiting the cab.
- 17.6 Before backing up equipment, employees shall look for persons or objects behind them. If they cannot see behind the vehicle, a second person shall be used as a ground guide.
- 17.7 Employees shall obey all signals, signs, speed limits, signalmen and traffic patterns. Employees shall drive slowly in congested areas.
- 17.8 Employees shall wear the seat belts in vehicles or heavy equipment at all times. If the equipment rolls over, the seat belt will keep them from being thrown out and crushed.
- 17.9 Employees shall not work within the boom swing radius of backhoes or similar equipment unless it is absolutely necessary.

18.0 FORKLIFT SAFETY

- 18.1 Only trained and certified operators shall operate forklifts.
- 18.2 Operators shall not lift loads greater than the forklifts rated lifting capacity and shall keep all wheels on the ground. Persons shall not ride on the back to add weight to the forklift.
- 18.3 Operators shall not turn the fork lift on an incline such as a ramp or it may tip over.
- 18.4 Operators shall not enter onto trucks or trailer beds unless they are chocked to keep them from rolling away from loading docks. Operators shall know the rated capacity of the bed and the accumulative weight of the forklift and load. The operator shall calculate if the bed will support the total weight imposed onto the truck or trailer.

19.0 CRANES

- 19.1 Crane operators shall have necessary state and local certification and licenses when required.
- 19.2 An inspection of the crane shall be made prior to making lifts. The inspection shall identify defects that would alter or prevent the lift from being made safely. All negative findings shall be corrected prior to using the crane.
- 19.3 Cranes shall be made level and verified with a carpenter level.
- 19.4 Operators shall use an experienced signalman to assist lifts when the load is not in full and direct view of the crane operator.
- 19.5 Brightly colored orange or yellow vests shall be worn by persons within crane lifting zones and make their presence known to the operator.
- 19.6 Visible barricades shall be placed at the perimeter of the lift zones when there is potential for persons or traffic to enter. Barricades shall be placed behind and to the side of (the operators blind spot) cranes whenever they are in use.

- 19.7 Loads shall have a tag line, except for extremely large loads where it would be to dangerous to do so. The person holding the tag line shall not stand under the load.

20.0 DRILL RIG OPERATION

- 20.1 Employees shall not operate drill rigs unless trained about the proper use of the equipment and the dangers associated with it. Employees must be authorized by a Montgomery Watson Health and Safety Manager before working with well drilling equipment.
- 20.2 Operators shall check for overhead and underground utilities before setting up or drilling with equipment.
- 20.3 Before use, the drilling rig shall be made level by using level jacks and verified by using a level on the rig at both axis.

21.0 CONCRETE CUTTING

- 21.1 Employees shall be careful to stay clear of the saw blade while it is in motion.
- 21.2 Unnecessary persons shall be kept out of the area while the equipment is in operation.
- 21.3 Employees shall not leave the machine unattended while it is in motion.

22.0 CONFINED SPACES

- 22.1 Employees shall not enter manholes, underground vaults, chambers, tanks, silos, or other similar places that receive little ventilation, unless it has been determined that it is safe to enter.
- 22.2 Employees shall not enter a confined space unless they have received "confined space training." Documentation of the training shall be on file in a Montgomery Watson office.
- 22.3 Employees shall follow all instructions on the confined space permit without compromise. If the employee feels there are hazards that are not being controlled, they are to exit the confined space and contact their supervisor immediately.

23.0 ELECTRICAL WORK

- 23.1 Employees shall check to ensure electric energy is de-energized and locked out before attempting to perform work on equipment in service.
- 23.2 Employees shall not wear jewelry, metal hard-hats or have metal objects (including metal ladders) near electrical work.
- 23.3 Employees shall not work on electrical equipment in wet areas or in inclement weather.
- 23.4 Employees shall not leave electrical panels open, unattended.
- 23.5 A minimum of five feet will be maintained between identified buried utility lines and the location of subsurface activity

- 23.6 The table below prescribes minimum clearance distance from overhead electrical lines:

Nominal Power Line System (kV)	Minimum Required Clearance (feet)
0-50	10
51-100	12
101-200	15
201-300	20
301-500	25
501-750	35
751-1,000	45

Source: United States Army Corp of Engineers

24.0 EXCAVATIONS AND TRENCHES

- 24.1 A ladder shall be used to gain access or egress from trenches, holes or excavations 19 inches or greater in depth. A ladder must be provided for workers in trenches every 25 feet of lateral distance. At minimum, two ladders shall be positioned at opposite ends for the first 25 feet of lateral distance.
- 24.2 Shoring shall be used when workers are to enter depths of 5 feet or greater. A confined space entry permit will be required.
- 24.3 Employees shall not lower anything into an excavation where other workers are present if the object has the ability to compromise the integrity of the excavation or injure persons inside.
- 24.4 Excavations shall be visually inspected before backfilling to ensure that it is safe to do so.

25.0 WELDING AND GRINDING

- 25.1 Employees shall not burn, weld, or apply other sources of ignition to any enclosed tank or vessel, opened or closed, until it has first been determined that no possibility of explosion exists, and permission to do so is granted by the proper authority.
- 25.2 Sparks shall not be allowed to fall onto sensitive equipment such as instrumentation, electrical components or gas cylinders. To prevent damage or scaring, a fire blanket shall be used to cover such equipment.
- 25.3 Sparks shall not be allowed to fall on combustible material such as lumber or trash. Areas where welding or cutting with a torch are taking place, shall be clear and free from debris, or covered with fire blanket material and kept wet

if necessary. Water must never be used on or in close proximity to electrical equipment.

25.4 Welding screens shall be used to protect other workers from arc flashes.

26.0 COMPRESSED GAS CYLINDERS

26.1 Compressed gas cylinders shall be secured in an upright position with the protective cap securely in place.

26.2 Gas gages shall be taken off of cylinders and the caps screwed back in place at the end of the shift or while transporting with a vehicle.

26.3 Oxygen cylinders in storage shall be separated from acetylene or combustible materials, especially oil or grease, by a minimum of 20 feet. Keep valves, regulators, and fittings away from oil and grease. Do not handle oxygen cylinders and fitting with oily hands, gloves or greasy materials.

27.0 PAINTING

27.1 Employees shall make themselves familiar with the hazards and safe use of paint material by checking with their supervisors or an MSDS.

27.2 Employees shall store paint materials in their properly designated location with their lids properly sealed.

27.3 Employees shall not store rags that are soaked with solvents or thinners in tight spaces and without ventilation. This could cause spontaneous combustion of the materials.

ATTACHMENT C

ATTACHMENT C

PERSONAL ACKNOWLEDGMENT

As a component of the health safety plan designed to provide personnel safety during site activities at the Clinton FMGP site in Clinton, Iowa, you are required to read and understand the site-specific Site Safety Plan (SSP) addendum. When you have fulfilled this requirement, please sign and date this "Personal Acknowledgment." Also, provide the requested information pertaining to use of Level C respiratory protection.

Model/Type of Level C Respirator: _____

Date Fit Tested: _____

Signature

Name (Printed)

Date

ATTACHMENT D

ATTACHMENT D

TAILGATE SAFETY MEETING FORM

Date: _____ Time: _____ Job Number: 1912839.0102

Client: Interstate Power and Light Company Address: Cedar Rapids, Iowa

Site Location: 201 N. 2nd Street, Clinton, Iowa

Scope of Work: Site-specific work activities include advancement of probe holes and borings using direct-push probe hole and conventional drill rig equipment, respectively; soil sampling with direct-push, conventional drill rig, and hand tools (surface sampling); field screening with photoionization detector (PID), ultraviolet fluorescence (UVF), and Dräger tubes; well construction and development; groundwater sampling; aquifer testing; river water and sediment sampling (from a boat); sewer water and sediment sampling (no entry); water level measurements in wells and from the river's edge; and surveying.

SAFETY TOPICS PRESENTED

Chemical Hazards:

1. Byproducts from the former manufactured gas plant (FMGP) processes typically consisted of aromatic and polynuclear aromatic hydrocarbons, hydrogen cyanide (HCN), hydrogen sulfide (H₂S), ammonia (NH₃), coke, tar, arsenic, and heavy metals.
2. Warning properties [Table 2-2 of the site-specific Site Safety Plan (SSP) addendum].
3. PPE Needed:

PCB- and Lead-Impacted Soil Removal. MWH field personnel will be required to wear at a minimum, hearing and eye protection, steel-toed boots (i.e., made of rubber or with outer disposable covers), hard hats, nitrile gloves (4-mil inner and outer), and Tyvek® outer protective clothing. Abrasion resistant outer gloves may be used, as necessary, based upon activity being performed. When working near active roadways, railroad tracks, or around operating equipment, high visibility vests shall be worn. Personnel assigned to the decontamination of equipment, using high-pressure spray equipment, must also wear a face shield and polycoated or SARANEX®-laminated Tyvek® protective clothing while completing decontamination activities.

FMGP-Impacted Soil Removal. MWH field personnel will be required to wear at a minimum, hearing and eye protection, steel-toed boots (i.e., made of rubber or with outer disposable covers), hard hats, and nitrile gloves (4-mil inner and outer), and Tyvek® outer

protective clothing. If it is anticipated, based on planned activities, that free product might be encountered, polycoated or SARANEX[®]-laminated outer protective clothing and 22-mil outer nitrile gloves shall be worn. Abrasion resistant outer gloves may be used, as necessary, based upon activity being performed. When working near active roadways, railroad tracks, or around operating equipment, high visibility vests shall be worn. Personnel assigned to the decontamination of equipment, using high-pressure spray equipment, must also wear a face shield and polycoated or SARANEX[®]-laminated Tyvek[®] protective clothing while completing decontamination activities.

Demolition of Metal Building. MWH field personnel will be required to wear at a minimum, long-sleeve shirts, full-length pants, hearing and eye protection, steel-toed boots, hard hats, high-visibility outer vests, and nitrile gloves (4-mil inner and outer). Abrasion-resistant outer gloves may be used, as necessary, based upon the activity being performed. Tyvek[®] outer protective clothing is recommended if excavation activities are occurring simultaneously on other portions of the site.

Site Restoration. While completing these activities, personnel will wear, at a minimum, long-sleeve shirts, full-length pants, steel-toed boots, and work gloves, depending upon the activity being completed. Safety glasses and hard hats are recommended while pouring concrete and completing fencing activities. High-visibility outer vests will be worn when completing activities near active roadways, railroad tracks, or heavy equipment.

Storm Sewer Cleaning and Abandonment. At a minimum, personnel directly involved in the cleaning and abandonment activities will be required to wear hearing protection (while working near heavy equipment), eye protection, steel-toed boots (i.e., made of rubber or with outer disposable covers), hard hats, nitrile gloves (4-mil inner and outer), and polycoated or SARANEX[®]-laminated Tyvek[®] outer protective clothing. Abrasion-resistant outer gloves may be used, as necessary, based upon the activity being performed. When working near roadways, railroad tracks, or equipment that is operating, high-visibility outer vests shall be worn. Personnel assigned to the decontamination of equipment or cleaning of the sewer lines, using high-pressure spray equipment, must also wear a face shield.

Construction of Storm Sewer Extension. At a minimum, personnel directly involved in the storm sewer extension activities will be required to wear hearing protection (while working near heavy equipment), eye protection, steel-toed boots (i.e., made of rubber or with outer disposable covers), hard hats, nitrile gloves (4-mil inner and outer), and Tyvek[®] outer protective clothing. Abrasion-resistant outer gloves may be used, as necessary, based upon activity being performed. When working near operating equipment, roadways, or railroad tracks, high-visibility outer vests shall be worn. Personnel assigned to the decontamination of equipment, using high-pressure spray equipment, must also wear a face shield and polycoated or SARANEX[®]-laminated Tyvek[®] protective clothing while completing these activities.

Soil Sampling/Field Screening. Nitrile gloves (4-mil inner and outer), safety glasses, hard hats, rubber steel-toed boots or steel-toed boots with disposable over boot covers, and

Tyvek® outer protective clothing will be worn during all soil sampling activities. When working near heavy equipment, hearing protection and high-visibility outer vests will be worn. Nitrile gloves (4-mil inner and 22-mil outer) and polycoated or SARANEX®-laminated Tyvek® protective clothing will be worn when contact with free product or liquids is anticipated. When working near heavy equipment, roadways, or railroad tracks, high-visibility outer vests shall be worn.

Surveying and Mapping. Field personnel will wear steel-toed boots, hard hats, and safety glasses when conducting surveying activities in restored areas. If completing these activities during the soil removals or in areas still impacted with FMGP or PCB contamination, the following PPE will be required: hearing and eye protection (while working near heavy equipment), steel-toed boots (i.e., made of rubber or with outer disposable covers), hard hats, nitrile gloves (4-mil inner and outer) and Tyvek® outer protective clothing. When working near heavy equipment, railroad tracks, or roadways, high-visibility outer vests shall also be worn.

Physical Hazards:

1. Equipment dangers.
2. Utility lines.
3. Heat/cold stress.
4. Vehicle traffic and train traffic hazards.
5. Trip, slip, and fall hazards.
6. Work limitations (temperature, weather conditions, light): Work will take place during daylight hours unless artificial light is provided; work may be postponed due to adverse weather conditions, such as lightning, or extreme hot or cold temperatures; a sufficient number of breaks will be allowed.

Monitoring:

1. Equipment needed/used: A PID will be used to monitor for total volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs); Dräger CMS chips will be used to provide quantitative measurements of NH₃, and benzene; a Compur Monitox or equivalent HCN meter will be used to measure HCN; a four-gas meter will be used to measure Lower Explosive Limits (LELs), oxygen (O₂), and H₂S; and dust conditions will be visually monitored.
2. Chemicals being monitored for: Total VOCs and SVOCs, benzene, NH₃, HCN, O₂, carbon monoxide, H₂S and LELs.

3. Action Levels: For quick reference, Table D-1 in Attached shows the specific action levels for upgrading to Level C PPE and ceasing operations.

Action Levels for Upgrading Protection

- When the PID indicates sustained (15 minutes) breathing zone organic vapor concentrations in excess of 5 meter units, the MWH On-Site Safety Officer (OSO) will require the use of air-purifying respirators equipped with organic vapor/dust filter cartridges until readings in the work zone drop and maintain a level below 5 meter units.
- If the Dräger CMS chip readings exceed 1 ppm benzene or 25 ppm NH₃, field work will be suspended until the following measures have been taken to ensure worker safety:
 - If the TWA for benzene (1 ppm) is exceeded, respirators equipped with organic vapor cartridges will be donned.
 - If the TWA for NH₃ (25 ppm) is exceeded, respirators equipped with NH₃ cartridges will be donned.
- If lead or PAH concentrations exceed 0.05 milligram per cubic meter (mg/m³) respirators equipped with HEPA cartridges will be donned.
- Should air particulate conditions arise, which cannot be controlled with water spray, that exceed 5 mg/m³ or are irritating to the eyes, nose or throat prevail during field activities, respirators equipped with high-efficiency particulate air (HEPA) cartridges will be donned.

Action Levels for Ceasing Operations. Situations dictating the ceasing of operations include:

- When the PID indicates sustained (15 minutes) breathing zone organic vapor concentrations exceeding 25 meter units, the designated work zone (exclusion zone) shall be evacuated until the vapor levels have subsided.
- If HCN readings equal or exceed the Short-Term Exposure Limit (STEL), 4.7 ppm, field activities must stop immediately and the MWH HSC should be notified.
- If the TWA of a contaminant exceeds the maximum use concentration (MUC) of the air-purifying respirator cartridge, operations will cease and the work zone will be evacuated. The MUC for OV cartridges is 1,000 ppm.
- If the four-gas meter indicates percent LELs of flammables in excess of 25 percent, operations will cease, and the work zone will be evacuated.

- If the O₂ concentration, as measured by the four-gas meter, falls below 19.5 percent, or exceeds 23.5 percent, operations will cease and the work zone will be evacuated until the O₂ concentration returns to the 19.5 to 23.5 percent range.
- If air-purifying respirator cartridges are not available, or if protection greater than an air-purifying respirator is recommended by the respirator manufacturer or recognized publications or authorities; operations will cease and the work zone will be evacuated.
- If contaminant levels, as measured by the PID, reach their corresponding Immediately Dangerous to Life or Health (IDLH) values, operations will cease and the work zone will be evacuated.
- If lead concentration exceeds 10 mg/m³ or PAH concentrations exceed 0.5 mg/m³, operations will cease and the work zone will be evacuated.

Reading Frequencies. Dräger CMS chip readings will be taken routinely during intrusive field activities being conducted in the unsaturated zone. PID readings will be taken routinely during all phases of intrusive field activities in both the saturated and unsaturated zone. HCN readings will be taken initially at 30-minute intervals during all intrusive activities conducted in the unsaturated zone. More frequent readings will be conducted if readings above background are recorded. Dust will be monitored continuously. LELs, H₂S and O₂ will be recorded continuously during confine space entry. All readings will be recorded in the field logbook.

Special Equipment:

- Direct-read instruments for air monitoring.
- UVF testing equipment.

Decontamination of Clothing/Equipment:

1. Cleaning/screening solvents used: Alconox[®], hexane, methanol, isobutylene, and distilled water will be used to decontaminate reusable equipment. Appropriate Material Data Safety Sheets (MSDSs) are located in Attachment F of this site-specific SSP addendum.
2. Disposal of clothing/equipment: Disposable PPE shall be sealed in sealed plastic bags and disposed of on site.

Site Control:

1. Location of working zones.
2. PPE needed in various zones: Level D or C in exclusion zone. Level D or work clothes in support zone.

Other:

- Smoking, eating, drinking, and chewing gum are prohibited in work areas.
- Containers for disposable PPE must be available at the exit point of the exclusion zone.

Emergency Procedures/Precautions:

1. Location of emergency equipment: First-aid kit, eye wash kit, and fire extinguisher located in each field vehicle; extra safety supplies located in a designated field vehicle.
2. A field vehicle shall be designated as the safety vehicle to be used for emergency evacuation.
3. Posted emergency information, route to hospital map, and chemical symptoms table.
4. The buddy system is required during river sampling, river sediment sampling, or sampling along the river bank. The buddy system is recommended for all site activities.
5. Communication devices, walkie-talkies, and mobile phone must be available on site.

ATTENDEES

Name (Print)

Signature

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Meeting Conducted By:

_____ Name (Print)

_____ Signature

TABLE D-1

SPECIFIC ACTION LEVELS AND ASSOCIATED ACTIONS FOR UPGRADING PROTECTION

Monitoring Instrument	Parameter Monitored	Action Level	Associated Action
<u>Action Levels for Upgrade to Level C</u>			
PID	VOCs	5 ppm for 15 minutes in breathing zone	The MWH OSO will require the use of air-purifying respirators equipped with organic vapor cartridges. Respirator cartridges will be changed out at the end of the work day. Concentrations over 100 parts per million (ppm) will require further evaluation with the HSC.
Dräger CMS chips	Benzene	1 ppm	Field work will be suspended until the following measures have been taken to ensure worker safety: If the TWA for benzene (1 ppm) is exceeded but is less than 10 or 50 ppm, respirators (half face or full-face, respectively) equipped with organic vapor cartridges will be donned. Respirator cartridges will be changed out at the end of each work day.
MINIRAM	Air particulates	5 mg/m ³	Control dust with water spray. If conditions cannot be controlled with water spray, respirators equipped with HEPA/P100 cartridges will be donned. Respirator cartridges will be changed out at the end of each work day.
Personal monitoring pump	Lead / PAHs	0.05 mg/m ³	Respirators equipped with HEPA/P100 cartridges will be donned.
<u>Action Levels for Ceasing Operations</u>			
PID	VOCs	25 ppm for 15 minutes in breathing zone	The designated work zone (exclusion zone) shall be evacuated until the vapor levels have subsided.
Compur Monitox or personal monitoring pump	HCN	4.7 ppm STEL	Field activities must stop immediately, the designated work zone (exclusion zone) shall be evacuated until the vapor levels have subsided, and the HSC should be notified.
Dräger CMS chips	Benzene	MUC 50 ppm full-face respirator 10 ppm half-face respirator	The designated work zone (exclusion zone) shall be evacuated until the vapor levels have subsided and the HSC should be notified.

TABLE D-1 (CONTINUED)

SPECIFIC ACTION LEVELS AND ASSOCIATED ACTIONS FOR UPGRADING PROTECTION

Monitoring Instrument	Parameter Monitored	Action Level	Associated Action
<u>Action Levels for Ceasing Operations (continued)</u>			
PID	TWA of VOCs	1,000 ppm – MUC of organic vapor cartridges	Operations will cease and the work zone will be evacuated.
Four-gas meter	LEL	25%	Operations will cease, and the work zone will be evacuated.
Four-gas meter	Oxygen	<19.5% >23.5%	Operations will cease and the work zone will be evacuated until the oxygen concentration returns to the 19.5 to 23.5 percent range.
Personal monitoring pump	Lead	10 mg/m ³	Operations will cease and the work zone will be evacuated.
Personal monitoring pump	PAH	0.5 mg/m ³	Operations will cease and the work zone will be evacuated.

CMS Chip Measurement System
 HEPA high-efficiency particulate air
 HCN hydrogen cyanide
 HSC Health And Safety Coordinator
 LEL Lower Explosive Limit
 mg/m³ milligrams per cubic meter
 MUC maximum use concentration
 OSO On-Site Safety Officer
 PAH polynuclear aromatic hydrocarbons
 PID photoionization detector
 ppm parts per million
 STEL Short-Term Exposure Limit
 TWA Time-Weighted Average
 VOCs volatile organic compounds

ATTACHMENT E



MWH

ATTACHMENT E
EMERGENCY ASSISTANCE INFORMATION

Interstate Power and Light Company (IPL)
201 North 2nd Street
Clinton, Iowa

Nearest Hospital

Address:

Mercy Medical Center North
1410 North 4th Street
Clinton, Iowa
Phone (563) 244-5555

Directions to Hospital*

- Exit site onto North 2nd Street, turn right (north), and proceed to 14th Avenue.
- Turn left on 14th Avenue and proceed to North 4th Street.
- Hospital is located at 1410 North 4th Street.

* See Emergency Route Map supplied with SSP Addendum (Figure 4-1).

Nearest Telephone

MWH Field Vehicle

Ambulance, Fire, Police, & Sheriff

Telephone 911

State Highway Patrol

(800) 525-5555

First-Aid Kit, Fire Extinguishers, & Emergency Eye Lavages

MWH Field Vehicle

Poison Control

(800) 272-6477

Project Contacts

MWH:

- Michael D. Geringer
Health and Safety Coordinator
(515) 253-0830 (8:00 - 5:00)
(417) 725-9220 (after hours)
- Randy J. Kroneman
Project Manager
(515) 253-0830 (8:00 - 5:00)
(515) 255-0990 (after hours)

Client Contact:

- Mr. Dean Hargens
IPL Project Coordinator
(319) 786-4658

State Notification

- Iowa Department of Natural Resources (515) 281-8694
- EPA Spill Response (913) 236-3778

Utilities

Electric:

IPL
(563) 243-2611

Telephone:

US West
(800) 772-7751

Iowa One Call:

(800) 292-8989

Natural Gas:

IPL
(563) 243-2611

Water and Sewer:

Iowa American Water Company
(563) 242-0923

City of Clinton Water Pollution Control
(563) 243-4064

ATTACHMENT F

ALCONOX

MATERIAL SAFETY DATA SHEET

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: ALCONOX

GENERAL USE: Detergent Cleaner

PRODUCT DESCRIPTION: White granular powder mixture, practically odorless

MANUFACTURERS NAME:

Alconox, Inc

DATE PREPARED: October 8, 2003

Page 1 of 4

STREET ADDRESS:

30 Glenn St. Suite 309

TELEPHONE NUMBER FOR INFORMATION

++914-948-4040

CITY, STATE, ZIP, COUNTRY

White Plains, NY 10603 USA

EMERGENCY TELEPHONE NUMBER

CHEM-TEL (800) 255-3924 Outside USA ++813-248-0573

DISTRIBUTOR NAME: same unless filled in

STREET ADDRESS:

TELEPHONE NUMBER FOR INFORMATION

CITY, STATE, ZIP, COUNTRY

EMERGENCY TELEPHONE NUMBER

SECTION 2 - HAZARDOUS INGREDIENTS

HAZARDOUS COMPONENTS	CAS #	% By Wt	OSHA PEL		ACGIH TWA		SARA TITLE III	RQ LBS.
			ppm	mg/m ³	ppm	mg/m ³		
Sodium phosphate, tribasic (a)	7758-29-40	10-30	N/E					5000
Sodium carbonate (nuisance dust)	497-19-8	7-13		15				
Sodium dodecylbenzene sulfonate (a)	25155-30-0	10-30	N/E					1000
Tetrasodium phosphate	7722-88-5	10-30		5				
(a) see Section 15			N/E not established					

SECTION 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Granular powder, airborne dust particles are harmful and irritating to respiratory tract. Contact with eyes and skin may cause irritation. Hazard symbols for this product XI, XN.

POTENTIAL HEALTH EFFECTS

INHALATION: Breathing airborne particles or dust from mixing, spraying, sanding, grinding, etc., may cause irritation to the respiratory tract

SKIN: : None expected, however, prolonged contact may cause irritation

EYES: Contact with eyes may cause irritation

INGESTION: May cause gastric distress, stomach pains, vomiting and diarrhea

CARCINOGENICITY

NTP? No

IARC (MONOGRAPHS)? No

OSHA REGULATED? No

Document Name	MSDSAX.doc	Effective date: 10/15/2003
Issued By	Malcolm McLaughlin	Issue Date: 10/08/03
Author	Malcolm McLaughlin	Supercedes: AXeumsds112502

Material Safety Data Sheet

from Genium's Reference Collection
Genium Publishing Corporation
1145 Catalyn Street
Schenectady, NY 12303-1836 USA
(518) 377-8855



GENIUM PUBLISHING CORP.

HYDROCHLORIC ACID
(Revision B)
Issued: October 1977
Revised: November 1988

SECTION 1. MATERIAL IDENTIFICATION

27

Material Name: HYDROCHLORIC ACID

Description (Origin/Uses): Used in the production of chlorides; in refining ore in the production of tin and tantalum; for the neutralization of bases; for pickling and cleaning metal products; for oil- and gas-well treatments; and in removing scale from boilers and heat-exchange equipment.



NFPA

Other Designations: Aqueous Hydrogen Chloride; Muriatic Acid; HCl/H₂O; CAS No. 7647-01-0

Manufacturer: Contact your supplier or distributor. Consult the latest edition of the *Chemicalweek Buyers' Guide* (Genium ref. 73) for a list of suppliers.

HMIS
H 3 R 1
F 0 I 4
R 0 S 4
PPG*
*See sect. 8 K 0

SECTION 2. INGREDIENTS AND HAZARDS

%

EXPOSURE LIMITS

Hydrogen Chloride, CAS No. 7647-01-0

38 or Less

OSHA PEL
Ceiling: 5 ppm, 7 mg/m³

Water

Balance*

ACGIH TLV, 1988-89
TLV-Ceiling: 5 ppm, 7 mg/m³

*Impurities such as iron, chlorine, and traces of organic matter may be present in small amounts, depending on the grade of acid.
**See NIOSH, RTECS (MW4025000), for additional data with references to reproductive and mutagenic effects. Continue to monitor NIOSH, RTECS (MW40300000), for toxicity data on hydrochloric acid itself.

Toxicity Data**
Human, Inhalation, LC₅₀: 1300 ppm (30 Mins)
Rat, Inhalation, LC₅₀: 3124 ppm (1 Hr)
Rabbit, Oral, LD₅₀: 900 mg/kg

SECTION 3. PHYSICAL DATA

Boiling Point: 227°F (109°C) (20.22%)

Melting Point: -85°F (-65°C) (20.69%)

Vapor Density (Air = 1): 1.268

pH: Strong Mineral Acid

Appearance and Odor: A clear, colorless-to-lightly yellowed, fuming liquid; sharp, pungent, characteristic, irritating odor of hydrogen chloride gas. This odor is detectable at 1 to 5 ppm and becomes unpleasant and irritating at 5 to 10 ppm; however, the odor serves as a good warning property.

Comments: The specific physical properties of aqueous hydrochloric acid solutions vary with the amount of dissolved hydrogen chloride gas. Hydrochloric acid forms a constant boiling azeotrope (a mixture of hydrochloric acid and water that behaves like a single substance in that its vapor has the same composition as the mixture itself) with water (at 227°F or 109°C) that contains 20.22% hydrogen chloride and has a density of 1.096. Boiling weaker or stronger aqueous solutions results in the loss of either component until the constant boiling acid is produced.

Molecular Weight: Not Applicable
Solubility in Water (%): Complete
Specific Gravity (H₂O = 1): >1
% Volatile by Volume: Ca 100

SECTION 4. FIRE AND EXPLOSION DATA

LEL

UEL

Flash Point and Method

Autoignition Temperature

Extinguishing Media: *Hydrochloric acid solutions do not burn. Use extinguishing agents that will put out the surrounding fire. Unusual Fire or Explosion Hazards: Use a water spray to cool fire-exposed containers of hydrochloric acid to prevent ruptures. Explosive hydrogen gas can be produced by the reaction of hydrochloric acid with metals such as iron. Neutralize spilled hydrochloric acid with limestone, slaked lime, or soda ash to minimize the possible generation of hydrogen gas. Special Fire-fighting Procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode. Special neutralization procedures, if applicable, include the application of chemically basic substances such as soda ash or slaked lime.

SECTION 5. REACTIVITY DATA

Stability/Polymerization: Hydrochloric acid is stable in closed containers during routine operations at room temperature. Hazardous polymerization cannot occur. Chemical Incompatibilities: Hydrochloric acid reacts dangerously with acetic anhydride, 2-aminoethanol, ammonium hydroxide, calcium phosphide, chlorosulfonic acid, ethylene diamine, ethylenimine, oleum, perchloric acid, 8-propiolactone, propylene oxide, silver perchlorate and carbon tetrachloride, sodium hydroxide, sulfuric acid, uranium phosphide, vinyl acetate, sodium, and many carbide compounds (Genium ref. 84). This material is a strong mineral acid that is very reactive with bases. Conditions to Avoid: Avoid exposure to incompatible chemicals and to any other material whose compatibility with hydrochloric acid or its vapor has not yet been established. The corrosive action of hydrochloric acid on most metals can liberate extremely flammable/explosive hydrogen gas (H₂); piping systems and containment systems must be chosen carefully. Hazardous Products of Decomposition: During fires hydrochloric acid may decompose by reacting with certain metals to produce very flammable and explosive hydrogen gas (H₂). Significant amounts of hydrogen chloride gas (HCl) are given off at room temperature; the rate of this generation increases as the temperature and the strength (1%) by weight of HCl in H₂O increase. Comments: Reactions between hydrochloric acid and cyanides, sulfides, and formaldehyde, will produce extremely toxic hydrogen cyanide (HCN), hydrogen sulfide (H₂S), sulfur dioxide (SO₂), and bischloromethylether, respectively.

Material Safety Data Sheet

AIR LIQUIDE AMERICA CORPORATION California Plaza, Suite 350 2121 N. California Blvd. Walnut Creek, California 94596		PRODUCT NAME 100 PPM Isobutylene in Air	CAS NUMBER See Last Page
		TELEPHONE (510) 977-6500 EMERGENCY RESPONSE INFORMATION ON PAGE 2	
ISSUE DATE JUNE 4, 1990 AND REVISIONS REPRINTED JANUARY 1, 1994 CORPORATE SAFETY DEPT.		TRADE NAME AND SYNONYMS 100 PPM Isobutene in Air	NFPA 704 NUMBER (H F R) 0 0 0
		CHEMICAL NAME AND SYNONYMS 100 Molar PPM iso-Butene in Air	MOLECULAR WEIGHT 28.96
FORMULA See Last Page		CHEMICAL FAMILY Gas Mixture	

HEALTH HAZARD DATA

TIME WEIGHTED AVERAGE EXPOSURE LIMIT None listed (ACGIH 1989-1990) or by OSHA			
SYMPTOMS OF EXPOSURE The amount of iso-butylene in this mixture should not present any symptoms of toxicity if this mixture is breathed. Air is nontoxic and necessary to support life. Inhalation of air in a high pressure environment such as underwater diving, caissons or hyperbaric chambers can result in symptoms similar to overexposure to pure oxygen. These include tingling of fingers and toes, abnormal sensations, impaired coordination and confusion. Decompression sickness pains or "bends" are possible following rapid decompression.			
TOXICOLOGICAL PROPERTIES High pressure effects (greater than two atmospheres of oxygen) are on the central nervous system. Improper decompression results in the accumulation of nitrogen in the blood. Neither isobutylene or air are listed in the IARP, NTP or by OSHA as a carcinogen or potential carcinogen.			
Listed as Carcinogen or Potential Carcinogen	National Toxicology Program	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	I.A.R.C. Monographs
		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	OSHA Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
RECOMMENDED FIRST AID TREATMENT Facilities or practices at which air is breathed in a high pressure environment should be prepared to deal with the illnesses associated with decompression (bends or caisson disease). Decompression equipment may be required.			

Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, Liquid Air Corporation extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or consequences of its use. Since Liquid Air Corporation has no control over the use of this product, it assumes no liability for damage or loss of product resulting from proper (or improper) use or application of the product. Data Sheets may be changed from time to time. Be sure to consult the latest edition.

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

N/A

PHYSICAL DATA

BOILING POINT -317.9°F (-194.4°C)	LIQUID DENSITY AT BOILING POINT 54.70 lb/ft ³ (876.21 kg/m ³)
VAPOR PRESSURE @ 70°F (21.1°C) Above the critical temperature of -220.4°F (-140.2°C)	GAS DENSITY AT 70°F 1 atm .0749 lb/ft ³ (1.200 kg/m ³)
SOLUBILITY IN WATER @ 68°F (20°C) Bunsen coefficient = .0183	FREEZING POINT N/A; Bubble point @ 1 Atm. = -317.8°F (-194.35°C)
APPEARANCE AND ODOR Colorless gas with possible very slight olefinic odor	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED) N/A	AUTO IGNITION TEMPERATURE N/A	FLAMMABLE LIMITS % BY VOLUME N/A
EXTINGUISHING MEDIA Nonflammable gas	ELECTRICAL CLASSIFICATION Nonhazardous	
SPECIAL FIRE FIGHTING PROCEDURES N/A		
UNUSUAL FIRE AND EXPLOSION HAZARDS Compressed air at high pressures will accelerate the burning of materials to a greater rate than they burn at atmospheric pressure.		

REACTIVITY DATA

STABILITY Unstable	CONDITIONS TO AVOID	
Stable	X	N/A
INCOMPATIBILITY (Materials to avoid)	None	
HAZARDOUS DECOMPOSITION PRODUCTS	None	
HAZARDOUS POLYMERIZATION May Occur	CONDITIONS TO AVOID	
Will Not Occur	X	N/A

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED N/A
WASTE DISPOSAL METHOD N/A

EMERGENCY RESPONSE INFORMATION

IN CASE OF EMERGENCY INVOLVING THIS MATERIAL, CALL DAY OR NIGHT (800) 231-1366
OR CALL CHEMTREC AT (800) 424-9300

RESPIRATORY PROTECTION (Specify type)		N/A	
VENTILATION N/A	LOCAL EXHAUST	N/A	SPECIAL N/A
	MECHANICAL (Gen.)	N/A	OTHER N/A
PROTECTIVE GLOVES		Any material	
EYE PROTECTION		Safety goggles or glasses	
OTHER PROTECTIVE EQUIPMENT		Safety shoes	

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION			
DOT Shipping Name:	Compressed Gas, n.o.s.	DOT Hazard Class:	Nonflammable Gas
DOT Shipping Label:	Nonflammable Gas	I.D. No.:	UN 1956

SPECIAL HANDLING RECOMMENDATIONS

Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (<3,000 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Do not tamper with (valve) safety device. Close valve after each use and when empty.

For additional handling recommendations consult L'Air Liquide's Encyclopedia de Gaz or Compressed Gas Association Pamphlet P-1.

SPECIAL STORAGE RECOMMENDATIONS

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130F (54C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders being stored for excessive periods of time.

For additional storage recommendations consult L'Air Liquide's Encyclopedia de Gaz or Compressed Gas Association Pamphlet P-1.

SPECIAL PACKAGING RECOMMENDATIONS

If this mixture is dry it is noncorrosive and may be used with all materials of construction. Moisture causes metal oxides which are formed with air to be hydrated so that they increase in volume and lose their protective role (rust formation). Concentrations of SO₂, Cl₂, salt, etc. in the moisture enhances the rusting of metals in this mixture.

OTHER RECOMMENDATIONS OR PRECAUTIONS

Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR).

Always secure cylinders in an upright position before transporting them. NEVER transport cylinders in trunks of vehicles, enclosed vans, truck cabs or in passenger compartments. Transport cylinders secured in open flatbed or in open pick-up type vehicles.

*Various Government agencies (i.e. Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation, handling, storage or use of this product which may not be contained herein. The customer or user of this product should be familiar with these regulations.



AIR LIQUIDE

ADDITIONAL DATA

FORMULA: 100 Molar PPM iso-C₄H₈ in Air

CAS NUMBER: iso-C₄H₈ = 115-11-7; Air = N/A



AIR LIQUIDE

MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

1. PRODUCT IDENTIFICATION

CHEMICAL NAME; CLASS: NON-FLAMMABLE GAS MIXTURE

Containing One or More of the Following Components in a Nitrogen Balance Gas:
Oxygen, 0-23.5%; Methane, 0-2.5%; Hydrogen, 0-2.0%; Carbon Monoxide, 0.0001-1.0%
SYNONYMS: Not Applicable

CHEMICAL FAMILY NAME: Not Applicable

FORMULA: Not Applicable

Document Number: 50009

Note: The Material Safety Data Sheet is for this gas mixture supplied in cylinders with 33 cubic feet (935 liters) or less gas capacity (DOT - 39 cylinders). This MSDS has been developed for various gas mixtures with the composition of components within the ranges listed in Section 2 (Composition and Information on Ingredients). Refer to the product label for information on the actual composition of the product.

PRODUCT USE:	Calibration of Monitoring and Research Equipment
SUPPLIER/MANUFACTURER'S NAME	AIR LIQUIDE AMERICA CORPORATION
ADDRESS:	821 Chesapeake Drive Cambridge, MD 21613
EMERGENCY PHONE:	CHEMTREC: 1-800-424-9300
BUSINESS PHONE:	1-410-228-6400
	General MSDS Information 1-713/868-0440
	Fax on Demand: 1-800/231-1366

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	mole %	EXPOSURE LIMITS IN AIR					
			ACGIH		OSHA		OTHER	
			TLV ppm	STEL ppm	PEL ppm	STEL ppm		IDLH ppm
Oxygen	7782-44-7	0 - 23.5%	There are no specific exposure limits for Oxygen. Oxygen levels should be maintained above 19.5%.					
Methane	74-82-8	0 - 2.5%	There are no specific exposure limits for Methane. Methane is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					
Hydrogen	1333-74-0	0 - 2.0%	There are no specific exposure limits for Hydrogen. Hydrogen is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					
Carbon Monoxide	630-08-0	0.0005 - 1.0%	25	NE	50 35 (Vacated 1989 PEL)	200 C (Vacated 1989 PEL)	1200	NIOSH REL: 35 ppm (TWA); 200 ppm C DFG MAK: 30 ppm
Nitrogen	7727-37-9	Balance	There are no specific exposure limits for Nitrogen. Nitrogen is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					

NE = Not Established.

C = Ceiling Limit.

See Section 16 for Definitions of Terms Used.

NOTE: All WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-1993 format.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This product is a colorless, odorless gas. Carbon Monoxide, a component of this gas mixture, is a chemical asphyxiant and can produce significant, adverse health effects at relatively low concentrations. Over-exposure to Carbon Monoxide can cause nausea, dizziness, headaches, and collapse. Additionally, releases of this product may produce oxygen-deficient atmospheres (especially in small confined spaces or other poorly-ventilated environments); individuals in such atmospheres may be asphyxiated.

SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: The most significant route of over-exposure for this product is by inhalation.

INHALATION: Due to the small size of an individual cylinder of this product, no unusual health effects from over-exposure to the product are anticipated under routine circumstances of use. Inhalation over-exposures to atmospheres containing more than the Threshold Limit Value of Carbon Monoxide (25 ppm) can result in serious health consequences. Carbon Monoxide is classified as a chemical asphyxiant, producing a toxic action by combining with the hemoglobin of the blood and replacing the available oxygen. Through this replacement, the body is deprived of the required oxygen, and asphyxiation occurs.

Since the affinity of carbon monoxide for hemoglobin is about 200-300 times that of oxygen, only a small amount of Carbon Monoxide will cause a toxic reaction to occur. Carbon Monoxide exposures in excess of 50 ppm will produce symptoms of poisoning if breathed for a sufficiently long time. If this product is released in a small, poorly ventilated area (i.e. an enclosed or confined space), symptoms which may develop include the following:

CONCENTRATION OF CARBON MONOXIDE

OBSERVED EFFECT

All exposure levels:

Over-exposure to Carbon Monoxide can be indicated by the lips and fingernails turning bright red.

200 ppm:

Slight symptoms (headache, discomfort) after several hours of exposure.

400 ppm:

Headache and discomfort experienced within 2-3 hours of exposure.

1,000 -2000 ppm:

Within 30 minutes, slight palpitations of the heart occurs. Within 1.5 hours, there is a tendency to stagger.

200-2500 ppm:

Within 2 hours, there is mental confusion, headaches, and nausea. Unconsciousness within 30 minutes.

>2500 ppm:

Potential for collapse and death before warning symptoms are produced.

Additionally, releases of this product may produce oxygen-deficient atmospheres (especially in small confined spaces or other poorly-ventilated environments); individuals in such atmospheres may be asphyxiated.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms. Over-exposure to this gas mixture may cause the following health effects:

ACUTE: Due to the small size of the individual cylinder of this product, no unusual health effects from exposure to the product are anticipated under routine circumstances of use. However, Carbon Monoxide (a component of this gas mixture) is toxic to humans. Symptoms of Carbon Monoxide poisoning can develop gradually, or can arise suddenly, depending on the concentration and duration of exposure. Lips and fingernails will turn bright red, which is a significant sign of Carbon Monoxide over-exposure. Other symptoms of over-exposure can include respiratory difficulty, headaches, shortness of breath, wheezing, headache, blurred vision, memory loss, dizziness, indigestion, nausea, unconsciousness, and death.

CHRONIC: There are currently no known adverse health effects associated with chronic exposure to this gas.

TARGET ORGANS: Respiratory system, blood system, cardiovascular system, reproductive system.

HAZARDOUS MATERIAL INFORMATION SYSTEM			
HEALTH		(BLUE)	2
FLAMMABILITY		(RED)	0
REACTIVITY		(YELLOW)	0
PROTECTIVE EQUIPMENT			B
EYES	RESPIRATORY	HANDS	BODY
See Section 8			
For routine industrial applications			

4. FIRST-AID MEASURES

RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO THIS PRODUCT WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus must be worn.

No unusual health effects are anticipated after exposure to this product, due to the small cylinder size. If any adverse symptom develops after over-exposure to this product, remove victim(s) to fresh air as quickly as possible. Only trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation if necessary.

Victim(s) who experience any adverse effect after over-exposure to this product must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take a copy of the label and the MSDS to physician or other health professional with victim(s).

5. FIRE-FIGHTING MEASURES

FLASH POINT, (method): Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not applicable.

Upper (UEL): Not applicable.

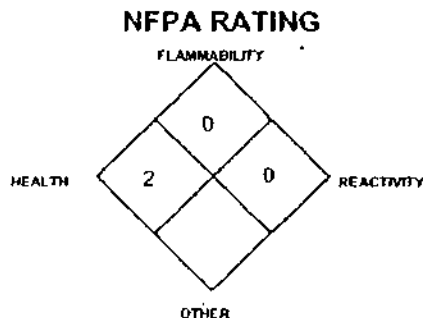
FIRE EXTINGUISHING MATERIALS: Non-flammable gas mixture. Use extinguishing media appropriate for surrounding fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS This gas mixture is not flammable; however, containers, when involved in fire, may rupture or burst in the heat of the fire.

Explosion Sensitivity to Mechanical Impact: Not Sensitive.

Explosion Sensitivity to Static Discharge: Not Sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment.



6. ACCIDENTAL RELEASE MEASURES

LEAK RESPONSE: Due to the small size and content of the cylinder, an accidental release of this product presents significantly less risk of an oxygen deficient environment and other safety hazards than a similar release from a larger cylinder. However, as with any chemical release, extreme caution must be used during emergency response procedures. In the event of a release in which the atmosphere is unknown, and in which other chemicals are potentially involved, evacuate immediate area. Such releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a leak, clear the affected area, protect people, and respond with trained personnel.

For emergency disposal, secure the cylinder and slowly discharge the gas to the atmosphere in a well-ventilated area or outdoors. Allow the gas mixture to dissipate. If necessary, monitor the surrounding area (and the original area of the release) for oxygen and Carbon Monoxide. Carbon Monoxide level must be below exposure level listed in Section 2 (Composition and Information on Ingredients) before non-emergency personnel are allowed to re-enter area.

If leaking incidentally from the cylinder or its valve, contact your supplier.

7. HANDLING and USE

WORK PRACTICES AND HYGIENE PRACTICES: Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of this product could occur without any significant warning symptoms, due to oxygen deficiency. Do not attempt to repair, adjust, or in any other way modify the cylinders containing Carbon Monoxide. If there is a malfunction or another type of operational problem, contact nearest distributor immediately.

STORAGE AND HANDLING PRACTICES: Cylinders should be firmly secured to prevent falling or being knocked-over. Cylinders must be protected from the environment, and preferably kept at room temperature (approximately 21°C, 70°F). Cylinders should be stored in dry, well-ventilated areas, away from sources of heat, ignition, and direct sunlight. Protect cylinders against physical damage.

7. HANDLING and USE (Continued)

Full and empty cylinders should be segregated. Use a first-in, first-out inventory system to prevent full containers from being stored for long periods of time. These cylinders are not refillable. **WARNING! Do not refill DOT 39 cylinders. To do so may cause personal injury or property damage.**

SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS: WARNING! Compressed gases can present significant safety hazards. During cylinder use, use equipment designed for these specific cylinders. Ensure all lines and equipment are rated for proper service pressure.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely. Always use product in areas where adequate ventilation is provided.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: No special ventilation systems or engineering controls are needed under normal circumstances of use. As with all chemicals, use this product in well-ventilated areas. If this product is used in a poorly-ventilated area, install automatic monitoring equipment to detect the levels of Carbon Monoxide and oxygen.

RESPIRATORY PROTECTION: No special respiratory protection is required under normal circumstances of use. Use supplied air respiratory protection if Carbon Monoxide level exceeds limits given in Section 2 (Composition Information on Ingredients) and oxygen levels are below 19.5% or unknown during emergency response to a release of this product. If respiratory protection is required for emergency response to this product, follow the requirements of the Federal OSHA Respiratory Protection Standard (29 CFR 1910.134) or equivalent State standards.

EYE PROTECTION: Safety glasses.

HAND PROTECTION: No special protection is needed under normal circumstances of use.

BODY PROTECTION: No special protection is needed under normal circumstances of use.

9. PHYSICAL and CHEMICAL PROPERTIES

Unless otherwise specified, the following information is for Nitrogen, the main component of this gas mixture.

GAS DENSITY @ 32°F (0°C) and 1 atm: .072 lbs/ ft³ (1.153 kg/m³)

BOILING POINT: -320.4°F (-195.8°C)

FREEZING/MELTING POINT @ 10 psig -210°C (-345.8°F)

SPECIFIC GRAVITY (air = 1) @ 70°F (21.1°C): 0.906

pH: Not applicable.

SOLUBILITY IN WATER vol/vol @ 32°F (0°C) and 1 atm: 0.023

MOLECULAR WEIGHT: 28.01

EVAPORATION RATE (nBuAc = 1): Not applicable.

EXPANSION RATIO: Not applicable.

ODOR THRESHOLD: Not applicable. Odorless.

SPECIFIC VOLUME (ft³/lb): 13.8

VAPOR PRESSURE @ 70°F (21.1°C) psig: Not applicable.

COEFFICIENT WATER/OIL DISTRIBUTION: Not applicable.

APPEARANCE AND COLOR: This product is a colorless, odorless gas mixture.

HOW TO DETECT THIS SUBSTANCE (warning properties): There are no unusual warning properties associated with a release of this product.

10. STABILITY and REACTIVITY

STABILITY: Normally stable in gaseous state.

DECOMPOSITION PRODUCTS: The thermal decomposition products of Methane include carbon oxides. The other components of this gas mixture do not decompose, per se, but can react with other compounds in the heat of a fire.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Titanium will burn in Nitrogen (the main component of this product). Lithium reacts slowly with Nitrogen at ambient temperatures. Components of this product (Hydrogen, Carbon Monoxide, Methane) are also incompatible with strong oxidizers (i.e. chlorine, bromine pentafluoride, oxygen, oxygen difluoride, and nitrogen trifluoride). Carbon Monoxide is mildly corrosive to nickel and iron (especially at high temperatures and pressures).

10. STABILITY and REACTIVITY (Continued)

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Contact with incompatible materials. Cylinders exposed to high temperatures or direct flame can rupture or burst.

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The following toxicology data are available for the components of this product:

NITROGEN: There are no specific toxicology data for Nitrogen. Nitrogen is a simple asphyxiant, which acts to displace oxygen in the environment.

HYDROGEN: There are no specific toxicology data for Hydrogen. Hydrogen is a simple asphyxiant (SA), which acts to displace oxygen in the environment.

METHANE: There are no specific toxicology data for Methane. Methane is a simple asphyxiant, which acts to displace oxygen in the environment.

OXYGEN: Oxygen is the vital element in the atmosphere in which we live and breathe. The atmosphere contains approximately 21% oxygen. Toxicological data are available for Oxygen, but due to the small cylinder size and subsequent small total amount of Oxygen in this mixture, no effects are anticipated.

CARBON MONOXIDE:

TCLo (inhalation, mouse) = 65 ppm/24 hours (7-18 preg); reproductive effects

TCLo (inhalation, mouse) = 8 pph/1 hour (female 8D post); teratogenic effects

TCLo (inhalation, human) = 600 mg/m³/10 minutes

LCLo (inhalation, man) = 4000 ppm/30 minutes

TCLo (inhalation, man) = 650 ppm/45 minutes: central nervous system and blood system effects.

LCLo (inhalation, human) = 5000 ppm/5 minutes

LCLo (inhalation, dog) = 4000 ppm/46 minutes

LCLo (inhalation, rabbit) = 4000 ppm

LC₅₀ (inhalation, rat) = 1811 ppm/4 hours

LC₅₀ (inhalation, guinea pig) = 2450 ppm/4 hours

LC₅₀ (inhalation, guinea pig) = 5718 ppm/4 hours

LCLo (inhalation, mammal) = 5000 ppm/5 minutes

LD₅₀ (inhalation, wild bird) = 1334 ppm

SUSPECTED CANCER AGENT: The components of this gas mixture are not found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, and IARC; therefore are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: Not applicable.

SENSITIZATION OF PRODUCT: The components of this gas mixture are not sensitizers.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this gas mixture on the human reproductive system.

Mutagenicity: This gas mixture is not expected to cause mutagenic effects in humans.

Embryotoxicity: This gas mixture is not expected to cause embryotoxic effects in humans.

Teratogenicity: This gas mixture is not expected to cause teratogenic effects in humans due to the small cylinder size and small total amount of all components. Carbon Monoxide, a component of this gas mixture which exists up to 1%, can cause teratogenic effects in humans. Severe exposure to Carbon Monoxide during pregnancy has caused adverse effects and the death of the fetus. In general, maternal symptoms are an indicator of the potential risk to the fetus since Carbon Monoxide is toxic to the mother before it is toxic to the fetus.

Reproductive Toxicity: This gas mixture is not expected to cause adverse reproductive effects in humans.

A *mutagen* is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generation lines. An *embryotoxin* is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A *teratogen* is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A *reproductive toxin* is any substance which interferes in any way with the reproductive process.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing respiratory conditions may be aggravated by over-exposure to this product. Carbon Monoxide, a component of this gas mixture, can aggravate some diseases of the cardiovascular system, such as coronary artery disease and angina pectoris.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate over-exposure. Hyperbaric oxygen is the most efficient antidote to Carbon Monoxide poisoning, the optimum range being 2-2.5 atm. A special mask, or, preferably, a compression chamber to utilize oxygen at these pressures is required. Avoid administering stimulant drugs.

BIOLOGICAL EXPOSURE INDICES (BEIs): Biological Exposure Indices (BEIs) are applicable for this product, as follows:

BIOLOGICAL EXPOSURE INDICES (BEIs) for components of this product are as follows:		
CHEMICAL DETERMINANT	SAMPLING TIME	BEI
CARBON MONOXIDE • Carboxyhemoglobin in blood • Carbon monoxide in end-exhaled air	• End of shift • End of shift	• 3.5% of hemoglobin • 20 ppm

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL STABILITY: The components of this gas mixture occur naturally in the atmosphere. The gas will be dissipated rapidly in well-ventilated areas. The following environmental data are applicable to the components of this product.

CARBON MONOXIDE: Water solubility = 3.3 ml/100 cc at 0 °C; 2.3 ml at 20 °C.

OXYGEN: Water Solubility = 1 volume Oxygen/32 volumes water at 20°C. Log K_{ow} = -0.65

NITROGEN: Water Solubility = 2.4 volumes Nitrogen/100 volumes water at 0°C; 1.6 volumes Nitrogen/100 volumes water at 20°C.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: No evidence is currently available on this product's effects on plant and animal life. Carbon Monoxide, a component of this product, can be deadly to exposed animal life, producing symptoms similar to those experienced by humans. Carbon Monoxide may also be harmful to plant life.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No evidence is currently available on this product's effects on aquatic life. The presence of more than a trace of Carbon Monoxide (a component of this product) is a hazard to fish.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. Cylinders with undesired residual product may be safely vented outdoors with the proper regulator. For further information, refer to Section 16 (Other Information).

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Compressed gases, n.o.s. (Nitrogen, Oxygen)

HAZARD CLASS NUMBER and DESCRIPTION: 2.2 (Non-Flammable Gas)

UN IDENTIFICATION NUMBER: UN 1956

PACKING GROUP: Not applicable.

DOT LABEL(S) REQUIRED: Non-Flammable Gas

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (1996): 126

MARINE POLLUTANT: The components of this gas mixture are not classified by the DOT as Marine Pollutants (as defined by 49 CFR 172.101, Appendix B).

SPECIAL SHIPPING INFORMATION: Cylinders should be transported in a secure position, in a well-ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards. If transporting these cylinders in vehicles, ensure these cylinders are not exposed to extremely high temperatures (as may occur in an enclosed vehicle on a hot day). Additionally, the vehicle should be well-ventilated during transportation.

Note: DOT 39 Cylinders ship in a strong outer carton (overpack). Pertinent shipping information goes on the outside of the overpack. DOT 39 Cylinders do not have transportation information on the cylinder itself.

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: THIS MATERIAL IS CONSIDERED AS DANGEROUS GOODS. Use the above information for the preparation of Canadian Shipments.

15. REGULATORY INFORMATION

SARA REPORTING REQUIREMENTS: This product is subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act, as follows:

COMPONENT	SARA 302	SARA 304	SARA 313
Oxygen	NO	NO	NO
Methane	NO	NO	NO
Hydrogen	NO	NO	NO
Carbon Monoxide	NO	NO	NO
Nitrogen	NO	NO	NO

SARA THRESHOLD PLANNING QUANTITY: Not applicable.

TSCA INVENTORY STATUS: The components of this gas mixture are listed on the TSCA Inventory.

CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

15. REGULATORY INFORMATION (Continued)

OTHER U.S. FEDERAL REGULATIONS:

- Carbon Monoxide is subject to the reporting requirements of CFR 29 1910.1000. Carbon Monoxide is listed on Table Z.1.
- Hydrogen and Methane are subject to the reporting requirements of Section 112(r) of the Clean Air Act. The Threshold Quantity for each of these gases is 10,000 pounds and so this mixture will not be affected by the regulation.
- This gas mixture does not contain any Class I or Class II ozone depleting chemicals (40 CFR part 82).
- Nitrogen and Oxygen are not listed as Regulated Substances, per 40 CFR, Part 68, of the Risk Management for Chemical Releases. Carbon Monoxide, Methane, and Hydrogen are listed under this regulation in Table 3 as Regulated Substances (Flammable Substances), in quantities of 10,000 lbs (4,553 kg) or greater, and so this mixture will not be affected by the regulation.

OTHER CANADIAN REGULATIONS: This gas mixture is categorized as a Controlled Product, Hazard Classes A and D2A, as per the Controlled Product Regulations.

STATE REGULATORY INFORMATION: The components of this gas mixture are covered under the following specific State regulations:

Alaska - Designated Toxic and Hazardous Substances: Carbon Monoxide, Methane, Hydrogen.

California - Permissible Exposure Limits for Chemical Contaminants: Carbon Monoxide, Nitrogen, Methane, Hydrogen.

Florida - Substance List: Oxygen, Carbon Monoxide, Hydrogen.

Illinois - Toxic Substance List: Carbon Monoxide, Hydrogen.

Kansas - Section 302/313 List: No.

Massachusetts - Substance List: Oxygen, Carbon Monoxide, Methane, Hydrogen.

Minnesota - List of Hazardous Substances: Carbon Monoxide, Methane, Hydrogen.

Missouri - Employer Information/Toxic Substance List: Methane, Hydrogen

New Jersey - Right to Know Hazardous Substance List: Oxygen, Carbon Monoxide, Nitrogen, Methane, Hydrogen.

North Dakota - List of Hazardous Chemicals, Reportable Quantities: No.

Pennsylvania - Hazardous Substance List: Oxygen, Carbon Monoxide, Nitrogen, Methane, Hydrogen.

Rhode Island - Hazardous Substance List: Oxygen, Carbon Monoxide, Nitrogen, Methane, Hydrogen.

Texas - Hazardous Substance List: No.

West Virginia - Hazardous Substance List: No.

Wisconsin - Toxic and Hazardous Substances: No.

CALIFORNIA PROPOSITION 65: Carbon Monoxide (a component of this product) is on the California Proposition 65 lists as a chemical known to the State of California to cause birth defects or other reproductive harm.

16. OTHER INFORMATION

INFORMATION ABOUT DOT-39 NRC (Non-Refillable Cylinder) PRODUCTS

DOT 39 cylinders ship as hazardous materials when full. Once the cylinders are relieved of pressure (empty) they are not considered hazardous material or waste. Residual gas in this type of cylinder is not an issue because toxic gas mixtures are prohibited. Calibration gas mixtures typically packaged in these cylinders are Nonflammable n.o.s., UN 1956. A small percentage of calibration gases packaged in DOT 39 cylinders are flammable or oxidizing gas mixtures.

For disposal of used DOT-39 cylinders, it is acceptable to place them in a landfill if local laws permit. Their disposal is no different than that employed with other DOT containers such as spray paint cans, household aerosols, or disposable cylinders of propane (for camping, torch etc.). When feasible, we recommended recycling for scrap metal content. Air Liquide America will do this for any customer that wishes to return cylinders to us prepaid. All that is required is a phone call to make arrangements so we may anticipate arrival. Scrapping cylinders involves some preparation before the metal dealer may accept them. We perform this operation as a service to valued customers who want to participate.

MIXTURES: When two or more gases or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

16. OTHER INFORMATION (Continued)

Further information about the handling of compressed gases can be found in the following pamphlets published by: Compressed Gas Association Inc. (CGA), 1725 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4102. Telephone: (703) 412-0900.

P-1 *"Safe Handling of Compressed Gases in Containers"*
AV-1 *"Safe Handling and Storage of Compressed Gases"*
 "Handbook of Compressed Gases"

PREPARED BY: CHEMICAL SAFETY ASSOCIATES, Inc.
 9163 Chesapeake Drive, San Diego, CA 92123-1002
 619/565-0302

Fax on Demand: 1-800/231-1366



AIR LIQUIDE

This Material Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of Air Liquide America Corporation's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this product is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.

MATERIAL SAFETY DATA SHEET

1. Product Name: **Unleaded Gasoline** Last Revision: 10/17/02
MSDS Number: A0001.msd Date Prepared: 10/05/85

Synonyms: Conventional Unleaded Gasoline, Unleaded Regular, Petrol, Motor Spirits, NL87 Oct. Over 7.8 RVP

Product Description: A volatile blend of paraffinic, olefinic, and aromatic hydrocarbons for automotive fuel.

2. COMPOSITION & INFORMATION ON INGREDIENTS

Limits*	CAS No.	Wt%	Occupational Exposure		
			OSHA PEL	ACGIH TLV	Other
Product Units					
Unleaded Gasoline ppm	8006-61-9	100	300**	300	500 STEL
Components					
Benzene ppm	71-43-2	0-5.0	1	0.5	2.5 (ACGIH) STEL
Toluene ppm	108-88-3	0-25.0	100	50	5 (OSHA) STEL ppm
Xylene ppm	1330-20-7	0-25.0	100	100	150 STEL
Ethyl benzene ppm	100-41-4	0-5.0	100	100	125 STEL
n-Hexane ppm	110-54-3	< 3.5	50	50	
Hexane (other isomers) ppm	N/A	< 9.0	500	500	1000 STEL
1,2,4-Trimethyl Benzene ppm	95-63-6	0-5.0	25**	25	
Cumene ppm	98-82-8	0-2.0	50	50	SKIN
Butane ppm	106-97-8	<9.0	800**	800	
Pentane	109-66-0	<6.5	600	600	750 STEL

ppm
 t-Butyl Alcohol 75-65-0 0-10.0 100 100 150 STEL
 ppm
 Methyl t-butyl 1634-04-4 0-15.0 N/A 40
 ppm
 Ether (MTBE)

Key: * = 8-Hr. TWA unless otherwise specified
 N/A = Not Available
 STEL = Short Term Exposure Limit; 15 minutes
 SKIN = May be skin absorbed.
 ** = Vacated 1989 PEL

3. HAZARD IDENTIFICATION

Note: This product has not been tested by El Paso Corporation to determine its specific health hazards. Therefore, the information provided in this section includes health hazard information on the product components.

Carcinogenicity:	NTP	IARC Monographs	OSHA
Regulated			
Unleaded Gasoline	No	2B*	No
Benzene	Yes	Yes	Yes

"2B*" = This product mixture and gasoline engine exhaust are classified by IARC as "possibly carcinogenic to humans".

Potential Health Effects From Overexposure

Acute Effects:

Eyes: Slight to moderate eye irritation with direct contact.

Skin: Moderately irritating; causing redness, drying of the skin.

Inhalation: Irritating to mucous membrane and respiratory tract. Can act as a simple asphyxiant. Overexposure to vapors may lead to headache, nausea, drowsiness, fatigue, pneumonitis, pulmonary edema, central nervous system depression, coma and respiratory arrest.

Ingestion: May cause stomach irritation, gastritis, headache, nausea, drowsiness, loss of consciousness, convulsions, cyanosis, pneumonitis, pulmonary edema, central nervous system depression and capillary hemorrhaging of

the lung and internal organs. Aspiration hazard if vomiting occurs.

Chronic Effects:

Skin and eye irritation. May affect the respiratory and central nervous system. Recent studies indicate kidney damage and kidney cancer in rats, and liver cancer in mice.

Additional Medical and Toxicological Information:

Contact with full strength or even dilute formulations of this product or exposure above and/or below the PEL or TLV may aggravate pre-existing dermatitis or respiratory disorders in certain individuals. There is sufficient evidence for the carcinogenicity of benzene in humans. Benzene may cause degeneration in blood forming organs leading to anemia, or acute myelogenous leukemia with large chronic exposures. Butane and isobutane have been shown to be cardiac sensitizers in laboratory animal testing. N-hexane has been shown to cause polyneuropathy in animal toxicological tests.

4. FIRST AID MEASURES

Eye Contact: Flush thoroughly with water for at least 15 minutes, including under eyelids. Contact a physician immediately, preferably an emergency department. Speed and thoroughness in rinsing eyes are important to avoid permanent injury.

Skin Contact: Remove contaminated clothing and shoes. Wash affected areas with soap and flush with large amounts of water for 15 to 20 minutes. Get immediate medical attention by calling 911.

Inhalation: Remove to fresh air. If breathing has stopped, apply artificial respiration. Seek immediate medical attention by calling 911.

Ingestion: Do not induce vomiting. If spontaneous vomiting occurs hold the victim's head lower than hips to prevent aspiration.

5. FIRE FIGHTING MEASURES

Flash Point: -45°F (TCC)

Flammable Limits in Air, % by Volume:

Lower: 1.4

Upper: 7.6

Autoignition Temperature: 495-850°F

Extinguishing Media: Dry chemical, foam, or carbon dioxide.

NFPA Ratings: Health: 1 Flammability: 3 Reactivity: 0

General Hazard:

Flowing gasoline can be ignited by self-generated static electricity: containers should be grounded and bonded. Runoff to sewer may create fire or explosion hazard well downstream from the source.

Fire Fighting Instructions:

Use a smothering technique for extinguishing fire. Do not use a forced water stream directly on gasoline fires as this will tend to scatter the fire. Use water spray to cool fire-exposed containers. Firefighters should wear self-contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE

Remove sources of heat or ignition including internal combustion engines and power tools. Clean up spill, but do not flush to sewer or surface water. Ventilate area and avoid inhalation of vapors or mists.

7. HANDLING & STORAGE

Store in tightly closed containers in a dry cool place, away from incompatible materials or source of heat and ignition. Ground and bond all transfer and storage equipment to prevent static sparks and equip with self-closing valves, pressure vacuum bungs and flame arrestors. Empty containers may contain residue (liquid and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame sparks, or other sources of ignition; they may explode and cause injury or death.

Gasoline is to be used as motor fuel only. Never use as a cleaning solvent or degreaser. Use explosion-proof electrical equipment.

No smoking should be allowed in area of use.

8. EXPOSURE CONTROL, PERSONAL PROTECTION

Eye Protection: Contact lenses should not be worn with chemical safety glasses or goggles where contact with liquid or mist may occur.

Skin Protection: Wear appropriate gloves and other PPE when contact with skin may occur. Launder contaminated clothing prior to reuse. Wash with soap and water before eating, drinking or smoking.

Inhalation: Wear self-contained breathing apparatus for cleaning large spills or entry into tanks, vessels or other confined spaces.

Ventilation: Provide adequate general and local ventilation: (1) to maintain airborne chemical concentrations below applicable exposure limits, (2) to prevent accumulation of flammable vapors and formation of explosive atmospheres, and (3) to prevent formation of oxygen deficient atmospheres, especially in confined spaces. [Note: this product may release gases or vapors that can displace oxygen in enclosed areas.]

9. PHYSICAL & CHEMICAL PROPERTIES

Boiling Point @760 mmHg:	80-430°F	Melting Point:
Variable		
Vapor Pressure mmHg @100°F:	325-525	Vapor Density
(Air=1):	3-4	

% Solubility in H ₂ O:	Negligible	pH: N/A
Specific Gravity 60/60F:	0.7-0.77	Evaporation Rate
% Volatile by Volume:	100	(Butyl Acetate=1): N/A
Viscosity (method, temp.):	1.4 cST@40°C	Odor: Aromatic odor
Appearance: Bronze fluid		Reid VP: 6.4 - 13.0
psi		

10. STABILITY & REACTIVITY

Stability: Stable under normal conditions of use.

Hazardous Polymerization: Will not occur.

Conditions to Avoid/Incompatibilities: Strong oxidizing agents, heat, sparks, flame, build-up of static electricity, halogens, strong acids and alkalis.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, and hydrocarbons.

11. TOXICOLOGICAL INFORMATION

No data available.

12. ECOLOGICAL INFORMATION

No data available.

13. DISPOSAL INFORMATION

Dispose through a licensed waste disposal company. Follow applicable federal, state and local waste disposal regulations.

14. TRANSPORT INFORMATION

Gasoline, 3, UN 1203, Packing Group II

15. REGULATORY INFORMATION

EPA SARA TITLE III

Section 302 EPCRA Extremely Hazardous Substances (EHS)

Product Component	CAS No.	Wt%	RQ, lb	TPQ, lb
None				

Section 304 CERCLA Hazardous Substances

Product Component	CAS No.	Wt%	RQ, lb
Benzene	71-43-2	0-5.0	10
Toluene	108-88-3	0-25.0	1000
Xylene	1330-20-7	0-25.0	100
Ethyl benzene	100-41-4	0-5.0	1000
n-Hexane	110-54-3	< 3.5	5000
Hexane (other isomers)	N/A	< 9.0	5000
Cumene	98-82-8	0-2.0	5000
Methyl t-butyl Ether	1634-04-4	0-15.0	1000

Section 311/312 Hazard Categorization

Acute: Chronic: Fire: Pressure: Reactive:
X X X

Section 313 EPCRA Toxic Substances

Product Component	CAS No.	Wt. %
Benzene	71-43-2	0-5.0
Toluene	108-88-3	0-25.0
Xylene	1330-20-7	0-25.0
Ethyl benzene	100-41-4	0-5.0
Cumene	98-82-8	0-2.0
t-Butyl Alcohol	75-65-0	0-10.0
Methyl t-Butyl Ether	1634-04-4	0-15.0

Key: RQ = Reportable Quantity
 TPQ = Threshold Planning Quantity (EHS)

CALIFORNIA PROPOSITION 65 WARNING

Chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm may be found in crude oil and petroleum products. Although it is possible to sufficiently refine a crude oil or its end products to remove the potential for cancer, we are advising that one or more of the listed chemicals may be present in some detectable quantities. Read and follow directions and use care when handling crude oil and petroleum products.

16. OTHER INFORMATION

THIS INFORMATION RELATES ONLY TO THE SPECIFIC MATERIAL DESIGNATED AND MAY NOT BE VALID FOR SUCH MATERIAL USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS. SUCH INFORMATION IS TO THE BEST OF THIS COMPANY'S KNOWLEDGE AND BELIEVED ACCURATE AND RELIABLE AS OF THE DATE INDICATED. HOWEVER, NO REPRESENTATION, WARRANTY OR GUARANTEE IS MADE AS TO THE ACCURACY, RELIABILITY OR COMPLETENESS. IT IS THE USER'S RESPONSIBILITY TO SATISFY THEMSELVES AS TO THE SUITABILITY AND COMPLETENESS OF SUCH INFORMATION FOR THEIR OWN PARTICULAR USE.

This is the end of MSDS A0001.msd

MATERIAL SAFETY DATA SHEET

1. **Product Name:** Diesel Fuel No. 2 Last Revision:
01/23/2003
MSDS Number: A0006.msds Date Prepared: 07/07/86

Synonyms: Diesel Fuel No. 2, F76 Naval Distillate.
Product Description: A complex mixture of paraffinic, olefinic, naphthenic and aromatic hydrocarbons. A distillate of low sulfur content.

2. COMPOSITION & INFORMATION ON INGREDIENTS

Limits*	Occupational Exposure				
	CAS No.	Wt%	OSHA PEL	ACGIH TLV	Other
Product Units					
Diesel Fuel No. 2	68476-34-6	100	N/A	N/A	

Key: * = 8-Hr. TWA unless otherwise specified

3. HAZARD IDENTIFICATION

Note: This product has not been tested by El Paso Corporation to determine its specific health hazards. Therefore, the information provided in this section includes health hazard information on the product components.

Carcinogenicity:	NTP	IARC Monographs	OSHA Regulated
	No	No	No

Potential Health Effects from Overexposure:

Acute Effects:

Eyes: Slight to moderate eye irritation with direct contact.

Skin: Moderately to extremely irritating; causing redness, drying to burns or blistering of the skin.

Inhalation: Inhalation can be irritating to the mucous membrane and respiratory tract. Will produce symptoms of intoxication such as headache, dizziness, nausea, vomiting, and loss of coordination.

Ingestion: Gastric irritation, abdominal pain, mild excitation, loss of consciousness, convulsions, cyanosis, congestion and capillary hemorrhaging of the lung and internal organs. Aspiration hazard if vomiting occurs.

Chronic Effects:

Prolonged and repeated skin contact may cause dermatitis.

Additional Medical and Toxicological Information:

May aggravate pre-existing dermatitis. Middle distillates have caused skin cancer and kidney damage in laboratory animals. The National Institute for Occupational Safety and Health (NIOSH), based on findings of carcinogenic and tumorigenic responses of mice and rats exposed to whole diesel exhaust, recommends that whole diesel exhaust be regarded as a "potential occupational carcinogen".

4. FIRST AID MEASURES

Eye Contact: Immediately flush with large amounts of water for at least 15 minutes, including under the eyelids. Contact a physician immediately, preferably an emergency department.

Skin Contact: Cool the exposed area immediately. Remove contaminated clothing. Wash affected areas with soap and water.

Inhalation: Remove to fresh air. If breathing has stopped, apply artificial respiration. Get medical attention by calling 911.

Ingestion: Do not induce vomiting. If spontaneous vomiting occurs, hold the victim's head lower than their hips to prevent aspiration.

5. FIRE FIGHTING MEASURES

Flash Point: 125°F (PM)

Flammable Limits in Air, % by Volume:

Lower: 0.6

Upper: 7.5

Autoignition Temperature: 495°F

Extinguishing Media: Dry chemical, foam, carbon dioxide, and water spray.

NFPA Ratings: Health: 0 Flammability: 2 Reactivity: 0

General Hazard:

Flowing oil can be ignited by self-generated static electricity.

Fire Fighting Instructions:

Use a water spray to cool fire-exposed containers. Use a smothering technique for extinguishing fire of this combustible liquid. Do not use a force water stream directly on oil fires as this will tend to scatter the fire. Firefighters should wear self-contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE

Remove sources of heat or ignition including internal combustion engines and power tools. Remove spill with vacuum trucks or pump and soak up residue with an inert absorbent. Do not flush to sewers or surface water. Ventilate area and avoid breathing vapors.

7. HANDLING & STORAGE

Store in tightly closed containers in a dry, cool place, away from incompatible substances or sources of heat or ignition. Ground and bond all transfer and storage equipment to prevent static sparks and equip with self-closing valves, pressure vacuum bungs and flame arrestors. Empty containers may contain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame sparks or other sources of ignition; they may explode and cause injury or death.

8. EXPOSURE CONTROL, PERSONAL PROTECTION

Eye Protection: Remove contact lenses and wear chemical safety glasses or goggles where contact with liquid or mist may occur.

Skin Protection: Wear appropriate gloves and other PPE when contact with skin may occur. Launder contaminated clothing prior to reuse. Wash with soap and water before eating, drinking or smoking.

Inhalation: Use approved respiratory protective equipment (wear self-contained breathing apparatus) for cleaning large spills or entry into tanks, vessels or other confined spaces.

Ventilation: Provide adequate general and local ventilation: (1) to maintain airborne chemical concentrations below applicable exposure limits, (2) to prevent accumulation of flammable vapors and formation of explosive atmospheres, and (3) to prevent formation of oxygen deficient atmospheres, especially in confined spaces. [Note: this product may release gases or vapors that can displace oxygen in enclosed areas.]

9. PHYSICAL & CHEMICAL PROPERTIES

Boiling Point 760 mmHg: 300-675°F Melting Point: N/A
Vapor Pressure mmHg @20°C: <0.5 Vapor Density (Air=1):8

% Solubility in H₂O: Insoluble pH: N/A
Specific Gravity 60/60F: 0.87 Evaporation Rate
% Volatile by Volume @ 20°C: N/A (Butyl Acetate=1): 0.01
Viscosity (method, temp.):1.9-4.1cST @40°C
Odor: Mild petroleum
Appearance: Clear to amber, blue or red liquid

10. STABILITY & REACTIVITY

Stability: Stable under normal conditions of use.

Hazardous Polymerization: Will not occur.

Conditions to Avoid/Incompatibilities: Strong oxidizing agents, heat, sparks, flame and build up of static electricity.

Hazardous Decomposition Products: CO, CO₂, SO₂, hydrocarbons.

11. TOXICOLOGICAL INFORMATION

No data available.

12. ECOLOGICAL INFORMATION

No data available.

13. DISPOSAL INFORMATION

Dispose through a licensed waste disposal company. Follow federal, state and local regulations.

14. TRANSPORT INFORMATION

Domestic: Diesel Fuel, 3, NA 1993, Packing Group III.
International: Petroleum distillates, N.O.S , 3. UN 1268,
Packing Group III.

15. REGULATORY INFORMATION

EPA SARA TITLE III

Section 302 EPCRA Extremely Hazardous Substances (EHS)

Product Component	CAS No.	Wt%	RQ, lb	TPQ, lb
None				

Section 304 CERCLA Hazardous Substances

Product Component	CAS No.	Wt%	RQ, lb
None			

Section 311/312 Hazard Categorization

Acute:	Chronic:	Fire:	Pressure:	Reactive:
X	X	X		

Section 313 EPCRA Toxic Substances

Product Component	CAS No.	Wt. %
None		

Key: RQ = Reportable Quantity
TPQ = Threshold Planning Quantity of EHS

CALIFORNIA PROPOSITION 65 WARNING

Chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm may be found in crude oil and petroleum products. Although it is possible to sufficiently refine a crude oil or its end products to remove the potential for cancer, we are advising that one or more of the listed chemicals may be present in some detectable

quantities. Read and follow directions and use care when handling crude oil and petroleum products.

16. OTHER INFORMATION

THIS INFORMATION RELATES ONLY TO THE SPECIFIC MATERIAL DESIGNATED AND MAY NOT BE VALID FOR SUCH MATERIAL USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS. SUCH INFORMATION IS TO THE BEST OF THIS COMPANY'S KNOWLEDGE AND BELIEVED ACCURATE AND RELIABLE AS OF THE DATE INDICATED. HOWEVER, NO REPRESENTATION, WARRANTY OR GUARANTEE IS MADE AS TO THE ACCURACY, RELIABILITY OR COMPLETENESS. IT IS THE USER'S RESPONSIBILITY TO SATISFY THEMSELVES AS TO THE SUITABILITY AND COMPLETENESS OF SUCH INFORMATION FOR THEIR OWN PARTICULAR USE.

This is the end of MSDS A0006.msd

APPENDIX D

SOIL ACTION LEVEL FOR LEAD

A soil-lead preliminary remediation goal (PRG) is to be proposed to guide remediation efforts at the former Allied Steel property in Clinton, Iowa as part of the overall removal action for the former manufactured gas plant (FMGP) site. The most likely future land redevelopment uses for the site are either as a recreational park area or as commercial office and/or support facilities. The site will not be redeveloped into residential land use in the future.

In the Iowa Land Recycling Program (Rule 567 of the Iowa Administrative Code Chapter 137), the State of Iowa currently has a Statewide Standard for lead in soil of 400 milligrams per kilogram (mg/kg) for residential properties, and allows for a site-specific standard of 1,100 mg/kg for nonresidential properties where institutional controls will prevent future residential development. The United States Environmental Protection Agency (EPA) currently has a soil lead hazard standard of 400 mg/kg for bare soil in the play area of residential properties, and 1,200 mg/kg average for bare soil in the remainder of the residential property (non play area). To evaluate the appropriateness of the above standards to the land uses that may occur in the future at the site, the following documents developed by the EPA were reviewed:

- *Assessing Intermittent or Variable Exposures at Lead Sites.* EPA-540-R-03-008; November 2003.
- *Adult Lead Methodology Frequently Asked Questions (FAQs).* <http://www.epa.gov/superfund/programs/lead/almfaq.htm>.
- 40 Code of Federal Regulations (CFR) Part 745, *Lead: Identification of Dangerous Levels of Lead.* Final Rule, Federal Register, January 5, 2001.
- *Economic Analysis of Toxic Substances Control Act Section 403: Lead-Based Paint Hazards Standards.* EPA, December 21, 2000.
- *Risk Analysis to Support Standards for Lead in Paint, Dust, and Soil,* EPA-747-R-97-006; June, 1998.
- *Blood Lead Concentrations of U.S. Adult Females: Summary Statistics from Phases 1 and 2 of the National Health and Nutrition Evaluation Survey (NAHNES III).* EPA OSWER #9285.7-52, March 2002.

The objective of this evaluation was to select a PRG from the variety of standards already available (i.e., 400; 1,100; or 1,200), or recommend an alternative value that would be protective of the different populations that might use the site in the future (i.e., recreational users or commercial employees). Based on review of the background documentation concerning the development of the different standards, the risk assessment that was conducted to develop the EPA standards, and the potential future site uses; a value of 800 mg/kg is recommended as an

appropriate PRG for surface soil (0 to 2 feet). The primary basis for the recommended PRG is as follows:

- The risk analysis conducted by the EPA in development of the national lead standards supports the fact that lead at concentrations of 800 mg/kg should not pose a hazard to even the most sensitive population likely to use the property (i.e., children). The risk analysis considered 1,200 mg/kg to be protective even if present throughout the yard (including the play area).
- The empirical data used in the EPA risk assessment showed the soil concentrations in the child play area had the greatest effect on children's exposure and body burden of lead. Soils outside the play area or that were not bare had little effect on the body burden of lead in the children. This was why EPA made a management decision to make the soil standard for bare soils in a play area (i.e., 400 mg/kg) lower than the 1,200 mg/kg soil standard recommended for the remainder of the yard. If the site is redeveloped as a recreational park, play areas will have imported cover material—such as sand, pea gravel, or wood chips—rather than bare soil.
- The example risk assessment analysis for a recreational scenario provided in the November 2003 *Assessing Intermittent or Variable Exposures at Lead Sites* indicates that intermittent exposure to lead at approximately 800 mg/kg (assuming three days of exposure per week) would be health protective.
- The EPA's updated screening level for lead in soil at commercial/industrial (i.e., non-residential) sites of 800 mg/kg is based on a recent analysis of the combined phases of the third National Health and Nutrition Evaluation Survey (NHANES III) that chose a cleanup goal protective for all subpopulations. The value of 800 mg/kg is considered protective of the most sensitive population under a commercial land use scenario (i.e., the fetus of an adult female construction worker that may have exposure to soils containing lead).
- Although not enrolled in the LRP, the future site use and potential exposure scenarios are consistent with the basis for the LRP non-residential Statewide Standard of 1,100 mg/kg. The recommended level of 800 mg/kg will provide additional protection for future site users.

Lead impacts at the site are anticipated to be concentrated in the surface soil. However, additional impacts at greater depths may be encountered. For soil greater than 2 feet in depth, a PRG of 1,200 mg/kg is recommended. The potential for direct contact, inhalation, or ingestion of soil at these greater depths is limited to short-term intrusive construction work rather than the more frequent recreational or commercial site user.

The following conditions will be applied when implementing these PRGs:

1. On average, soil lead concentrations after remediation will be less than 800 mg/kg for surface soil and less than 1,200 mg/kg for soil deeper than 2 feet.

2. Soil concentrations will be averaged over no more than a one-acre area on site to meet condition 1 above and avoid the masking of possible "hot spots."
3. No individual soil concentration detected in confirmation soil samples that are greater than 2,000 mg/kg will be allowed to remain. This is an arbitrary concentration selected to prevent "hot spots" from being left behind after remediation is complete (similar to condition 2).
4. A land use restriction will be placed on any remaining portion of the property where soil concentrations exceed 400 mg/kg. The land use restriction will maintain that either playgrounds will not be placed in areas where soils are on average greater than 400 mg/kg to prevent soil exposure, or that a physical barrier will be placed over the soil before a playground is built in such areas. This additional condition is provided to be consistent with the intent of the current EPA soil standard that exists for bare soil in the play areas of residential yards (i.e., 400 mg/kg).



THOMAS J. VILSACK, GOVERNOR
SALLY J. PEDERSON, LT. GOVERNOR

March 2, 2000

PAUL W. JOHNSON, DIRECTOR

Certified Mail

Mr. Steve Mockenhaupt
Dustcoating, Inc.
7217 W. 128th Street
Savage, Minnesota 55378

Re: Soil Remediation Plant Number *AG*
Project No. 00-103
Plant No. PP-63-004

Dear Mr. Mockenhaupt:

This letter transmits three permits for the following air contamination sources and emissions control equipment.

Source Description	Control Equipment	Testing	Permit
Thermal Soil Remediation	Thermal Oxidizer and Baghouse	No	00-A-233
Thermal Soil Remediation	Cooler/Mixer and Auxiliary Baghouse	No	00-A-234
Diesel-Electric Generator	None	No	00-A-235

Your attention is directed toward the permit conditions specified in these permits. Based on the information submitted, the Department has determined that:

1. This project is not subject to New Source Performance Standards (NSPS) for the reason there are no applicable subparts.
2. This project is not subject to PSD regulations.
3. The emission units referenced under these permits are not subject to the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAPS) for the reason there are no applicable subparts.

You may contact Michael Hayward of my staff with questions regarding this permit. His telephone number is (515) 281-3499.

Sincerely,

David Phelps, Supervisor
Construction Permit Section
Air Quality Bureau

Enclosures: Permits 00-A-233, 00-A-234 and 00-A-235
cc: Field Offices 1, 2, 3, 4, 5 and 6

Iowa Department of Natural Resources Air Quality Construction Permit

Permit Holder

Firm: Dustcoating, Incorporated

Contact:

Steve Mockenhaupt
Environmental Coordinator

(612) 894-0012

7217 West 128th Street
Savage, Minnesota 55378

Responsible Party:

Larry Johnson
President

Permitted Equipment

Emission Unit(s): Thermal Soil Remediation Unit No. 6

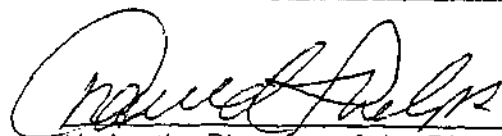
Control Equipment: Thermal Oxidizer/Baghouse

Emission Point: EP-OX-01S

Equipment Location: Portable Equipment --- Various Locations

Plant Number: PP-63-004

Permit No.	Proj. No.	Description	Date	Testing
00-A-233	00-103	Thermal Soil Remediation Unit No. 6 (Thermotech System Corp. - TDU 90) Thermal Oxidizer/Baghouse	Mar 2, 00	No



Under the Direction of the Director of
the Department of Natural Resources

PERMIT CONDITIONS

The owner or operator of the facility shall assure that the installation, operation, and maintenance of this equipment is in compliance with all of the following conditions.

1. Departmental Review

This permit is issued based on information submitted by the applicant. Any misinformation, false statements or misrepresentations by the applicant shall cause this permit to be void. In addition, the applicant may be subject to criminal penalties according to Iowa Code Section 455B.146A.

This permit is issued under the authority of 567 Iowa Administrative Code (IAC) 22.3. The proposed equipment has been evaluated for conformance with Iowa Code Chapter 455B; 567 IAC Chapters 20-31; and 40 CFR Parts 51, 52, 60, 61 and 63 and has the potential to comply.

No review has been undertaken on the engineering aspects of the equipment or control equipment other than the potential of that equipment for reducing air contaminant emissions. The DNR assumes no liability, directly or indirectly, for any loss due to damage to persons or property caused by, resulting from, or arising out of the design, installation, maintenance or operation of the proposed equipment.

2. Transferability

As limited by 567 IAC 22.3(3)"f", this permit is not transferable from one location to another or from one piece of equipment to another, unless the equipment is portable. When portable equipment for which a permit has been issued is to be transferred from one location to another, the DNR shall be notified in writing at least thirty (30) days prior to transferring to the new location. The owner will be notified at least ten (10) days prior to the scheduled relocation if the relocation will cause a violation of the National Ambient Air Quality Standards. In such case, a supplemental permit shall be required prior to the initiation of construction of additional control equipment or equipment modifications needed to meet the standards.

This permit is for the construction and operation of the specific emission unit(s), control equipment and emission point as described in this permit and in the application for this permit. Any owner or operator of the specified emission unit(s), control equipment or emission point, including any person who becomes an owner or operator subsequent to the date on which this permit is issued, is responsible for compliance with the provisions of this permit. No person shall construct, install, reconstruct or alter this emission unit, control equipment or emission point without the required revisions to this permit.

3. Construction

This permit shall become void if construction on the proposed project has not been initiated within eighteen (18) months after the date of the issuance of this permit and completed within thirty-six (36) months after the date of the issuance of this permit.

3. Construction (Continued)

It shall be the responsibility of the owner to ensure that construction conforms to the final plans and specifications as submitted and that adequate operation and maintenance is provided to ensure that no condition of air pollution is created. A supplement to this permit shall be obtained if the owner proposes changes to the final submitted plans and specifications.

4. Credible Evidence

As stated in 567 IAC 21.5 and also in 40 CFR Part 60.11(g), where applicable, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any provisions specified in this permit or any provisions of 567 IAC Chapters 20 through 31.

5. Owner Responsibility

Issuance of this permit shall not relieve the owner or operator of the responsibility to comply fully with applicable provisions of the State Implementation Plan (SIP), and any other requirements of local, state, and federal law.

The owner or operator of any emission unit or control equipment shall maintain and operate the equipment and control equipment at all times in a manner consistent with good practice for minimizing emissions, as required by paragraph 567 IAC 24.2(1) "*Maintenance and Repair*".

6. Disposal of Contaminants

The disposal of materials collected by the control equipment shall meet all applicable rules.

7. Excess Emissions

Excess emissions during a period of startup, shutdown, or cleaning of control equipment are not a violation of the emission standard if it is accomplished expeditiously and in a manner consistent with good practice for minimizing emissions. Cleaning of control equipment, which does not require the shutdown of process equipment, shall be limited to one six-minute period per one-hour period. An incident of excess emissions other than the above is a violation and may be subject to criminal penalties according to Iowa Code 455B.146A. If excess emissions are occurring, either the control equipment causing the excess shall be repaired in an expeditious manner, or the process generating the emissions shall be shutdown within a reasonable period of time, as specified in 567 IAC 24.1.

An incident of excess emissions shall be orally reported to the appropriate DNR field office within eight (8) hours of, or at the start of, the first working day following the onset of the incident. A written report of an incident of excess emissions shall be submitted as a follow-up to all required oral reports within seven (7) days of the onset of the upset condition.

8. Notification, Reporting and Recordkeeping

- A. The owner shall furnish the DNR the following written notifications:
1. The date construction, installation, or alteration is initiated postmarked within seven (7) days following initiation of construction, installation, or alteration;
 2. The date of intended startup, at least ten (10) days before the equipment or control equipment involved is placed into operation;
 3. The actual date of startup, postmarked within fifteen (15) days following the start of operation;
 4. The date of each compliance test required by Permit Condition 12, at least thirty (30) days before the anticipated compliance test date;
 5. The date of each pretest meeting, at least fifteen (15) days before the proposed meeting date. The owner shall request a proposed test plan protocol questionnaire at least sixty (60) days prior to each compliance test date. The completed questionnaire shall be received by the DNR at least fifteen (15) days before the pretest meeting date;
 6. Transfer of equipment ownership, within 30 days of the occurrence;
 7. Portable equipment relocation, at least thirty (30) days before equipment relocation.
- B. The owner shall furnish DNR with the following reports:
1. Oral excess emissions reports, in accordance with 567 IAC 24.1;
 2. Indicator opacity reports in accordance with Opacity Policy 3-b-08 (See footnote 1, Permit Condition 10);
 3. A written compliance demonstration report for each compliance testing event, whether successful or not, postmarked not later than forty-five (45) days after the completion of the test period;
 4. Operation of this emission unit(s) or control equipment outside of those limits specified in Permit Conditions 10, 11 and 14 and according to the schedule set forth in 567 IAC 24.1.

8. Notification, Reporting and Recordkeeping (continued)

- C. The owner shall send notifications, reports and correspondence to the following addresses:

Mr. David Phelps
Construction Permit Supervisor
Air Quality Bureau
Iowa Department of Natural Resources
7900 Hickman Road, Suite 1
Urbandale, Iowa 50322
Telephone: (515) 281-8189
Fax: (515) 242-5094

Field Office 1
909 West Main Street, Suite 4
Manchester, Iowa 52057
Telephone (319) 927-2640
Fax (319) 927-2075

Field Office 4
706 Sunnyside
Atlantic, Iowa 50022
Telephone (712) 243-1934
Fax (712) 243-6251

Field Office 2
2300 15th Street, SW
P.O. Box 1443
Mason City, Iowa 50401
Telephone (515) 424-4073
Fax (515) 424-9342

Field Office 5
607 East 2nd Street
Des Moines, Iowa 50309
Telephone (515) 281-~~9069~~ *ok*
Fax (515) 281-~~9069~~ *9068*

Field Office 3
1900 N. Grand Avenue
Gateway North Mall
Spencer, Iowa 51301
Telephone (712) 262-4177
Fax (712) 262-2901

Field Office 6
1004 West Madison
Washington, Iowa 52352
Telephone (319) 653-2135
Fax (319) 653-2856

- D. The owner shall send correspondence concerning stack testing to:

Stack Testing Coordinator
Air Quality Bureau
Iowa Department of Natural Resources
7900 Hickman Road, Suite 1
Urbandale, Iowa 50322
Telephone: (515) 242-6001
FAX: (515) 242-5127

- E. All data, records, reports, documentation, construction plans, and calculations required under this permit shall be available at the plant during normal business hours for inspection and copying by federal, state, or local air pollution regulatory agencies and their authorized representatives, for a minimum of two (2) years from the date of recording.
-

9. Permit Violations

Knowingly committing a violation of this permit may carry a criminal penalty of up to \$10,000 per day fine and 2 years in jail according to Iowa Code Section 455B.146A.

10. Emission Limits

Pollutant	Lb/Hr	Tons/Yr	Additional Limits	Reference (567 IAC)
Particulate Matter (PM)	NA	NA	0.1 gr/dscf	23.3(2)"a"
PM ₁₀	NA	NA	NA	NAAQS
Opacity	NA	NA	40% ⁽¹⁾	23.3(2)"d"
Sulfur Oxides (SO _x)	NA	NA	NA	23.3(3)
Nitrogen Dioxide (NO ₂)	NA	NA	NA	NA
Volatile Organic Compounds	NA	NA	NA	NA
Carbon Monoxide (CO)	NA	NA	NA	NA
Lead (Pb)	NA	NA	NA	NA
(Single HAP)	NA	NA	NA	NA
(Total HAP)	NA	NA	NA	NA

⁽¹⁾ Per DNR Air Quality Policy 3-b-08, Opacity Limits, an exceedence of the indicator opacity of (20%) will require the owner/operator to promptly investigate the emission unit and make corrections to operations or equipment associated with the exceedence. The permit holder shall also file an "indicator opacity exceedence report" with the DNR field office and keep records as required in the policy. If exceedences continue after the corrections, the DNR may require additional proof to demonstrate compliance (e.g., stack testing).

11. Emission Point Characteristics

This emission point shall conform to the specifications listed below.

Parameter	Value
Stack Height, (ft, from the ground)	35.3 ft
Discharge Style	Vertical
Stack Opening, (inches, dia.)	92.5 inches diameter
Exhaust Temperature (°F)	1,700 F
Exhaust Flowrate (acfm)	108,000 acfm

It shall be the owner's responsibility to ensure that construction conforms with the emission point characteristics stated above. If it is determined that any of the emission point characteristics are different than stated above, the owner must notify the Department and obtain a permit amendment, if required.

12. Initial Performance Testing Requirements

Pollutant	Testing Required	Test Method
PM	No	Iowa Compliance Sampling Manual Method 5
PM ₁₀	No	40 CFR 51, Appendix M, 201A with 202
Opacity	No	40 CFR 60, Appendix A, Method 9
SO _x	No	40 CFR 60, Appendix A, Method 6C
NO ₂	No	40 CFR 60, Appendix A, Method 7E
VOC	No	40 CFR 60, Appendix A, Method 25A
CO	No	40 CFR 60, Appendix A, Method 10
Pb	No	40 CFR 60, Appendix A, Method 12
Other	No	

If specified above, the owner shall verify compliance with the emission limitations contained in Permit Condition 10 within 90 days after achieving maximum production rate and no later than one hundred eighty (180) days after the initial startup date of the proposed equipment. The tests shall be conducted with the equipment operating in a manner representative of maximum rated capacity. Failure to test at the rated capacity may be cause for the Department to limit the emission unit to the operating level at which the compliance tests had been conducted.

Each emissions compliance test must be approved by the DNR. Unless otherwise specified by the DNR, each test shall consist of three separate runs. The duration of each run shall be established by the DNR at the pretest meeting. The arithmetic mean of three acceptable test runs shall apply for compliance, unless otherwise indicated by the DNR. The test methods to be used are those stated above unless otherwise approved by the DNR.

A pretest meeting shall be held at a mutually agreeable site no less than fifteen (15) days prior to the date of each test. Representatives from the DNR shall attend this meeting, along with the owner and the testing firm, if any. It shall be the responsibility of the owner to coordinate and schedule the pretest meeting. The owner shall be responsible for the installation and maintenance of test ports. The DNR shall reserve the right to impose additional, different, or more detailed testing requirements.

13. NSPS and NESHAP Applicability

The emission unit referenced under this permit may be subject to the requirements of either the New Source Performance Standards (NSPS), or the National Emission Standards for Hazardous Air Pollutants (NESHAPS), if there is an applicable subpart within either of these standards.

14. Operating Limits

- A. The process weight rate of the soil remediation unit administered under DNR permits 00-A-233 and 00-A-234 shall not exceed 32 tons per hour.
 - B. The soil remediation unit administered under DNR permits 00-A-233 and 00-A-234 shall be used to process soil with a volatile organic compound (VOC) content not to exceed 2 percent by weight.
-

15. Operating Condition Monitoring

- A. The permit holder shall maintain records on the premises to show the process weight rate per hour of the soil remediation unit administered under DNR permits 00-A-233 and 00-A-234. Records shall be maintained for two (2) years and available for inspection upon request by representatives of the Department of Natural Resources.
 - B. The permit holder shall maintain records on the premises to show the weight percent of volatile organic compound (VOC) content in the contaminated soil processed by the soil remediation unit administered under DNR permits 00-A-233 and 00-A-234. Records shall be maintained for two (2) years and available for inspection upon request by representatives of the Department of Natural Resources.
-

16. Continuous Emission Monitoring

Continuous emission monitoring is not required by this permit at this time.

17. Descriptions of Terms and Acronyms

acfm	Actual cubic foot per minute
Applicant	The owner, company official or authorized agent
CFR	Code of Federal Regulations
Department	Iowa Department of Natural Resources
DNR	Iowa Department of Natural Resources
gr/dscf	Grains per dry standard cubic foot
HAP	Hazardous Air Pollutant(s)
IAC	Iowa Administrative Code
MMBtu	One million British thermal units
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NO ₂	Nitrogen Dioxide, a criteria pollutant measured as NO _x
Owner	The owner or authorized representative
Permit	This document including permit conditions and all submitted application materials
PM ₁₀	Particulate Matter equal to or less than 10 microns in aerodynamic diameter
scfm	Standard cubic foot per minute
SIP	State Implementation Plan
SO ₂	Sulfur Dioxide, the measured surrogate for SO _x
SO _x	Sulfur Oxides, a criteria pollutant
VOC	Volatile Organic Compound

END OF PERMIT CONDITIONS

Iowa Department of Natural Resources Air Quality Construction Permit

Permit Holder

Firm: Dustcoating, Incorporated

Contact:

Steve Mockenhaupt
Environmental Coordinator

(612) 894-0012

7217 West 128th Street
Savage, Minnesota 55378

Responsible Party:

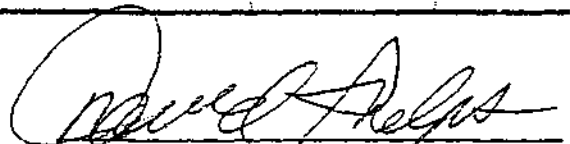
Larry Johnson
President

Permitted Equipment

Emission Unit(s): Thermal Soil Remediation Unit 6
Control Equipment: Mixer-Cooler Baghouse
Emission Point: MC-01S
Equipment Location: Portable Equipment --- Various Locations

Plant Number: PP-63-004

Permit No.	Proj. No.	Description	Date	Testing
00-A-234	00-103	Thermal Soil Remediation Unit 6 (Thermotech System Corp. - TDU 90) Mixer-Cooler Baghouse	Mar 2, 00	No


Under the Direction of the Director of
the Department of Natural Resources

PERMIT CONDITIONS

The owner or operator of the facility shall assure that the installation, operation, and maintenance of this equipment is in compliance with all of the following conditions.

1. Departmental Review

This permit is issued based on information submitted by the applicant. Any misinformation, false statements or misrepresentations by the applicant shall cause this permit to be void. In addition, the applicant may be subject to criminal penalties according to Iowa Code Section 455B.146A.

This permit is issued under the authority of 567 Iowa Administrative Code (IAC) 22.3. The proposed equipment has been evaluated for conformance with Iowa Code Chapter 455B; 567 IAC Chapters 20-31; and 40 CFR Parts 51, 52, 60, 61 and 63 and has the potential to comply.

No review has been undertaken on the engineering aspects of the equipment or control equipment other than the potential of that equipment for reducing air contaminant emissions. The DNR assumes no liability, directly or indirectly, for any loss due to damage to persons or property caused by, resulting from, or arising out of the design, installation, maintenance or operation of the proposed equipment.

2. Transferability

As limited by 567 IAC 22.3(3)"f", this permit is not transferable from one location to another or from one piece of equipment to another, unless the equipment is portable. When portable equipment for which a permit has been issued is to be transferred from one location to another, the DNR shall be notified in writing at least thirty (30) days prior to transferring to the new location. The owner will be notified at least ten (10) days prior to the scheduled relocation if the relocation will cause a violation of the National Ambient Air Quality Standards. In such case, a supplemental permit shall be required prior to the initiation of construction of additional control equipment or equipment modifications needed to meet the standards.

This permit is for the construction and operation of the specific emission unit(s), control equipment and emission point as described in this permit and in the application for this permit. Any owner or operator of the specified emission unit(s), control equipment or emission point, including any person who becomes an owner or operator subsequent to the date on which this permit is issued, is responsible for compliance with the provisions of this permit. No person shall construct, install, reconstruct or alter this emission unit, control equipment or emission point without the required revisions to this permit.

3. Construction

This permit shall become void if construction on the proposed project has not been initiated within eighteen (18) months after the date of the issuance of this permit and completed within thirty-six (36) months after the date of the issuance of this permit.

3. Construction (Continued)

It shall be the responsibility of the owner to ensure that construction conforms to the final plans and specifications as submitted and that adequate operation and maintenance is provided to ensure that no condition of air pollution is created. A supplement to this permit shall be obtained if the owner proposes changes to the final submitted plans and specifications.

4. Credible Evidence

As stated in 567 IAC 21.5 and also in 40 CFR Part 60.11(g), where applicable, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any provisions specified in this permit or any provisions of 567 IAC Chapters 20 through 31.

5. Owner Responsibility

Issuance of this permit shall not relieve the owner or operator of the responsibility to comply fully with applicable provisions of the State Implementation Plan (SIP), and any other requirements of local, state, and federal law.

The owner or operator of any emission unit or control equipment shall maintain and operate the equipment and control equipment at all times in a manner consistent with good practice for minimizing emissions, as required by paragraph 567 IAC 24.2(1) "*Maintenance and Repair*".

6. Disposal of Contaminants

The disposal of materials collected by the control equipment shall meet all applicable rules.

7. Excess Emissions

Excess emissions during a period of startup, shutdown, or cleaning of control equipment are not a violation of the emission standard if it is accomplished expeditiously and in a manner consistent with good practice for minimizing emissions. Cleaning of control equipment, which does not require the shutdown of process equipment, shall be limited to one six-minute period per one-hour period. An incident of excess emissions other than the above is a violation and may be subject to criminal penalties according to Iowa Code 455B.146A. If excess emissions are occurring, either the control equipment causing the excess shall be repaired in an expeditious manner, or the process generating the emissions shall be shutdown within a reasonable period of time, as specified in 567 IAC 24.1.

An incident of excess emissions shall be orally reported to the appropriate DNR field office within eight (8) hours of, or at the start of, the first working day following the onset of the incident. A written report of an incident of excess emissions shall be submitted as a follow-up to all required oral reports within seven (7) days of the onset of the upset condition.

8. Notification, Reporting and Recordkeeping

A. The owner shall furnish the DNR the following written notifications:

1. The date construction, installation, or alteration is initiated postmarked within seven (7) days following initiation of construction, installation, or alteration;
2. The date of intended startup, at least ten (10) days before the equipment or control equipment involved is placed into operation;
3. The actual date of startup, postmarked within fifteen (15) days following the start of operation;
4. The date of each compliance test required by Permit Condition 12, at least thirty (30) days before the anticipated compliance test date;
5. The date of each pretest meeting, at least fifteen (15) days before the proposed meeting date. The owner shall request a proposed test plan protocol questionnaire at least sixty (60) days prior to each compliance test date. The completed questionnaire shall be received by the DNR at least fifteen (15) days before the pretest meeting date;
6. Transfer of equipment ownership, within 30 days of the occurrence;
7. Portable equipment relocation, at least thirty (30) days before equipment relocation.

B. The owner shall furnish DNR with the following reports:

1. Oral excess emissions reports, in accordance with 567 IAC 24.1;
2. Indicator opacity reports in accordance with Opacity Policy 3-b-08 (See footnote 1, Permit Condition 10);
3. A written compliance demonstration report for each compliance testing event, whether successful or not, postmarked not later than forty-five (45) days after the completion of the test period;
4. Operation of this emission unit(s) or control equipment outside of those limits specified in Permit Conditions 10, 11 and 14 and according to the schedule set forth in 567 IAC 24.1.

8. Notification, Reporting and Recordkeeping (continued)

- C. The owner shall send notifications, reports and correspondence to the following addresses:

Mr. David Phelps
Construction Permit Supervisor
Air Quality Bureau
Iowa Department of Natural Resources
7900 Hickman Road, Suite 1
Urbandale, Iowa 50322
Telephone: (515) 281-8189
Fax: (515) 242-5094

Field Office 1
909 West Main Street, Suite 4
Manchester, Iowa 52057
Telephone (319) 927-2640
Fax (319) 927-2075

Field Office 4
706 Sunnyside
Atlantic, Iowa 50022
Telephone (712) 243-1934
Fax (712) 243-6251

Field Office 2
2300 15th Street, SW
P.O. Box 1443
Mason City, Iowa 50401
Telephone (515) 424-4073
Fax (515) 424-9342

Field Office 5
607 East 2nd Street
Des Moines, Iowa 50309
Telephone (515) 281-9069
Fax (515) 281-9069

Field Office 3
1900 N. Grand Avenue
Gateway North Mall
Spencer, Iowa 51301
Telephone (712) 262-4177
Fax (712) 262-2901

Field Office 6
1004 West Madison
Washington, Iowa 52352
Telephone (319) 653-2135
Fax (319) 653-2856

- D. The owner shall send correspondence concerning stack testing to:

Stack Testing Coordinator
Air Quality Bureau
Iowa Department of Natural Resources
7900 Hickman Road, Suite 1
Urbandale, Iowa 50322
Telephone: (515) 242-6001
FAX: (515) 242-5127

- E. All data, records, reports, documentation, construction plans, and calculations required under this permit shall be available at the plant during normal business hours for inspection and copying by federal, state, or local air pollution regulatory agencies and their authorized representatives, for a minimum of two (2) years from the date of recording.
-

9. Permit Violations

Knowingly committing a violation of this permit may carry a criminal penalty of up to \$10,000 per day fine and 2 years in jail according to Iowa Code Section 455B.146A.

10. Emission Limits

Pollutant	Lb/Hr	Tons/Yr	Additional Limits	Reference (567 IAC)
Particulate Matter (PM)	NA	NA	0.1 gr/dscf	23.3(2)"a"
PM ₁₀	NA	NA	NA	NAAQS
Opacity	NA	NA	40% ⁽¹⁾	23.3(2)"d"
Sulfur Oxides (SO _x)	NA	NA	NA	23.3(3)
Nitrogen Dioxide (NO ₂)	NA	NA	NA	NA
Volatile Organic Compounds	NA	NA	NA	NA
Carbon Monoxide (CO)	NA	NA	NA	NA
Lead (Pb)	NA	NA	NA	NA
(Single HAP)	NA	NA	NA	NA
(Total HAP)	NA	NA	NA	NA

⁽¹⁾ Per DNR Air Quality Policy 3-b-08, Opacity Limits, an exceedence of the indicator opacity of (25%) will require the owner/operator to promptly investigate the emission unit and make corrections to operations or equipment associated with the exceedence. The permit holder shall also file an "indicator opacity exceedence report" with the DNR field office and keep records as required in the policy. If exceedences continue after the corrections, the DNR may require additional proof to demonstrate compliance (e.g., stack testing).

11. Emission Point Characteristics

This emission point shall conform to the specifications listed below.

Parameter	Value
Stack Height, (ft, from the ground)	26.6 ft
Discharge Style	Vertical
Stack Opening, (inches, dia.)	24 inches diameter
Exhaust Temperature (°F)	272 F
Exhaust Flowrate (acfm)	7,795 acfm

It shall be the owner's responsibility to ensure that construction conforms with the emission point characteristics stated above. If it is determined that any of the emission point characteristics are different than stated above, the owner must notify the Department and obtain a permit amendment, if required.

12. Initial Performance Testing Requirements

Pollutant	Testing Required	Test Method
PM	No	Iowa Compliance Sampling Manual Method 5
PM ₁₀	No	40 CFR 51, Appendix M, 201A with 202
Opacity	No	40 CFR 60, Appendix A, Method 9
SO _x	No	40 CFR 60, Appendix A, Method 6C
NO ₂	No	40 CFR 60, Appendix A, Method 7E
VOC	No	40 CFR 60, Appendix A, Method 25A
CO	No	40 CFR 60, Appendix A, Method 10
Pb	No	40 CFR 60, Appendix A, Method 12
Other	No	

If specified above, the owner shall verify compliance with the emission limitations contained in Permit Condition 10 within 90 days after achieving maximum production rate and no later than one hundred eighty (180) days after the initial startup date of the proposed equipment. The tests shall be conducted with the equipment operating in a manner representative of maximum rated capacity. Failure to test at the rated capacity may be cause for the Department to limit the emission unit to the operating level at which the compliance tests had been conducted.

Each emissions compliance test must be approved by the DNR. Unless otherwise specified by the DNR, each test shall consist of three separate runs. The duration of each run shall be established by the DNR at the pretest meeting. The arithmetic mean of three acceptable test runs shall apply for compliance, unless otherwise indicated by the DNR. The test methods to be used are those stated above unless otherwise approved by the DNR.

A pretest meeting shall be held at a mutually agreeable site no less than fifteen (15) days prior to the date of each test. Representatives from the DNR shall attend this meeting, along with the owner and the testing firm, if any. It shall be the responsibility of the owner to coordinate and schedule the pretest meeting. The owner shall be responsible for the installation and maintenance of test ports. The DNR shall reserve the right to impose additional, different, or more detailed testing requirements.

13. NSPS and NESHAP Applicability

The emission unit referenced under this permit may be subject to the requirements of either the New Source Performance Standards (NSPS), or the National Emission Standards for Hazardous Air Pollutants (NESHAPS), if there is an applicable subpart within either of these standards.

14. Operating Limits

- A. The process weight rate of the soil remediation unit administered under DNR permits 00-A-233 and 00-A-234 shall not exceed 32 tons per hour.
 - B. The soil remediation unit administered under DNR permits 00-A-233 and 00-A-234 shall be used to process soil with a volatile organic compound (VOC) content not to exceed 2 percent by weight.
-

15. Operating Condition Monitoring

- A. The permit holder shall maintain records on the premises to show the process weight rate per hour of the soil remediation unit administered under DNR permits 00-A-233 and 00-A-234. Records shall be maintained for two (2) years and available for inspection upon request by representatives of the Department of Natural Resources.

- B. The permit holder shall maintain records on the premises to show the weight percent of volatile organic compound (VOC) content in the contaminated soil processed by the soil remediation unit administered under DNR permits 00-A-233 and 00-A-234. Records shall be maintained for two (2) years and available for inspection upon request by representatives of the Department of Natural Resources.

16. Continuous Emission Monitoring

Continuous emission monitoring is not required by this permit at this time.

17. Descriptions of Terms and Acronyms

acfm	Actual cubic foot per minute
Applicant	The owner, company official or authorized agent
CFR	Code of Federal Regulations
Department	Iowa Department of Natural Resources
DNR	Iowa Department of Natural Resources
gr/dscf	Grains per dry standard cubic foot
HAP	Hazardous Air Pollutant(s)
IAC	Iowa Administrative Code
MMBtu	One million British thermal units
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NO ₂	Nitrogen Dioxide, a criteria pollutant measured as NO _x
Owner	The owner or authorized representative
Permit	This document including permit conditions and all submitted application materials
PM ₁₀	Particulate Matter equal to or less than 10 microns in aerodynamic diameter
scfm	Standard cubic foot per minute
SIP	State Implementation Plan
SO ₂	Sulfur Dioxide, the measured surrogate for SO _x
SO _x	Sulfur Oxides, a criteria pollutant
VOC	Volatile Organic Compound

END OF PERMIT CONDITIONS

Iowa Department of Natural Resources Air Quality Construction Permit

Permit Holder

Firm: Dustcoating, Incorporated

Contact:

Steve Mockenhaupt
Environmental Coordinator

(612) 894-0012

7217 West 128th Street
Savage, Minnesota 55378

Responsible Party:

Larry Johnson
President

Permitted Equipment

Emission Unit(s): Portable Diesel-Electric Generator Unit (653 hp)
Caterpillar Model 3412

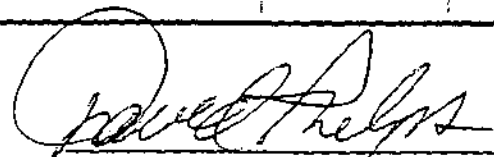
Control Equipment: None

Emission Point: EP-Gen-01

Equipment Location: Portable Equipment -- Various Locations

Plant Number: PP-63-004

Permit No.	Proj. No.	Description	Date	Testing
00-A-235	00-103	Diesel-Electric Generator Unit (653 hp)	Mar 2, 00	No



Under the Direction of the Director of
the Department of Natural Resources

PERMIT CONDITIONS

The owner or operator of the facility shall assure that the installation, operation, and maintenance of this equipment is in compliance with all of the following conditions.

1. Departmental Review

This permit is issued based on information submitted by the applicant. Any misinformation, false statements or misrepresentations by the applicant shall cause this permit to be void. In addition, the applicant may be subject to criminal penalties according to Iowa Code Section 455B.146A.

This permit is issued under the authority of 567 Iowa Administrative Code (IAC) 22.3. The proposed equipment has been evaluated for conformance with Iowa Code Chapter 455B; 567 IAC Chapters 20-31; and 40 CFR Parts 51, 52, 60, 61 and 63 and has the potential to comply.

No review has been undertaken on the engineering aspects of the equipment or control equipment other than the potential of that equipment for reducing air contaminant emissions. The DNR assumes no liability, directly or indirectly, for any loss due to damage to persons or property caused by, resulting from, or arising out of the design, installation, maintenance or operation of the proposed equipment.

2. Transferability

As limited by 567 IAC 22.3(3)"f", this permit is not transferable from one location to another or from one piece of equipment to another, unless the equipment is portable. When portable equipment for which a permit has been issued is to be transferred from one location to another, the DNR shall be notified in writing at least thirty (30) days prior to transferring to the new location. The owner will be notified at least ten (10) days prior to the scheduled relocation if the relocation will cause a violation of the National Ambient Air Quality Standards. In such case, a supplemental permit shall be required prior to the initiation of construction of additional control equipment or equipment modifications needed to meet the standards.

This permit is for the construction and operation of the specific emission unit(s), control equipment and emission point as described in this permit and in the application for this permit. Any owner or operator of the specified emission unit(s), control equipment or emission point, including any person who becomes an owner or operator subsequent to the date on which this permit is issued, is responsible for compliance with the provisions of this permit. No person shall construct, install, reconstruct or alter this emission unit, control equipment or emission point without the required revisions to this permit.

3. Construction

This permit shall become void if construction on the proposed project has not been initiated within eighteen (18) months after the date of the issuance of this permit and completed within thirty-six (36) months after the date of the issuance of this permit.

3. Construction (Continued)

It shall be the responsibility of the owner to ensure that construction conforms to the final plans and specifications as submitted and that adequate operation and maintenance is provided to ensure that no condition of air pollution is created. A supplement to this permit shall be obtained if the owner proposes changes to the final submitted plans and specifications.

4. Credible Evidence

As stated in 567 IAC 21.5 and also in 40 CFR Part 60.11(g), where applicable, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any provisions specified in this permit or any provisions of 567 IAC Chapters 20 through 31.

5. Owner Responsibility

Issuance of this permit shall not relieve the owner or operator of the responsibility to comply fully with applicable provisions of the State Implementation Plan (SIP), and any other requirements of local, state, and federal law.

The owner or operator of any emission unit or control equipment shall maintain and operate the equipment and control equipment at all times in a manner consistent with good practice for minimizing emissions, as required by paragraph 567 IAC 24.2(1) "*Maintenance and Repair*".

6. Disposal of Contaminants

The disposal of materials collected by the control equipment shall meet all applicable rules.

7. Excess Emissions

Excess emissions during a period of startup, shutdown, or cleaning of control equipment are not a violation of the emission standard if it is accomplished expeditiously and in a manner consistent with good practice for minimizing emissions. Cleaning of control equipment, which does not require the shutdown of process equipment, shall be limited to one six-minute period per one-hour period. An incident of excess emissions other than the above is a violation and may be subject to criminal penalties according to Iowa Code 455B.146A. If excess emissions are occurring, either the control equipment causing the excess shall be repaired in an expeditious manner, or the process generating the emissions shall be shutdown within a reasonable period of time, as specified in 567 IAC 24.1.

An incident of excess emissions shall be orally reported to the appropriate DNR field office within eight (8) hours of, or at the start of, the first working day following the onset of the incident. A written report of an incident of excess emissions shall be submitted as a follow-up to all required oral reports within seven (7) days of the onset of the upset condition.

8. Notification, Reporting and Recordkeeping

- A. The owner shall furnish the DNR the following written notifications:
1. The date construction, installation, or alteration is initiated postmarked within seven (7) days following initiation of construction, installation, or alteration;
 2. The date of intended startup, at least ten (10) days before the equipment or control equipment involved is placed into operation;
 3. The actual date of startup, postmarked within fifteen (15) days following the start of operation;
 4. The date of each compliance test required by Permit Condition 12, at least thirty (30) days before the anticipated compliance test date;
 5. The date of each pretest meeting, at least fifteen (15) days before the proposed meeting date. The owner shall request a proposed test plan protocol questionnaire at least sixty (60) days prior to each compliance test date. The completed questionnaire shall be received by the DNR at least fifteen (15) days before the pretest meeting date;
 6. Transfer of equipment ownership, within 30 days of the occurrence;
 7. Portable equipment relocation, at least thirty (30) days before equipment relocation.
- B. The owner shall furnish DNR with the following reports:
1. Oral excess emissions reports, in accordance with 567 IAC 24.1;
 2. Indicator opacity reports in accordance with Opacity Policy 3-b-08 (See footnote 1, Permit Condition 10);
 3. A written compliance demonstration report for each compliance testing event, whether successful or not, postmarked not later than forty-five (45) days after the completion of the test period;
 4. Operation of this emission unit(s) or control equipment outside of those limits specified in Permit Conditions 10, 11 and 14 and according to the schedule set forth in 567 IAC 24.1.

8. Notification, Reporting and Recordkeeping (continued)

- C. The owner shall send notifications, reports and correspondence to the following addresses:

Mr. David Phelps
Construction Permit Supervisor
Air Quality Bureau
Iowa Department of Natural Resources
7900 Hickman Road, Suite 1
Urbandale, Iowa 50322
Telephone: (515) 281-8189
Fax: (515) 242-5094

Field Office 1
909 West Main Street, Suite 4
Manchester, Iowa 52057
Telephone (319) 927-2640
Fax (319) 927-2075

Field Office 4
706 Sunnyside
Atlantic, Iowa 50022
Telephone (712) 243-1934
Fax (712) 243-6251

Field Office 2
2300 15th Street, SW
P.O. Box 1443
Mason City, Iowa 50401
Telephone (515) 424-4073
Fax (515) 424-9342

Field Office 5
607 East 2nd Street
Des Moines, Iowa 50309
Telephone (515) 281-9069
Fax (515) 281-9069

Field Office 3
1900 N. Grand Avenue
Gateway North Mall
Spencer, Iowa 51301
Telephone (712) 262-4177
Fax (712) 262-2901

Field Office 6
1004 West Madison
Washington, Iowa 52352
Telephone (319) 653-2135
Fax (319) 653-2856

- D. The owner shall send correspondence concerning stack testing to:

Stack Testing Coordinator
Air Quality Bureau
Iowa Department of Natural Resources
7900 Hickman Road, Suite 1
Urbandale, Iowa 50322
Telephone: (515) 242-6001
FAX: (515) 242-5127

- E. All data, records, reports, documentation, construction plans, and calculations required under this permit shall be available at the plant during normal business hours for inspection and copying by federal, state, or local air pollution regulatory agencies and their authorized representatives, for a minimum of two (2) years from the date of recording.
-

9. Permit Violations

Knowingly committing a violation of this permit may carry a criminal penalty of up to \$10,000 per day fine and 2 years in jail according to Iowa Code Section 455B.146A.

10. Emission Limits

Pollutant	Lb/Hr	Tons/Yr	Additional Limits	Reference (567 IAC)
Particulate Matter (PM)	NA	NA	NA	23.3(2) "a"
PM ₁₀	0.7	NA	NA	NAAQS
Opacity	NA	NA	40% ⁽¹⁾	23.3(2) "d"
Sulfur Oxides (SO _x)	NA	NA	NA	23.3(3)
Nitrogen Dioxide (NO ₂)	NA	NA	NA	NA
Volatile Organic Compounds	NA	NA	NA	NA
Carbon Monoxide (CO)	NA	NA	NA	NA
Lead (Pb)	NA	NA	NA	NA
(Single HAP)	NA	NA	NA	NA
(Total HAP)	NA	NA	NA	NA

⁽¹⁾ Per DNR Air Quality Policy 3-b-08, Opacity Limits, an exceedence of the indicator opacity of (20%) will require the owner/operator to promptly investigate the emission unit and make corrections to operations or equipment associated with the exceedence. The permit holder shall also file an "indicator opacity exceedence report" with the DNR field office and keep records as required in the policy. If exceedences continue after the corrections, the DNR may require additional proof to demonstrate compliance (e.g., stack testing).

11. Emission Point Characteristics

This emission point shall conform to the specifications listed below.

Parameter	Value
Stack Height, (ft, from the ground)	13.5 ft
Discharge Style	Vertical
Stack Opening, (inches, dia.)	6 inches diameter
Exhaust Temperature (°F)	1131 F
Exhaust Flowrate (acfm)	4051 acfm

It shall be the owner's responsibility to ensure that construction conforms with the emission point characteristics stated above. If it is determined that any of the emission point characteristics are different than stated above, the owner must notify the Department and obtain a permit amendment, if required.

12. Initial Performance Testing Requirements

Pollutant	Testing Required	Test Method
PM	No	Iowa Compliance Sampling Manual Method 5
PM ₁₀	No	40 CFR 51, Appendix M, 201A with 202
Opacity	No	40 CFR 60, Appendix A, Method 9
SO _x	No	40 CFR 60, Appendix A, Method 6C
NO ₂	No	40 CFR 60, Appendix A, Method 7E
VOC	No	40 CFR 60, Appendix A, Method 25A
CO	No	40 CFR 60, Appendix A, Method 10
Pb	No	40 CFR 60, Appendix A, Method 12
Other	No	

If specified above, the owner shall verify compliance with the emission limitations contained in Permit Condition 10 within 90 days after achieving maximum production rate and no later than one hundred eighty (180) days after the initial startup date of the proposed equipment. The tests shall be conducted with the equipment operating in a manner representative of maximum rated capacity. Failure to test at the rated capacity may be cause for the Department to limit the emission unit to the operating level at which the compliance tests had been conducted.

Each emissions compliance test must be approved by the DNR. Unless otherwise specified by the DNR, each test shall consist of three separate runs. The duration of each run shall be established by the DNR at the pretest meeting. The arithmetic mean of three acceptable test runs shall apply for compliance, unless otherwise indicated by the DNR. The test methods to be used are those stated above unless otherwise approved by the DNR.

A pretest meeting shall be held at a mutually agreeable site no less than fifteen (15) days prior to the date of each test. Representatives from the DNR shall attend this meeting, along with the owner and the testing firm, if any. It shall be the responsibility of the owner to coordinate and schedule the pretest meeting. The owner shall be responsible for the installation and maintenance of test ports. The DNR shall reserve the right to impose additional, different, or more detailed testing requirements.

13. NSPS and NESHAP Applicability

The emission unit referenced under this permit may be subject to the requirements of either the New Source Performance Standards (NSPS), or the National Emission Standards for Hazardous Air Pollutants (NESHAPS), if there is an applicable subpart within either of these standards.

14. Operating Limits

The amount of diesel fuel consumed in the diesel-electric generator administered under DNR permit 00-A-235 shall not exceed 80,000 gallons per twelve-month period rolled monthly.

15. Operating Condition Monitoring

The permit holder shall maintain records on the premises to show the twelve-month period rolled monthly use of diesel fuel from the diesel-electric generator administered under permit 00-A-235. Records shall be maintained for two (2) years and available for inspection upon request by representatives of the Department of Natural Resources.

16. Continuous Emission Monitoring

Continuous emission monitoring is not required by this permit at this time.

17. Descriptions of Terms and Acronyms

acfm	Actual cubic foot per minute
Applicant	The owner, company official or authorized agent
CFR	Code of Federal Regulations
Department	Iowa Department of Natural Resources
DNR	Iowa Department of Natural Resources
gr/dscf	Grains per dry standard cubic foot
HAP	Hazardous Air Pollutant(s)
IAC	Iowa Administrative Code
MMBtu	One million British thermal units
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NO ₂	Nitrogen Dioxide, a criteria pollutant measured as NO _x
Owner	The owner or authorized representative
Permit	This document including permit conditions and all submitted application materials
PM ₁₀	Particulate Matter equal to or less than 10 microns in aerodynamic diameter
scfm	Standard cubic foot per minute
SIP	State Implementation Plan
SO ₂	Sulfur Dioxide, the measured surrogate for SO _x
SO _x	Sulfur Oxides, a criteria pollutant
VOC	Volatile Organic Compound

END OF PERMIT CONDITIONS



STATE OF IOWA

THOMAS J. VILSACK, GOVERNOR
SALLY J. PEDERSON, LT. GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
JEFFREY R. VONK, DIRECTOR

April 18, 2002

Mr. Frank Kellogg, III
General Manager, Dustcoating, Inc. (DCI)
7217 West 128th Street
Savage, MN 55378

RE: New Permit # 57-SDP-31-02P-SMF

Dear Frank:

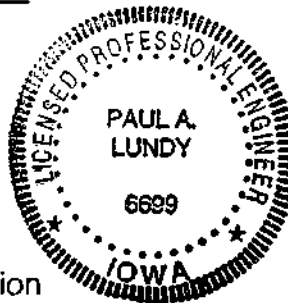
Enclosed is a new permit # 57-SDP-31-02P-SMF for the Dustcoating, Inc. thermal adsorption soil management facility project in Cedar Rapids, Iowa. A copy of the permit as well as the site plans must be kept on file at the site in accordance with 567 IAC 103.2(2)c. Please review the permit with your operators, as they must be familiar with it.

This renewed permit approves the ERRAP and outlines the periodic reporting requirements. The General Provisions and Special Provisions # 6, # 12, # 13 and # 16 include requirements which, if not properly completed will prompt enforcement action by the Department. In addition, you are required to submit an application for permit renewal on or before January 18, 2005.

If you have questions or need additional information, please contact me at 515/281-8912 or e-mail paul.lundy@dnr.state.ia.us.

Sincerely,

Handwritten signature of Paul A. Lundy
PAUL A. LUNDY, P.E.
Environmental Engineer
Solid Waste Planning and Permitting Section



- c: Field Office # 1, Manchester, Iowa
Dave Hogan, Executive Director, Bluestem Solid Waste Agency, P.O. Box 2068, Cedar Rapids, IA 52406
Joe Nelson, P.E., CH2MHill, Inc., 8501 West Higgins Road, Suite 300, Chicago, IL 60631

IOWA DEPARTMENT OF NATURAL RESOURCES
THERMAL ADSORPTION SOIL MANAGEMENT FACILITY
(SANITARY DISPOSAL) PROJECT PERMIT

- I. Permit Number: 57-SDP-31-02P-SMF
- II. Permitted Agency: DCI Environmental, Inc. (DCI)
- III. Project Location: A portion of NW4 of the NW4, Sec 34, T83N, R7W
abutting former Burlington Street, SW (~7 acres)
Linn County, Iowa

IVa. Overall Responsible Official

Name: Larry D. Johnson, President
DCI
Address: 7217 West 128th Street
Savage, MN 55378
Phone: 952/894-0012 FAX: 952/894-0126
E-mail: dcimm.com

IVb. Local Responsible Official

Name: Frank B. Kellogg, III, General Manager
DCI
Address: 7217 West 128th Street
Savage, MN 55378
Phone: 952/894-0012 FAX: 952/894-0126
E-mail: dcimm.com

V. Licensed Engineer Representative

Name: Joseph R. Nelson, P.E.
CH2M Hill, Inc.
Address: 8501 West Higgins Road, Suite 300
Chicago, IL 60631
Phone: 913/568-9000 FAX: 414/894-0126
Iowa License Number: 11751

VI. Date Permit Issued: April 18, 2002

VII. Permit Expiration Date: April 18, 2005

VIII. Issued by: Paul A. Lundy
Environmental Services Division
for the Director



IX. General Provisions

The above named permitted agency is hereby authorized to operate a thermal desorption soil management facility at the described location in conformance with the Iowa Code, chapter 455B the rules pursuant thereto existing at the time of issuance, and any subsequent new rules which may be duly adopted, and any provisions contained in Section X of this permit.

The project shall be operated according to the engineering plans and specifications approved by the Department of Natural Resources and these shall become a part of this permit. Any modifications or deviations from the engineering plans and specifications must have prior approval by the Department and an amendment to this permit issued.

The permitted service areas and conditions are specified in Special Provision #1 in Section X. Any deviations from the specified comprehensive planning documents, including changes in waste accepted from outside the permitted service areas, any special wastes from outside the permitted service areas, or any changes in the amount of waste, or changes in the waste stream shall have prior comprehensive planning approval by the Department

The issuance of this permit in no way relieves the applicant of the responsibility for complying with all other local, state, and federal statutes, ordinances, and rules or other requirements applicable to the establishment and operation of this soil management facility.

No legal or financial responsibility arising from the construction or operation of the approved project shall attach to the State of Iowa or the Department of Natural Resources due to the issuance of this permit.

If title to this project is transferred, the new owner must apply to the Department for a formal transfer of this permit within thirty days of the date of title transfer. The permitted facility/operation must be in technical compliance with all applicable administrative rules and sections of the Iowa Code before the Department can transfer the permit. This permit will be void sixty days after the date of title transfer unless the Department has transferred the permit. If this occurs, the new owner will need to apply for a new permit before operation can commence. These requirements also apply to change(s) in responsible officials.

This facility shall be inspected on an annual basis by a professional engineer licensed in the State of Iowa. The engineer shall prepare a brief report describing the site's conformance and nonconformance with the permit and the approved plans and specifications during the

inspections. These reports shall be submitted by November 1 each year to both Field Office # 1 and the Solid Waste Planning and Permitting Section of the Department. The Department shall be notified if any inspection reveals any nonconformance with the permit and approved plans and specifications.

Failure to comply with the Iowa Code, chapter 455B or any rule of order promulgated pursuant thereto, or any or all provisions of this permit may result in 1) a civil penalty of up to \$5000 for each day of violation, pursuant to the Iowa Code, subsection 455B.307 or 2) the suspension or revocation of this permit, pursuant to the Iowa Code, subsection 455B.305.

X. Special Provisions

1. DCI is authorized to accept for treatment/remediation up to 100,000 tons annually of waste soils generated from the cleanup projects at former manufactured gas plants (MGP), petroleum storage facilities, and fuel spill sites that originate from sources/clients above and beyond cleanup projects supervised by IDNR or USEPA Region VII in accordance with the Comprehensive Plan, Part I as approved by the Land Quality and Waste Management Assistance Division on January 18, 2002. (Processing of the waste soils from DNR/EPA-supervised cleanups does not require a permit from the Department.) These waste soils contain coal tars and petroleum compounds, whose primary constituents of concern are polycyclic aromatic hydrocarbons (PAHs) and benzene, toluene, ethylbenzene and xylene (BTEX) and whose secondary contaminants include cyanide, other hydrocarbons, metals, and phenols. The approved Comprehensive Plan is hereby incorporated as a permit plan document.
2. DCI cannot accept or otherwise treat wastes that are either listed or characteristic hazardous wastes as defined in 40 CFR 261.3. 40 CFR 262.11 requires the generator of the solid waste to determine if the waste delivered to the DCI facility is hazardous. These records of determination must be kept and maintained in accordance with Special Provision #13.

DCI shall not accept any contaminated waste soils from MGP cleanup projects that exceed the Toxicity Characteristic Leaching Procedure (TCLP) standard of 0.5 mg/L of benzene in sample extract.

The acceptance and processing of all PAH-contaminated soils from non-DNR/EPA-supervised cleanup projects at this facility shall be subject to raw waste and reclaimed product testing and process reporting.

3. DCI must minimize the acceptance of free-phase material from remediation projects. The Department recognizes that free liquids may occasionally be present in some materials removed from manufactured

gas plant sites, but it will be the responsibility of DCI to ensure that any free phase material encountered in the water treatment system or otherwise delivered to the site is recovered and containerized to the extent possible, and treated appropriately.

4. It is the responsibility of DCI to appropriately manage all contaminated debris delivered to the site as part of the cleanup projects. Large contaminated metallic debris and metal debris collected by the magnetic separator will be decontaminated on the treatment pad prior to offsite recycling. Large concrete or masonry pieces which cannot be crushed must be decontaminated on the treatment pad prior to recycling or off site disposal as a solid waste. Large pieces of contaminated wood must be appropriately containerized, manifested, shipped, and otherwise handled as a nonhazardous solid waste. Quantities of contaminated materials shipped off site and treated as a solid waste must be included in the reporting requirements of Special Provision #13.
5. DCI shall perform System Efficiency Testing (SET) during each calendar year of operation to verify sufficient thermal treatment of PAH compounds utilizing standard protocols approved by the Department's Contaminated Site Section for previous TDU setups at Cedar Rapids, Storm Lake and Ottumwa. The Destruction Rate Efficiency (DRE) for each SET must meet 99.99% for PAH stack emission testing and 99.7% for sulfur hexafluoride (SF6) testing. Sulfur hexafluoride testing of stack emissions is an acceptable surrogate to PAH stack testing a maximum of every other calendar year. At least one SET every two years must include stack emission PAH testing.
6. In accordance with 567 IAC 102.8(2) DCI is required to submit the First (1st) Update to the approved Comprehensive Plan, Part I and an application for renewal of this permit on or before January 18, 2005.
7. The pretreatment soil staging pad will be constructed of a 30 mil HDPE lower liner, overlain with a granular material and covered with an asphalt pad which serves as a upper liner and durable surface for heavy equipment traffic.
8. Curbs or soil berms must be maintained around the pretreatment soil staging pad and plant layout area to control run on and run off.
9. All contaminated soil and screened rubble stockpiles will be covered with tarps or similar coverings during periods of inactivity to minimize volatilization of contaminants, odors, dusts, and infiltration of precipitation.

10. No more than 40,000 tons of PAH-contaminated soil and no more than 10,000 tons of treated soils may be stored on the facility site at any given time, without first obtaining authorization from the Department.
11. The allowable contaminants remaining in treated soils shall not exceed 5 mg/kg total PAHs. Each 300 ton batch of treated soil shall be tested utilizing 6 aliquots collected from 50 ton intervals and analytical results received **prior** to use by the landfill operator as daily cover.
12. Landfill # 1 downgradient well #91MW-12 shall be sampled quarterly for the 16 priority pollutant PAHs and BTEX as the background (upgradient) well for DCI and well #AW-4 (downgradient for DCI) shall be sampled quarterly for the same parameters in order to assure that the DCI facility is not negatively contributing to groundwater pollution levels beyond the pollution levels coming from the landfill. Analytical results shall be forwarded to the Contaminated Sites Section, the Solid Waste Planning and Permitting Section and Field Office # 1 within 30 days of sampling activity. **If the analytical results from well #AW-4 exceed any of the groundwater standards in Table 1b, a remediation plan must be developed that takes into account the percentage of contribution of groundwater contaminants from the upgradient landfill area, as determined from #91MW-12. This plan must be approved by the Department and implemented within 30 days of first indication of high readings.**
13. DCI shall develop and maintain records for the service area and tonnages accepted and treated at this facility. The data from these records shall be reported on a form furnished by the Department. A generic copy of the reporting form is incorporated into and attached to this permit. Due to the nature of this operation, reports are due on a monthly basis (use the annual form provided). DCI shall mail the completed forms to the Waste Management Assistance Bureau, Wallace State Office Building, 502 East Ninth Street, Des Moines, Iowa 50319 and Field Office # 1 at Manchester, Iowa.
14. DCI shall develop a post closure plan for the facility that describes the actions to be taken to insure and confirm that the site is left in acceptable condition after the DCI plant has left this location. It shall be submitted to the Department within 90 days of the issuance date of this permit.
15. All equipment placed, stored, or operated in the plant layout area or pretreatment soil staging area that comes into contact with contaminated material must be decontaminated prior to leaving these areas.
16. The Emergency Response and Remedial Action Plan (ERRAP) submitted by CH2MHill on behalf of DCI and dated **January 31, 2002** is in compliance with

567 IAC 102.16 and is hereby approved. An updated ERRAP shall be submitted at the time of each permit renewal application. An updated ERRAP shall be included with any request for permit modification to incorporate a facility expansion or significant changes in facility operation that require modification of the currently approved ERRAP.

MGP Contaminant Standards Comparison Table

TABLE 16

	Contaminant	Soil Standards							Groundwater Standards					
		LRP Standards		Region 9 PRGs		Region III Table		SSL		LRP Standards		Region 9 PRG	Region 3 Table	MCL
		Soil Minimum (ppm)	Soil Maximum (ppm)	Res. Soil (ppm)	Ind. Soil (ppm)	Res. Soil (ppm)	Ind. Soil (ppm)	DAF 20	DAF 1	Protected GW (ppb)	Nonprotected GW (ppb)	Tap Water (ppb)	Tap Water (ppb)	(ppb)
Carcinogenic PAHs	Benzo(a)anthracene	2.9	1,200	0.62	2.90	0.88	7.80	2	0.08	0.24	4.8	0.092	0.092	
	Benzo(a)pyrene	0.29	120	0.062	0.29	0.088	0.78	8	0.4	0.2	4	0.0092	0.0092	2
	Benzo(b)fluoranthene	2.9	1,200	0.62	2.90	0.88	7.80	5	0.2	0.24	4.8	0.092	0.092	
	Benzo(k)fluoranthene	29	12,000	6.20	29.00	8.80	78.00	49	2	2.4	48	0.92	0.92	
	Chrysene	290	120,000	62.00	290.00	88.00	780.00	160	8	24	480	9.20	9.20	
	Dibenzo(ah)anthracene	0.29	120	0.062	0.29	0.088	0.78	2	0.08	0.2	4	0.0092	0.0092	
	Indeno(1,2,3-cd)perylene	2.9	1,200	0.62	2.90	0.88	7.80	14	0.7	0.24	4.8	0.092	0.092	
Noncarcinogenic PAHs	Acenaphthene	4,700	460,000	3,700	38,000	4,700	120,000	570	29	420	2,100	370	2,200	
	Acenaphthylene													
	Anthracene	23,000	610,000	22,000	100,000	23,000	610,000	12,000	590	2,100	11,000	1,800	11,000	
	Benzo(ghi)perylene													
	Fluoranthene	3,100	310,000	2,300	30,000	3,100	82,000	4,300	210	280	1,400	1,500	1,500	
	Fluorene	3,100	310,000	2,600	33,000	3,100	82,000	560	28	280	1,400	240	1,500	
	Naphthalene	1,600	150,000	56	190	3,100	82,000	84	4	20	700	6.20	1,500	
	Phenanthrene													
Pyrene	2,300	230,000	2,300	54,000	2,300	61,000	4,200	210	210	1,100	180	1,100		
BTEX	Benzene	73	31,000	0.65	1.50	22	200	0.03	0.002	5	120	0.35	0.36	5
	Ethylbenzene	7,800	770,000	230	230	7,800	200,000	13	0.7	700	3,500	1,300	1,300	700
	Toluene	16,000	400,000	520	520	16,000	410,000	12	0.6	1,000	7,000	720	750	1
	Xylenes	160,000	160,000	210	210	160,000	1,000,000	210	10	10,000	70,000	1400	1,400	10,000
	Cyanide	1,600	150,000	11	35	1,600	41,000			200	1,000	6.20	730	200
	Phenols	47,000	47,000	37,000	100,000	47,000	1,000,000	100	5	4,000	21,000	22,000	22,000	

SUMMA CANISTER SAMPLING

Field Data Sheet

PROJECT: _____ DATE: _____
PROJECT NUMBER: _____ SAMPLE LOCATION: _____
SAMPLE NO.: _____ OPERATOR(S): _____
PUMP ID: _____ CALIBRATION METER ID: _____
CANISTER ID NO.: _____ ANALYTICAL METHOD: _____
REGULATOR FLOW RATE: _____ SAMPLE NUMBER: _____

LABORATORY: _____
ADDRESS: _____

SAMPLE SHIP DATE: _____

	SAMPLING TIMES	
	LOCAL TIME	ELAPSED TIME METER READING
START		
STOP		

FLOW RATES		
MANIFOLD FLOW RATE	CANISTER FLOW RATE	FLOW CONTROLLER READOUT

SAMPLING SYSTEM CERTIFICATION DATE: _____

QUARTERLY RECERTIFICATION DATE: _____

BLANK PREPARATION: _____

SAMPLE TRAIN DESCRIPTION _____

COMMENTS _____

AMBIENT AIR MONITORING (PARTICULATES)

Field Data Sheet

PROJECT: _____ DATE: _____
 PROJECT NUMBER: _____ SAMPLE LOCATION: _____
 SAMPLE NO.: _____ OPERATOR(S): _____
 PUMP ID: _____ CALIBRATION METER ID: _____
 ANALYTICAL METHOD: _____

LABORATORY: _____
 ADDRESS: _____

SAMPLE SHIP DATE: _____

SAMPLE DATA:		SAMPLE TIMER SETTING:		
Sampler I.D. No.			Start	Stop
Height Above Ground		Time		
Filter I.D. No.		Date		

Actual Sample Elapsed Time, min.	
Flow Recorder Average Indication	

FLOW CALIBRATION CHECK:		
	Pretest	Posttest
Date		
Manometer DH, IN H ₂ O		
Q actual, ft. 3/min.		
Flow Recorder Indication		
Q indicated, ft. 3/min.		
Percent Deviation *		

* Percent Deviation = $\left| \frac{Q \text{ actual} - Q \text{ indicated}}{Q \text{ actual}} \right| 100$

And must be less than 10%.

AMBIENT AIR MONITORING (PAHs)

Field Data Sheet

PROJECT: _____ DATE: _____
 PROJECT NUMBER: _____ SAMPLE LOCATION: _____
 SAMPLE NO.: _____ OPERATOR(S): _____
 PUMP ID: _____ CALIBRATION METER ID: _____
 ANALYTICAL METHOD: _____

LABORATORY: _____
 ADDRESS: _____

SAMPLE SHIP DATE: _____

SAMPLE DATA:		SAMPLE TIMER SETTING:		
Sampler I.D. No.			Start	Stop
Height Above Ground		Time		
Filter I.D. No.		Date		

Actual Sample Elapsed Time, min.	
Flow Recorder Average Indication	

FLOW CALIBRATION CHECK:		
	Pretest	Posttest
Date		
Manometer DH, IN H ₂ O		
Q actual, ft. 3/min.		
Flow Recorder Indication		
Q indicated, ft. 3/min.		
Percent Deviation *		

* Percent Deviation = $\left| \frac{Q_{\text{actual}} - Q_{\text{indicated}}}{Q_{\text{actual}}} \right| 100$

And must be less than 10%.

AMBIENT AIR MONITORING (LEAD)

Field Data Sheet

PROJECT: _____ DATE: _____
 PROJECT NUMBER: _____ SAMPLE LOCATION: _____
 SAMPLE NO.: _____ OPERATOR(S): _____
 PUMP ID: _____ CALIBRATION METER ID: _____
 ANALYTICAL METHOD: _____

LABORATORY: _____
 ADDRESS: _____

SAMPLE SHIP DATE: _____

SAMPLE DATA:		SAMPLE TIMER SETTING:		
Sampler I.D. No.			Start	Stop
Height Above Ground		Time		
Filter I.D. No.		Date		

Actual Sample Elapsed Time, min.	
Flow Recorder Average Indication	

FLOW CALIBRATION CHECK:		
	Pretest	Posttest
Date		
Manometer DH, IN H ₂ O		
Q actual, ft. 3/min.		
Flow Recorder Indication		
Q indicated, ft. 3/min.		
Percent Deviation *		

* Percent Deviation = $\left| \frac{Q \text{ actual} - Q \text{ indicated}}{Q \text{ actual}} \right| 100$

And must be less than 10%.



DAILY CONSTRUCTION REPORT

				DATE: _____								
				DAY: <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">S</td> <td style="width: 20px; text-align: center;">M</td> <td style="width: 20px; text-align: center;">T</td> <td style="width: 20px; text-align: center;">W</td> <td style="width: 20px; text-align: center;">TH</td> <td style="width: 20px; text-align: center;">F</td> <td style="width: 20px; text-align: center;">S</td> </tr> </table>		S	M	T	W	TH	F	S
S	M	T	W	TH	F	S						
Client: _____		WEATHER	Clear	Partially Cloudy	Overcast	Rain	Snow					
Project: _____		TEMP	To 32	32-50	50-70	70-85	85-100					
Job No.: _____		HUMIDITY	Low	Moder	High	Fog						
Project Manager: _____		WIND	Still	Moder	High	Direction						
Average Field Force												
Name of Contractor	Non-Manual	Manual	Remarks									
Visitors												
Time	Name	Representing	Remarks									
Equipment Utilized For Work Activities:												
Unusual Items:												
Construction Activities:												

- Distribution:
1. Proj Mgr
 2. Field Office
 3. File
 4. Client

By: _____ Title: _____



DAILY CONSTRUCTION REPORT
(Continuation Sheet)

Client: _____

Job No.: _____

Project: _____

Date: _____

Construction Activities (Continued):

- Distribution:
1. Proj Mgr
 2. Field Office
 3. File
 4. Client

By: _____ Title: _____



FIELD CHANGE REQUEST

Client: _____ Location: _____
Project Name: _____ Project No.: _____
Subject: _____ Date: _____

Original Contract Requirements: _____

Reason for Field Change Request: _____

Proposed Field Change: _____

Any Change in Contract Time or Cost? (if yes, attach detail.) Yes No
Proposed: Approved Disapproved

Requestor

Date

MWH
Project Manager Signature

Date

