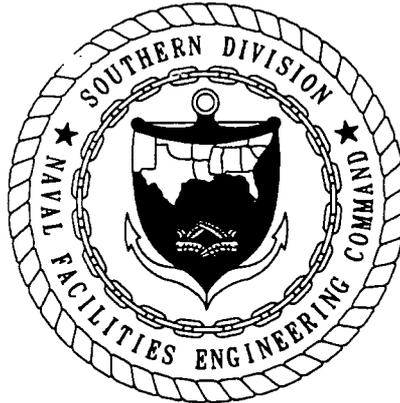


**Work Plan
For
Data Acquisition Work**

**NAVAL INDUSTRIAL RESERVE ORDNANCE
PLANT
FRIDLEY, MINNESOTA**



**SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND**

Contract #N62467-93-D-1106

Delivery Order #0014

Statement of Work #015

October 1997

Revision 0

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Revision 0

OCTOBER 21, 1997

**CONTRACT #N62467-93-D-1106
DELIVERY ORDER #0014
STATEMENT OF WORK #015**

Prepared For:

**SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
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10/22/97
Date

APPROVALS:



Robert E. Hlavacek
MK Program Manager

27 Oct 97
Date

CLIENT ACCEPTANCE



U.S. Navy Responsible Authority

28 Oct 97
Date

PREFACE

This work plan addresses the Data Acquisition Work to be performed at Anoka County Park in Fridley, Minnesota. The scope of work has been discussed and approved by Team NIROP whose members include representatives from the Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), the United States Environmental Protection Agency (USEPA) - Region 5, the Minnesota Pollution Control Agency (MPCA), Morrison Knudsen Corporation (MK) and Brown and Root Environmental (BRE).

This work plan was prepared on an expedited basis to facilitate the start of field work by 30 October, 1997. A concerted effort was applied to ensure that the work plan meets the contractual and technical requirements within the time allowed.

This final work plan is being submitted for approval by SOUTHNAVFACENGCOM and it incorporates SOUTHNAVFACENGCOM's comments on the draft work plan.

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ACRONYMS

AHA	Activity Hazard Analysis
BRE	Brown and Root Environmental
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CPT	Cone penetrometer technology
DFOW	Definable Feature of Work
DOT	U.S. Department of Transportation
GIS	Geographical Information System
GSHP	MK General Safety and Health Plan
MK	Morrison Knudsen Corporation
MPCA	Minnesota Pollution Control Agency
MSDS	Material safety data sheets
MSL	Mean sea level
NIROP	Naval Industrial Reserve Ordnance Plant
OSHA	Occupational Safety and Health Administration
PM	Project Manager
PMO	Program Management Office
POD	Plan-of-the-day
POTW	Publicly owned treatment works
PPE	Personal protective equipment
REICC	Resident Engineer In-Charge of Construction
ROD	Record of Decision
RQ	Reportable Quantities
SOUTHNAVFACENGCOM	Southern Division, Naval Facilities Engineering Command
SQCS	Site Quality Control Supervisor
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SZ	Support zone
TCE	Trichloroethene
USEPA	U.S. Environmental Protection Agency

1.0 INTRODUCTION

1.1 BACKGROUND

This Work Plan has been prepared by Morrison Knudsen Corporation (MK) for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), under contract number N62467-93-D-1106, Delivery Order 0014, Statement of Work 015.

The data acquisition work will be performed at the Naval Industrial Reserve Ordnance Plant (NIROP) and the Anoka County Park, at Fridley, Minnesota. As shown in Figure 1-1, the NIROP facilities are approximately 1,000 feet east of the Mississippi River. It lies on a broad, flat outwash terrace, and is largely covered by pavement, structures, and other facilities. Out of the total plant size of 138 acres, the federal government owns 80 acres which are operated by United Defense. The remaining 55 acres are owned and operated by United Defense. The plants at NIROP began producing Naval guns in 1941. Later, they were diversified into the production of guided missile launching systems, various weaponry and hydraulic and electric power drive and control systems.

The Anoka County Park is located across the East River Road from the NIROP facilities. The park is owned and operated by Anoka County. Available information indicate that the park was constructed over miscellaneous fill material.

Surficial soils in the area are generally fill material comprising of silty sand, gravel and miscellaneous construction debris. Subsurface soils are of glacial origin consisting of coarse sand, fine to medium sand, and some gravelly sand; discontinuous layers of silt and clay occur at some locations. These unconsolidated deposits may have thicknesses of up to 150 feet. The groundwater gradient at the NIROP site is generally to the southwest. The static groundwater level at the site varies from approximately 800 to 816 feet above mean sea level (MSL) [RMT, 1995].

1.2 OBJECTIVES

This Work Plan provides a brief description for performing data acquisition work at the Anoka County Park area. The objectives of the data acquisition work are to provide a preliminary hydrogeologic and subsurface contaminant information at Anoka County Park. The data acquisition work is a screening level effort to be performed using the cone penetrometer technology (CPT).

The scope of work has been discussed and approved by Team NIROP whose members include the SOUTHNAVFACENGCOM, the United States Environmental Protection Agency (USEPA) - Region 5, the Minnesota Pollution Control Agency (MPCA), MK and Brown and Root Environmental (BRE). The scope of work includes:

- Piezocone sounding for determination of hydrogeologic information
- Collection and laboratory analyses of ground-water samples



BURLINGTON NORTHERN R.R.

NORTH 40

SOUTH PARKING AREA

NIROP BUILDING

WATER WORKS

NORTH PARKING AREA

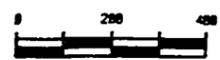
EAST RIVER ROAD

ANOKA PARK

MISSISSIPPI RIVER

LEGEND

- - EXISTING EXTRACTION WELL
- ⊕ - EXISTING MONITORING WELL



NO.		DATE		DESCRIPTION OF REVISION OR ISSUE		BY	
NIROP FRIDLEY							
FIGURE 1-1 SITE MAP							
MORRISON KNUDSEN CORPORATION <small>1500 WEST 3RD STREET CLEVELAND, OHIO 44113-1408 PHONE: (216) 523-5600</small>							
W. O. 4324-0014				DRWG. NO. 818317			
DRAWN	APPROVED BY		WORK ORDER NO.				
E. R.							
CHECKED BY	SCALE	DRAWING NUMBER			REV.		
					A		
DEPT	ARCH	STR/CIV	MECH	ELECT	PRDC	SYSC	PIPG
INIT							SAFETY
DATE							P.E.

1-2

2.0 ENVIRONMENTAL COMPLIANCE

2.1 REGULATORY COMPLIANCE

The information generated from this data acquisition work will be used to determine the effectiveness of the existing ground-water extraction and treatment system which was installed pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). A Record of Decision (ROD) for implementation of a ground-water remediation system was signed in 1990 by representatives of the U.S. Navy, USEPA - Region V, and MPCA.

Work in hazardous or potentially hazardous waste areas will be performed in accordance with all applicable codes and standards including, but not necessarily limited to, the following:

- 40 CFR 261, "Hazardous Waste Identification and Listing"
- 40 CFR 262, "Standards Applicable to Generators of Hazardous Waste"
- 40 CFR 263, "Standards Applicable to Transporters of Hazardous Waste"
- 40 CFR 268, "Land Disposal Restrictions"
- 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response"
- 29 CFR 1926, "Safety and Health Regulations for Construction"
- 49 CFR 173, "Shippers - General Requirements for Shipments and Packaging"
- Minnesota Rules Chapter 7045 - "Hazardous Waste"
- Minnesota Rules Chapter 7035 - "Solid Waste"
- Minnesota Rules Chapter 4725 - "Wells and Borings"

2.2 PERMITS, APPROVALS, AND NOTIFICATIONS

The Anoka County Park is the property of Anoka County. Any permit required from city of Fridley or Anoka County will be obtained prior to start of work at the park.

Field work will be performed by a licensed well contractor or a monitoring well contractor registered in the state of Minnesota.

3.0 PROJECT ORGANIZATION

Table 3-1 summarizes the key parties involved with the work activities covered by this Work Plan and their responsibilities.

TABLE 3-1 PROJECT RESPONSIBILITIES	
Team Member(s)	Responsibilities
SOUTHNAVFACENGCOM	Overview of project execution and coordination between MK, NIROP site and regulatory agencies.
Navy Resident Engineer in-Charge of Construction (REICC)	SOUTHNAVFACENGCOM's on-site representative who is the liaison between NIROP personnel and the MK Project Manager.
Program Management Office (PMO)	Overall responsibility for all cleanup measures at all sites in the Southern Division of the Naval Facilities Engineering Command under Contract No. N62467-93-D-1106. The PMO is the point of contact for SOUTHNAVFACENGCOM.
Project Manager (PM)	Overall responsibility for implementing this Work Plan and all other project activities. The Project Manager will control all on-site forces to ensure completion of project tasks. <ul style="list-style-type: none"> • Provides single point of contact for liaison • Coordinates the project resources to ensure compliance with the appropriate plans, procedures, and regulatory requirements • Oversees all personnel on-site and coordinates with the PMO
Project Engineer	<ul style="list-style-type: none"> • Responsible for development of this Work Plan and Statement of Work for Subcontractors • Evaluate Subcontractor proposals • Participates in pre-construction meetings and post-construction inspections • Responsible for developing the Completion Report
Field Geologist	<ul style="list-style-type: none"> • Responsible for coordination and control of all field activities to ensure that all tasks included in the Work Plan are completed • Directs and coordinates the subcontractor activities • Provides daily reports to the PM on the status of field activities • Determines the drilling and sampling locations

**TABLE 3-1 (Continued)
PROJECT RESPONSIBILITIES**

Team Member(s)	Responsibilities
<p>Site Safety and Health Officer (SSHO)</p>	<p>Reports to the PMO. Implements and ensures compliance with the Site-Specific Safety and Health Plan (SSHP). Tracks and reports on safety-related matters.</p> <ul style="list-style-type: none"> • Responsible for the control and elimination of existing and potential industrial hazards • Implements and executes personnel monitoring program to ensure proper monitoring of internal and external exposures. • Provides site-specific training to personnel, as required by the SSHP • Tracks all personnel training requirements, survey data, certifications, and records to ensure compliance with plans and regulations • Assists in developing and implementing the SSHP • Reviews and approves Subcontractor Safety and Health Plans and Programs, and conducts audits as appropriate to ensure compliance • Reviews and approves work permits for appropriate industrial hygiene and safety controls • Provides monitoring to ensure the protection of project personnel, the public, and the environment • Maintains an inventory of industrial hygiene and safety supplies as appropriate • Maintains monitoring equipment and calibration records • Stops work when necessary to ensure the safety of personnel and to prevent damage to the environment

**TABLE 3-1 (Continued)
PROJECT RESPONSIBILITIES**

Team Member(s)	Responsibilities
<p>Site Quality Control Supervisor (SQCS)</p>	<p>Reports to the PMO and has primary responsibility for verifying a consistently high level of quality for the project. Implements and ensures compliance with the Quality Control Plan and other planning documents, as applicable.</p> <ul style="list-style-type: none"> • Reviews and checks all documents, reports, and testing results • Reports all inspection/test results to PMO and others as required • Coordinates with procurement, engineering, and cost/schedule departments • Observes all field activities to ensure compliance with this Work Plan and completes Field Inspection Checklists • Keeps minutes of the periodic quality meetings • Performs required tests and implements the three phases of quality control: Preparatory, Initial, and Follow-up inspections • Ensures tracking and resolution of nonconformance/rework items • Stops work when work does not comply with requirements established contractually • Supervises the Quality staff, as applicable • Assists the Program Quality Manager in the submittal process • Maintains the Testing Plan and Log • Documents results of inspection and testing activities on the Contractor Quality Control Report • Ensures that sample custody requirements are maintained
<p>One person will perform the tasks of the Field Geologist, SSHO and SQCS.</p>	

4.0 PROJECT EXECUTION

4.1 WORK APPROACH

This section describes the work approach that will be employed during the data acquisition work. The work approach addresses the control of work process, work elements, and regulatory and reporting requirements associated with the work activities.

The information provided in this Work Plan is a summary of the proposed work. Field work will be performed using the CPT to obtain screening-quality subsurface data without producing any drill cuttings. The required equipment will be truck mounted. Data/sample collection will be performed by pushing a small (one to two inches) diameter steel cone hydraulically into the soil.

4.2 DEFINABLE FEATURES OF WORK

The general sequence of the work can be broken down into definable features of work (DFOWs). DFOWs and the Three Phases of Control will be used to maintain Quality Control over the work at the site. The DFOWs, shown below and described briefly in the following sections, are the basic elements associated with the work activities:

- Site preparatory work
- Decontamination
- Utility survey
- Piezocone sounding
- Ground-water sampling and analysis
- Surveying
- Site restoration
- Waste management
- Regulatory compliance
- Reports

4.2.1 Site Preparatory Work

Site preparatory work is the first physical activity at the site and involves the staging of material and equipment and demarcation of work zones. Coordination, scheduling of work activities and a pre-construction conference will also be performed during the site preparation.

4.2.2 Decontamination

Field equipment will be inspected prior to use to ensure that it has been decontaminated. Push rods and cones will be decontaminated between boreholes and after completion of field work. The non-disposable sampling equipment will be decontaminated after each use.

4.2.3 Utility Survey

Location and elevation of utilities in the area will be verified prior to start of any subsurface penetrations. The utility lines will be identified by stakes and flags. Subsurface penetrations will be conducted at least five feet away from the identified utility lines.

4.2.4 Piezocone Sounding

Piezocone sounding will be performed for hydrogeological characterization at the site. ASTM D 3441 defines piezocone sounding as "the entire series of penetration tests performed at one location when using a piezocone penetrometer." The steel cone of the penetrometer will be fitted with load cells, electronic strain gauges and pressure transducers to provide data on cone resistance, sleeve friction and pore pressure continuously as the cone is pushed into the ground. During testing, the data will be simultaneously printed as a continuous chart and stored in a computer for plotting at a later date.

Piezocone sounding will be performed in accordance with ASTM D 3441- *Standard Test Method for Deep, Quasi-Static, Cone and Friction-Cone Penetration Tests of Soil*. [ASTM D 3441]. Each piezocone sounding will be performed to a depth of 100 feet below ground surface or refusal is encountered. The proposed penetrometer locations are shown on Figure 4-1. Each location will be field determined to accommodate utility clearance requirements and other site conditions. The proposed number of piezocone soundings in Area # 1 and Area # 2 are two and 85, respectively. It is recognized that some locations may not be accessible and will need to be deleted. Piezocone sounding in Area # 2 will be completed prior to starting Area # 1. Field work in Area # 2 will be prioritized in accordance with the following order of sub-areas: W1, W2, W3 and W4. Thus, the investigative effort required for sub-areas W3 and W4 will be determined by the results of piezocone sounding and ground-water sampling from sub-areas W1 and W2, respectively.

Following completion of piezocone sounding, the holes will be grouted to prevent ingress of surface water and cross-contamination of aquifers. Grout mixture will be comprised of cement, bentonite and water.

4.2.5 Ground-Water Sampling and Analysis

Ground-water samples will be obtained at discrete depths using the CPT. To obtain ground-water samples, the piezocone will be replaced with a solid cone connected to a stainless steel screen and a sampling chamber. When the desired depth is reached, the penetrometer will be activated from the surface to collect ground-water samples.

The ground-water sampling holes will be located at a distance of two to four feet away from each piezocone sounding location. Ground-water samples will be collected from an approximate depth of 50 feet. As discussed in Section 4.2.4, the results of ground-water sampling will be reviewed and evaluated for each sub-area to determine subsequent sampling effort.

The ground-water samples will be shipped to an off-site laboratory certified by the Minnesota Department of Health. Laboratory analysis will be performed for determination of TCE concentration. The data quality will be a minimum of NEESA level E.

Following completion of ground-water sampling, the holes will be grouted to prevent ingress of surface water and cross-contamination of aquifers. Grout mixture will be comprised of cement, bentonite and water.

4.2.6 Surveying

All piezocone soundings and ground-water sampling locations will be surveyed and subsequently mapped by a surveyor licensed in the state of Minnesota. The locations will be marked with high stakes to ensure that they are not lost in the snow. Surveying will provide the coordinates and elevation of each location. The existing wells at the Anoka County Park will also be surveyed. The map will include elevations of ground surface protective installations and the elevations of the top of riser.

4.2.7 Site Restoration

Any ground surface that had been rutted due to vehicular traffic will be filled and the area seeded. The site will be restored to original condition.

4.2.8 Waste Management

A Waste Management Plan, included as Appendix D, provides a list of wastes expected to be generated and a description of how they will be managed.

4.2.9 Regulatory Compliance

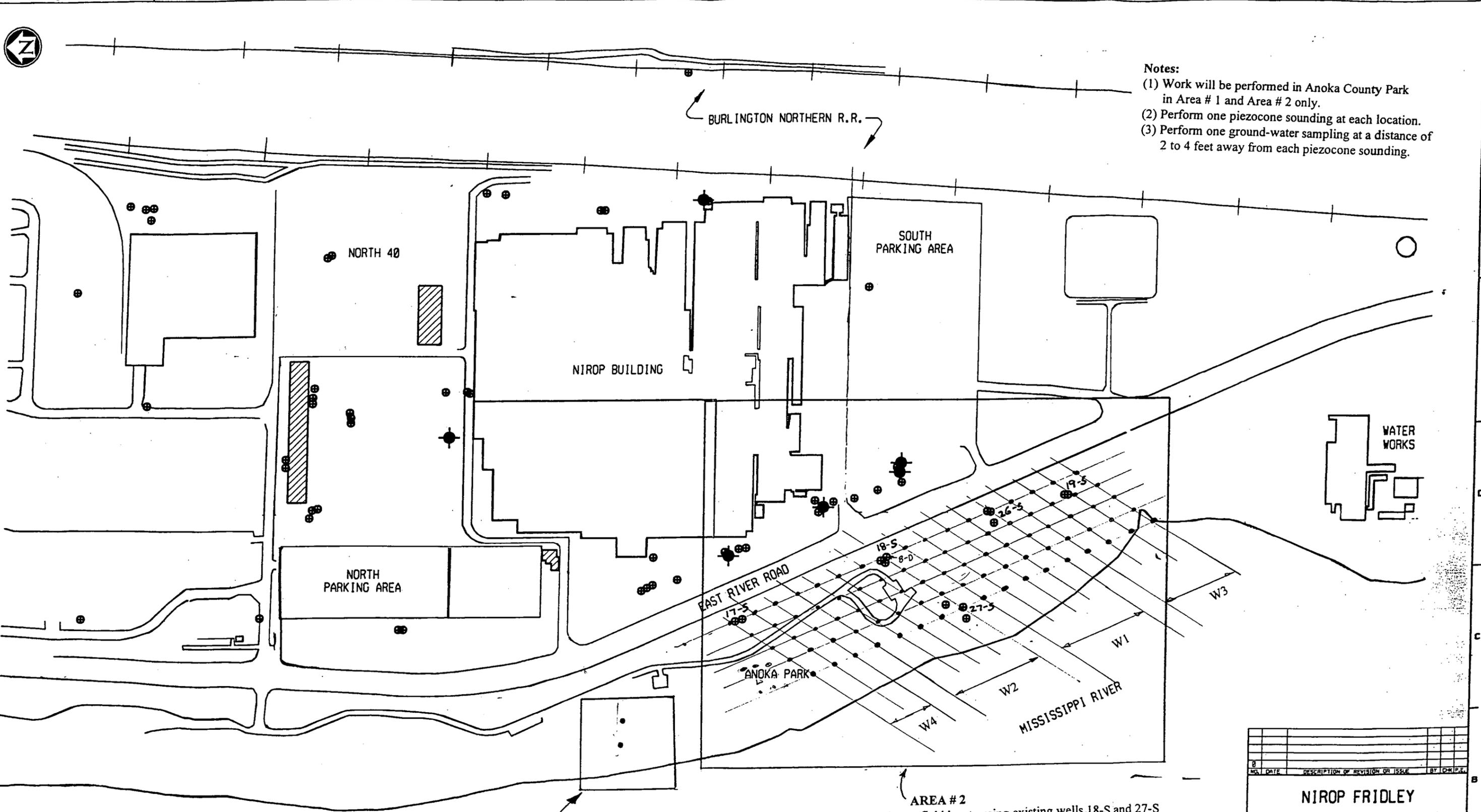
To assure compliance with federal, state and local regulations, a Quality Control checklist has been developed to verify that the applicable regulations have been addressed. The Regulatory Compliance checklist (RG-01), included in Appendix B, requires the SQCS to review other specific checklists and verify that regulatory requirements have been met prior to proceeding with a DFOW.

4.2.10 Reports

MK will generate and submit a Completion Report to SOUTHNAVFACENGCOM after all site activities are completed. The report will include:

- A summary of piezocone sounding activities completed
- A summary of ground-water sampling activities
- A summary of wastes generated, managed and disposed
- Photographic documentation of site conditions before, during, and after work activities
- As-built record drawings
- A discussion of any deviations from the Work Plan with results
- Final acceptance of work activities by the REICC
- Lessons learned
- Project conclusions

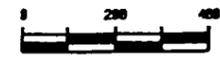
The data from piezocone sounding and ground-water sampling will be provided to BRE for input into their Geographical Information System (GIS) and ground-water model.



- Notes:**
- (1) Work will be performed in Anoka County Park in Area # 1 and Area # 2 only.
 - (2) Perform one piezocone sounding at each location.
 - (3) Perform one ground-water sampling at a distance of 2 to 4 feet away from each piezocone sounding.

LEGEND

- - EXISTING EXTRACTION WELL
- ⊙ - EXISTING MONITORING WELL
- Penetrometer Locations



AREA # 1
 (2 penetrometer locations - field locate one upstream and one downstream of storm drain pipe headwalls)

AREA # 2
 (85 penetrometer locations - field locate using existing wells 18-S and 27-S as one axis and 17-S and 18-S as another axis for lines; grid on 100-foot centers)

NO.		DATE		DESCRIPTION OF REVISION OR ISSUE		BY		CHK'D BY	
NIROP FRIDLEY									
FIGURE 4-1 PENETROMETER LOCATIONS									
MORRISON KNUDSEN CORPORATION									
500 WEST 3RD STREET CLEVELAND, OHIO 44108 PHONE: (216) 523-5600									
W. D. 4324-0814		DRWG. NO. 818317							
DRAWN E.R.	APPROVED BY	WORK ORDER NO.		DRAWING NUMBER		REV. A			
CHECKED BY	SCALE	DATE		PROJECT		P.E.			
DEPT	ARCH	STR/CEM	MECH	ELECT	PRDC	SYS.C	PIPE	SAFETY	P.E.
INIT									
DATE									

5.0
SITE SAFETY AND HEALTH PLAN

The Site Safety and Health Plan is contained in Appendix A to this Work Plan.

6.0 QUALITY CONTROL

6.1 QUALITY CONTROL REQUIREMENTS

The Quality Control requirements, specified in this section supplement, are to be used in conjunction with the requirements of the Delivery Order Execution Quality Control Plan previously approved by SOUTHNAVFACENCOM [MK, 1996].

6.2 INSPECTION SYSTEM

MK will use the DFOWs and the Three Phases of Control to ensure that work activities at the site achieve and maintain a consistently high level of quality.

At each phase -- Preparatory, Initial and Follow-Up -- quality control verification activities may be supplemented by the performance of detailed inspections of a particular activity. Field Inspection Checklists, included in Appendix B, will be used to assure a thorough verification of the work process. When utilized, the completed Field Inspection Checklist is attached to the combined *Contractor Production Report/ Contractor Quality Control Report (Form 01400-1)*, which is completed on a daily basis.

6.3 TESTING PLAN AND LOG

A Testing Plan and Log has been prepared and is included in Appendix B of this Work Plan. The Testing Plan and Log delineates the required tests and inspections applicable to a definable feature, as well as the inspection checklist or governing standard to be used in the performance of the inspection. The Testing Plan and Log will be utilized in the field to record the status of sampling and inspections performed. The SQCS will attach a copy of the updated Testing Plan and Log to the last daily Contractor Quality Control Report of each week.

6.4 REQUIRED QUALITY CONTROL DOCUMENTATION

Table 6-1 cross references each DFOW as it relates to applicable Field Inspection Checklists and Activity Hazard Analysis (AHA). Field Inspection Checklists that are to be completed to support the work activities are included in Appendix B.

6.5 FINAL SITE INSPECTION

Following substantial completion of installation and construction activities, a final inspection will be performed by the REICC and MK SQCS. If any work item is not in compliance with this Work Plan, a punchlist will be generated by the MK SQCS. All punchlist items will be corrected to the requirements of the Work Plan. Upon acceptance of the work activities, a Certificate of Satisfactory Completion will be signed by all parties involved in the final inspection. A typical certificate of satisfactory completion is included in Appendix B.

**TABLE 6-1
DFOW CROSS REFERENCE**

DFOW	Work Plan Section	Activity Hazard Analysis (Appendix A)	Field Inspection Checklist(s) (Appendix B)
Site Preparatory Work	4.2.1	1 of 4	SP-01
Decontamination	4.2.2	2 of 4	DE-01
Utility Survey	4.2.3	1 of 4	US-01
Piezocone Sounding	4.2.4	3 of 4	PS-01
Ground-water Sampling and Analysis	4.2.5	3 of 4	GS-01 SA-01
Surveying	4.2.6	4 of 4	SV-01
Site Restoration	4.2.7	4 of 4	SR-01
Waste Management	4.2.8	2 of 4	WM-01
Regulatory Compliance	4.2.9	N/A	RG-01
Reports	4.2.10	N/A	N/A
Note: N/A = Not applicable			

7.0 SCHEDULE

The work will depend on weather conditions at the site. Work may be suspended during winter and remobilized in the spring of 1998. On the worst case, field work may be postponed until the spring of 1998. If no winter shutdown is necessary, the duration for the field work is expected to be 12 weeks. All reasonable efforts will be made to execute the project in accordance with the schedule shown in the following page unless winter conditions make continued operations unfeasible. Tentative milestones are listed below:

Pre-construction Meeting	10/29/97
Mobilization and Field Work Start	10/30/97
Demobilization	01/21/98 (Will depend on weather)
Complete Draft Report	03/05/98

**NIROP Fridley - Data Aquisition Work
1997-1998 Field Work
No Winter Shutdown**

WBS	Name	Duration	Start	Finish	1998											
					Oct	Nov	Dec	Jan	Feb	Mar	Apr					
1	Work Plan (WP)	24d	10/6/97	11/6/97												
1.1	Prepare Draft WP	8d	10/6/97	10/15/97												
1.2	Submit Draft WP to SouthDiv	1d	10/16/97	10/16/97												
1.3	SouthDiv Review	5d	10/17/97	10/23/97												
1.4	SouthDiv Conditional Approval	1d	10/24/97	10/24/97												
1.5	Prepare Final WP	8d	10/27/97	11/5/97												
1.6	Submit Final WP to SDiv	1d	11/6/97	11/6/97												
2	Bid Process	18d	10/6/97	10/29/97												
2.1	Prepare Bid Pkg and Select Sub	12d	10/6/97	10/21/97												
2.1.1	Develop/Review Bid Packag	5d	10/6/97	10/10/97												
2.1.2	Distribute Bid Packages	1d	10/13/97	10/13/97												
2.1.3	(Subcontractor Prepare Bid)	5d	10/14/97	10/20/97												
2.1.4	Bids Due	1d	10/21/97	10/21/97												
2.2	Award Subcontract	1d	10/22/97	10/22/97												
2.3	Submittals/Notice to Proceed	2d	10/23/97	10/24/97												
2.4	Rig Travel Time	2d	10/27/97	10/28/97												
2.5	Pre-construction Meeting	1d	10/29/97	10/29/97												
3	Field Work	60d	10/30/97	1/21/98												
3.1	Piezocone Sounding	60d	10/30/97	1/21/98												
3.2	GW Sampling	60d	10/30/97	1/21/98												
4	Report	31d	1/22/98	3/5/98												
4.1	Prepare Report	30d	1/22/98	3/4/98												
4.2	Submit Draft Report to SDiv	1d	3/5/98	3/5/98												

8.0 REFERENCES

RMT, Inc., January 1995. *Workplan for Improvement of Groundwater Containment System Effectiveness*. [RMT, 1995]

US Army Corps of Engineers, October 1996. *Safety and Health Requirements Manual*. EM 385-1-1. [ACOE, 1996]

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APPENDIX A
SITE SAFETY AND HEALTH PLAN

APPROVAL:

William P. Simpson Date: 10/22/97

MK PMO Health and Safety Manager

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1.0 SITE SAFETY AND HEALTH PLAN

This Site Safety and Health Plan (SSHP) describes safety and health requirements for the data acquisition work at the NIROP facility. Tasks include collection of hydrogeologic information using cone penetrometer technology (CPT) and groundwater sampling for trichloroethylene (TCE). This SSHP, together with the MK General Safety and Health Plan (GSHP) [MK, 1996c], is consistent with requirements of the Occupational Safety and Health Administration's (OSHA) Hazardous Waste Site Regulations, 29 CFR 1910.120 and 29 CFR 1926.65 along with the U.S. Army Corps of Engineers' *Safety and Health Requirements Manual* EM 385-1-1, [ACOE, 1996]. This SSHP is applicable to all personnel who enter into work areas described in this SSHP and who are under the control of MK or its Subcontractor.

1.1 CONTAMINANT CHARACTERISTICS

Contaminants of concern include chlorinated hydrocarbons, most likely TCE and its biodegradation products in low parts per million (ppm) concentrations. Generally, these compounds if ingested, inhaled, or contacted can cause central nervous system (CNS) depression, poor equilibrium, and dermatitis. TCE is a colorless liquid with a sweet chloroform-like odor. It is a Class IC flammable liquid, but burns with difficulty. Precautions include preventing eye and skin contact and respiratory protection if action levels are reached. First aid for exposure includes soap and water wash for skin, immediate irrigation for eye contact and removal from exposure. Respiratory support and medical attention will be sought immediately. TCE has an OSHA PEL of 50 ppm as 8 Hr. TWA and an OSHA 15-min STEL of 200 ppm.

1.2 SAFETY AND HEALTH HAZARDS SUMMARY

Utility and process piping locator service will be completed prior to any ground penetrations. Walking and working surfaces will be monitored for fall and slip hazards, and approved barriers and signs will be placed for pedestrian and vehicle safety. Level D Personal Protective Equipment (PPE) is anticipated for the majority of the tasks with an upgrade to chemical resistant gloves during sampling, wastewater handling, and when potentially contaminated penetration equipment is handled.

1.2.1 Activity Hazards Analysis (AHA)

AHAs have been prepared for each anticipated task in accordance with EM 385-1-1, [ACOE, 1996]. AHAs are in the form of worksheets contained in Attachment A of this Appendix. Each site activity will be reviewed by field supervisors, namely the MK SSHO, MK Site Project Manager (PM) and Subcontractor Job Supervisors and affected personnel prior to starting work, to determine if the prepared AHA adequately addresses the planned activity. If the prepared AHA requires revision or a new task is identified, additional AHA worksheets will be prepared as needed. The AHA worksheet will be redlined, or a new AHA worksheet will be field prepared by the Subcontractor Job Supervisor and the MK SSHO before the activity takes place.

1.2.2 Ground Penetration Safety

Prior to commencing ground penetrations, the location of the existing utilities and process piping will be surveyed and marked by the public utility locating service and the Facilities Maintenance Department. An excavation and trenching permit will be completed by the MK SSHO and its approval coordinated through the Resident Engineer In-Charge of Construction (REICC). The utility lines will be identified by stakes and flags. Subsurface probes and drilling will be conducted at least five feet away from utility lines. Management of the ground penetration safety program for this project will be established during mobilization, communicated to all affected parties at the pre-construction meeting, and managed by the MK SSHO using guidelines established in MK Program Procedure PHSP 05.1. This procedure is included

in the *Program Procedures Manual* which will be available on site [MK, 1996d]. Gopher State One is the public utility locating service, their phone number is listed in Table A-1.

1.2.3 Fire and Explosion

No hot work or open flames will be allowed in the work area without a Hot Work Permit. This permit will be issued by the MK SSHO and coordinated with the REICC. At least one 20-lb or equivalent ABC multi-purpose fire extinguisher will be maintained for fire response near each work zone during hot work activity.

1.2.4 General Motor Vehicle, Hand and Power Equipment Safety

Refer to GSHP Section 2.5.8 for motor vehicle and equipment safety inspection requirements. At least one 5-lb or equivalent ABC multi-purpose fire extinguisher will be maintained in the cab/work area of the CPT vehicle. If an noticeable hydrocarbon odor forms inside of the CPT cab/work area during borehole penetrations, work will be shut-down, the cab/work area evacuated and ventilated, and an evaluation conducted.

1.2.5 Work Site Control Safety

Approved barricades and signs will be placed around work areas in accordance with GSHP Section 2.5.9. Special attention will be given to ensuring pedestrian safety around work areas inside and outside of buildings.

1.3 RESPONSIBILITIES AND AUTHORITIES SUMMARY

Ultimately, responsibility for the safety and health lies with the individual. All personnel must be cognizant of the hazards and the methods of reducing the risk of injury and illness. All personnel will comply with the rules and procedures set forth in this plan and will make project management aware of any conditions which may jeopardize the welfare of project workers and/or the general public. The specific personnel names and telephone numbers of responsible persons are presented in Table A-1 which includes directions to the nearest medical facility. Figure A-1 is the map showing routes to the nearest medical facility. Refer to the GSHP, Section 3.0, for a summary on responsibilities and authorities. Planned MK staffing includes a PM, an SQCS, and an SSHO.

1.4 SAFETY TRAINING AND MEETING REQUIREMENTS SUMMARY

All regulatory and project specific training and meetings for this project are summarized in Table A-2. Personnel will require 40 hour HAZWOPER training certification per 29 CFR 1910.120.

1.5 MEDICAL PROGRAM SURVEILLANCE PROGRAM REQUIREMENTS

Personnel will require participation in a medical surveillance program consistent with HAZWOPER regulations per 29 CFR 1910.120.

1.6 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Refer to Table 4 in the GSHP document for the definition of the basic levels (Level B, C, Modified D, and D) of PPE. Table A-3 lists the minimum PPE level required for each task or operation. The majority of the tasks will be completed in Level D (standard work attire) PPE with upgrades that include chemical resistant gloves and other protective clothing on an as needed basis. The MK SSHO is empowered with the authority to authorize any modification to the PPE requirements based on air sampling and/or monitoring or by professional judgement.

1.7 MONITORING AND SAMPLING

No air monitoring and/or sampling is anticipated for this project. The Subcontractor is responsible for determining sound levels in the CPT cab/work area and appropriate level of protection if applicable.

1.8 GENERAL SAFETY RULES AND PROCEDURES

Operations will be conducted in a safe manner consistent with the policies and procedures outlined in this SSHP. The number of personnel will be restricted to the minimum necessary to complete the required work as an administrative control to limit personnel exposures to potential site chemical and physical agents. All project and subcontractor personnel assigned to this project are responsible for following this SSHP and its approved modifications, for using safe practices, and for wearing the PPE specified by the MK SSHO. Project personnel will report hazards and unsafe conditions and practices to the MK SSHO. All federal, state and local occupational health and safety regulations must be complied with by project personnel. Violations of project procedures may include disciplinary measures up to and including removal from the work site and termination of employment.

1.8.1 Rules and Procedures

Refer to GSHP Section 8.2. The requirement for two fire extinguishers at the work site is changed to one only.

1.9 SITE CONTROL MEASURES

Prior to the commencement of field activities, the work zones will be established by MK with the approval of the REICC as necessary to meet operational and safety objectives. Work zones will be communicated to all affected personnel which includes information on the assembly points; evacuation routes; location of first aid equipment and fire extinguisher; and emergency communications equipment. Emergency phone numbers and a hospital route map will be posted in the office locations and the CPT cab/work area.

1.9.1 Work Zone Controls

Before site operations begin, the Support Zone (SZ) MK site office and if applicable, the Subcontractor office, will be identified with signs. MK's Subcontractor will post signs if necessary, near the CPT cab/work area stating the following or equivalent.

HAZARDOUS AREA KEEP OUT
DANGER
AUTHORIZED PERSONNEL ONLY

MK's Subcontractor will control pedestrian and vehicle traffic around work areas using traffic-type barricades such as cones and also caution tape if determined to be necessary.

1.10 PERSONNEL AND EQUIPMENT DECONTAMINATION AND HYGIENE PROCEDURES

1.10.1 General

Where applicable, potentially contaminated protective clothing will be disposed of rather than decontaminated. The CPT equipment will utilize a built-in hot water decontamination system for push rods and cones and is equipped with a small sink for sampling equipment decontamination.

1.10.2 Personal Hygiene and Sanitation

Personnel exiting work zones are required to thoroughly wash their hands and face prior to eating, drinking, smoking, or using toilet facilities. A hand and face washing facility, including toilet facilities, will be identified in or near the work zone consisting of water, towels and soap for personnel. Lunchroom facilities for use by all personnel, will be identified by MK.

1.11 ON-SITE FIRST AID AND EQUIPMENT

At a minimum, a 16-unit first aid kit will be maintained by MK in its office. MK's Subcontractor will maintain a first aid kit at its office or inside of the CPT vehicle. The location of the first aid equipment will be communicated to project personnel as part of the site-specific training. Included with the first aid kit will be a CPR Pocket Mask and a biohazards control kit (used to clean up incidents involving body fluids) and a personal portable eyewash kit meeting ANSI Z358.1-1990 recommended standards.

1.11.1 Report of First Aid Cases

All first aid cases, accidents and incidents including equipment damage incidents will be promptly reported to the MK SSHO. Refer to GSHP Section 11.2 for additional guidance on reporting requirements. The incident reporting requirement is revised such that a Navy CSIR Form, available from the MK SOUTHNAVFACENCOM Health and Safety Manager, will be used to document all OSHA recordables and equipment damage greater than \$1,000.00.

1.12 EMERGENCY RESPONSE PLAN AND CONTINGENCY PROCEDURES

1.12.1 General

This section describes a contingency plan to be implemented in the event of injuries, illnesses, accidents, and fires. The contingency plan provides guidelines for the proper response to emergency situations; however, the actual response will depend on the situation. In the event of an emergency, the MK SSHO, MK Site PM and/or Subcontractor Job Supervisors will direct all personnel to take appropriate action which could include any or all of the following:

- Evacuate all personnel involved to a safe place.
- **Notify NIROP Emergency Number at X2345 or 911.**
- Initiate emergency response action.

1.12.2 Pre-Emergency Planning

During mobilization activities for this project, the MK PM, MK SQCS, and the MK SSHO will review the MK Program Procedure PHSP 02.1 and execute the steps necessary to assure effective emergency response requirements and resources are established for this project.

1.12.3 Initial Reporting and Management of Incidents

All emergencies will be promptly reported to the **Notify NIROP Emergency Number at X2345 or 911** and to the MK SSHO. The MK SSHO will assure that the Navy designated authority is notified promptly and will direct initial emergency response actions until the arrival of the emergency response unit. The following contains the initial response actions to be taken by MK personnel and subcontractors at the work site for the type of incident incurred.

- **Incident Type: Accident involving vehicles and mobile equipment, process equipment, structures and contact with underground utilities.**
1. **Notify NIROP Emergency Number at X2345 or 911**, include the following information:
 - A. Name and phone number of person calling;
 - B. Location of incident;
 - C. Type of incident;
 - D. Is anyone injured or trapped; and
 - E. Potential material release or spill conditions.
 2. MK SSHO, MK Site PM or Subcontractor Job Supervisor(s) designates one person to meet the emergency response units at the nearest road where the units will be approaching.
 3. MK SSHO, MK Site PM or Subcontractor Job Supervisor(s) assumes initial command of the situation and directs personnel to do one of the following either separately or concurrently:
 - A. Emergency shutdown of process equipment or mobile equipment -- evacuate the work zone or immediate area to a safe place and meet the incoming response units and provide all available information.
 - B. If fire is present -- initiate initial fire attack and knockdown using available fire extinguishing equipment followed by evacuating the work zone or immediate area.

- **Incident Type: Medical and Rescue Emergencies.**

1. **Notify NIROP Emergency Number at X2345 or 911**, include the following information:
 - A. Name and phone number of person calling;
 - B. Location of incident;
 - C. Type of incident;
 - D. Person(s) injured or trapped and exposed to hazardous material.
2. MK SSHO, MK PM or Subcontractor Job Supervisor(s) designates one person to meet the emergency response units at the nearest road where the units will be approaching.
3. MK SSHO, MK PM or Subcontractor Job Supervisor(s) assumes initial command of the situation and completes or directs personnel to do one or both of the following:
 - A. Emergency shutdown of process equipment or mobile equipment and any other necessary action to mitigate or control the incident.
 - B. Initiate emergency first aid actions until arrival of emergency units.

1.13 LOGS, REPORTS AND RECORDKEEPING

1.13.1 Safety and Health Logbook

MK SSHO will maintain safety and health logbook in accordance with GSHP Section 13.1. A separate daily report (refer to GSHP Figure 3) is not required, information can be entered into the daily logbook instead.

1.13.2 Reports

A weekly site safety and health inspection report will be prepared by the MK SSHO in accordance with GSHP Section 13.2 and using Figure 4 from the GSHP for weekly reports.

1.13.3 Field Master Copy of SSHP

The MK SSHO will maintain a field master copy of this SSHP in accordance with the GSHP Section 13.3.

1.13.4 Recordkeeping

Refer to GSHP Section 13.4. The MK SSHO will receive copies of all records for injuries and illnesses of Subcontractors incidental to the work, including copies of the Worker's Compensation First Report of Injury. These records will be maintained on the Subcontractors OSHA 200 Log. Per the Subcontract General Conditions 13(c), the Subcontractor will provide a monthly project safety review form and attach with it a copy of its OSHA 200 Log specific to this project. The MK SSHO will insure that information on Subcontractor exposure hours is provided to the MK SOUTHNAVFACENGCOM Health and Safety Manager on a monthly basis. A record of all first aid treatments not otherwise recordable will be maintained and furnished to MK or the Navy's designated authority upon request.

1.13.5 Safety and Health Project Completion Report

The MK SSHO will complete a safety and health project completion report at the conclusion of the field work in accordance with the GSHP Section 13.5.

1.14 ON-SITE WORK PLAN

This SSHP is Appendix A to the Work Plan.

1.15 COMMUNICATIONS PROCEDURES

Telephones will be selected as the primary choice of emergency communication and are installed on-site. The MK SSHO will test all communication systems prior to commencing work for confirmation of emergency communication capability.

1.16 SPILL CONTAINMENT PLAN

1.16.1 General

The only spill and release accident scenarios credible to this operation is loss of containment of rinsates from decontamination activities and spills of sampled groundwater. These types of spills can be generally classified as incidental, but will still require fast response to mitigate and clean-up the spill. The following information will be used by project personnel to respond to and mitigate any releases on the project site. In the event of a spill or release, the MK SSHO, MK PM and/or Subcontractor Job Supervisors will direct all personnel to take appropriate action which could include one or all of the following:

- Initiate spill response action.
- Notify the **NIROP Emergency Number at X2345 or 911**
- Evacuate the work zone to a safe place.

1.16.2 Preplanning for Spill Control

Field operations will be reviewed for release potential during Plan-of-the-Day meetings. During mobilization activities for this project, the MK PM, SSHO, and the SQCS will review the MK Program Procedure PHSP 03.1 and execute the steps necessary to assure effective spill response planning requirements and resources are established for this project. **The NIROP Emergency Number will be notified of any spills classified above incidental. They will in turn notify the NIROP Fire Department who will provide overall command and control of the of spill mitigation activities until relieved by a higher authority.**

1.16.3 Spill and Fire Control Materials and Equipment

The Subcontractor will have available a spill clean-up container with porous or absorbent barriers. Drums and containers used during a clean-up will be appropriate for the hazardous substances they are meant to contain, and will meet the regulations promulgated by DOT, 49 CFR Parts 171-179, OSHA 29 CFR 1910.120, and EPA 40 CFR 262. Drums and containers will be inspected for defects and their integrity assured prior to being filled with any hazardous or special waste substance.

A spill of material will be contained with porous or absorbent barriers. Absorbent materials can take several configurations (pillows, sheets, booms, loose chips, particle beads, and fibers) that may be set in place, or scattered by hand. Preferred sorbents are inert, nonreactive clay minerals (neutralizing agents may be added), or specific formulations which provide automatic neutralization or vapor control.

1.16.4 Spill Control Measures

Stopping the leak or spill at its source may involve turning off pumps or closing valves, returning a container to an upright position, transferring wastes to other containers, or moving containers to less dangerous locations. In some circumstances clean-up should not be attempted if the identification of the substance is not known unless Level B Protection is worn and decontamination stations have been established. Similarly, the patching of an active leak is not advised until an initial "Size-Up" of the situation is made by the MK SSHO and guidance established in Section 1.16.6 has been followed.

1.16.6 Initial Reporting and Management of Incidents

All spill emergencies initially classified above an Incidental Release as defined below will be promptly reported to the **NIROP Emergency Number at X2345 or 911**.

Incidental Release - a release of hazardous material where the substance can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area, or by maintenance personnel. In addition, the quantity of released material does not exceed EPA Reportable Quantities (RQs). Note: it is anticipated that none of the collected decontamination waste water or ground water samples will be present in any quantities that which if spilled, could exceed EPA RQs for TCE or other hydrocarbons.

The MK SSHO, the MK Site PM and the Subcontractor Job Supervisors are responsible for directing initial emergency response actions until the arrival of the NIROP FIRE DEPARTMENT. The following contains the initial response actions to be taken by MK and Subcontractors at the work site for spill and release emergencies.

Spill Response Actions:

1. Classify spill as Incidental or an Emergency.
2. If Incidental (as defined above): a) notify immediate supervisor; b) assess hazard potential, and establish precautions and PPE requirements; c) begin clean-up of spill.
3. If Emergency, initiate response action in accordance with the following steps:
 - A. Quickly assess probability of safely stopping spill. If physical, chemical, or biological health hazards exist, immediately evacuate the area to a safe distance upwind and upgrade from the spill.
 - B. Notify the **NIROP EMERGENCY RESPONSE** and provide the following information:
 1. Name and phone number of person calling;
 2. Location of incident;
 3. Type of incident;

4. Is anyone injured or trapped; and
 5. Estimated volume of material released.
- C. MK SSHO, MK PM or Subcontractor Job Supervisors designates one person to meet the emergency response units at the nearest road where the units will be approaching.
- D. MK SSHO, MK PM or Subcontractor Job Supervisors assumes initial command of the situation and directs personnel to do one of the following:
- a. Emergency shutdown of process equipment or mobile equipment, evacuate the work zone or immediate area to a safe place and meet the incoming response units and provide all available information.
 - b. Initiate initial spill response using available spill response equipment only for small emergency spill events where personnel are trained to mitigate. Evacuate the work zone or immediate area if there are any health threats or risks to personnel.
 - c. MK's PM will immediately notify the Navy's Designated Authority and the MK PMO. The Navy's Designated Authority is the REICC assigned to this project.

1.17 CONFINED SPACES

None are anticipated.

**TABLE A-1
PERSONNEL NAMES AND TELEPHONE NUMBERS**

Contact	Person or Agency	Telephone Number
Emergency Response	NIROP Emergency Response Dispatcher	X2345 or 911 emergency
Fire Department	NIROP Fire Department	X2345 or 911
Law Enforcement	NIROP Security	X2407
Law Enforcement	Fridley Police and Fire	(612) 571-3450 or 911
Ambulance Service	NIROP Medical	X2222 or 911
Robert Hlavacek	MK Program Manager	(803) 554-9367
Scott Newman	MK Senior Project Manager	(803) 554-0100
Marty Wilson	MK Field Operations Manager	(803) 554-6003
Greg Hibbard	MK Site Project Manager	(612) 572-5365
to be determined	MK Site Safety and Health Officer	to be determined
to be determined	MK Site Quality Control Supervisor	to be determined
Han Maung	MK Project Engineer	Office: (216) 523-3422 1-800-334-3081
William Piispanen	MK Health and Safety Program Manager	(208) 386-5930
Joel Murphy	SOUTHNAVFACENGCOM Remedial Project Manager	(803) 820-5577
Scott Glass	SOUTHNAVFACENGCOM Remedial Project Manager	(803) 820-5587
Pat Mosites	REICC	(612) 572-6438
Doug Hildre	United Defense Environmental Contact	(612) 572-6938
Rick Kamrath	United Defense Facilities Engineering	(612) 572-6887
Public Utility Locate Service	Gopher State One	(800) 252-1166
Poison Control Center	National Poison Control Center	(800) 492-2414
CHEMTRAC	Chemical Spill or Leak Emergencies	(800) 424-9300
National Response Center	National Response Center	(800) 424-8802
Hospital	Fridley Unity Medical Center	(612) 571-3450 (612) 780-6742
USEPA RCRA/CERCLA Hotline	USEPA	(800) 424-9346

**TABLE A-1
PERSONNEL NAMES AND TELEPHONE NUMBERS**

Contact	Person or Agency	Telephone Number

Directions to Fridley Unity Medical Center, 500 Osborne Road Northeast #120, Minneapolis, MN 55432

1. From Main Gate, take East River Road North for 0.9 miles,
2. Bear right onto the on-ramp to I-694 heading east for 0.8 miles,
3. Turn left on University Avenue (Highway 47) heading north for 2.7 miles,
4. Turn right on unnamed street heading east for 0.1 miles,
5. Continue on 8 heading east for 0.5 miles,
6. Turn right on Jackson Street NE heading south for 0.2 miles to 500 Osborne Road NE.

A copy of the map to the hospital will be posted at work sites for reference.

**FIGURE A-1
HOSPITAL ROUTE MAP**

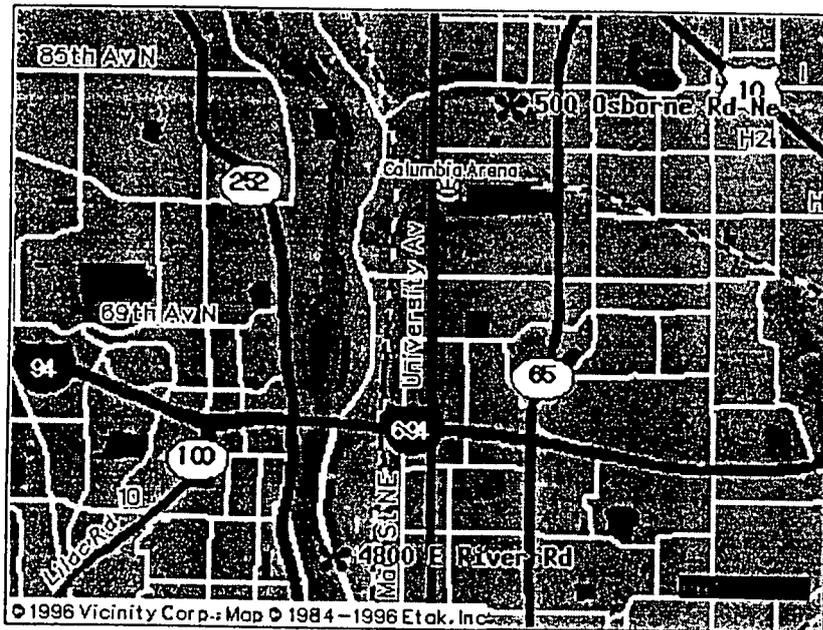
Note: The MK SSHO will verify directions to hospital during mobilization and obtain a better copy of the map for posting purposes.

From: 4800 E River Rd
Minneapolis, MN

To: 500 Osborne Rd Ne
Minneapolis, MN

WARNING: The above addresses were not precisely located. Please beware of this, and use these directions appropriately as a guide only.

The following *F15y Route* can assist you in reaching your destination.



Estimated travel time: 9.4 minutes for 5.1 miles of travel.
[Show Maneuver Maps]

Directions		miles
1	Starting at 4800 E River Rd, begin on E RIVER RD heading north for 0.9 miles	0.0
2	Bear right onto the on-ramp to I 694 heading east for 0.8 miles	0.9
3	Turn left on UNIVERSITY AV (HWY 47) heading north for 2.7 miles	1.7
4	Turn right on UNNAMED STREET heading east for 0.1 miles	4.4
5	Continue on 8 heading east for 0.5 miles	4.5
6	Turn right on JACKSON ST NE heading south for 0.2 miles to 500 Osborne Rd Ne	5.0

(NOTE: like any driving directions/map you should always do a reality check and make sure the roads still exist. watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.)

**TABLE A-2
TRAINING AND MEETINGS**

Type of Training or Meeting	Time of Training/Meeting	GSHP Reference
1. Site-Specific Training	At Site Prior to Work	GSHP Section 4.2
2. Hazard Communication (awareness of contaminants in the groundwater plus any other chemical agents used in work activities)	Before Mobilization	GSHP Section 4.5
3. CPR/First Aid & Bloodborne Pathogens	Before Mobilization	GSHP Section 4.6
4. Safety Meeting	Weekly During Work	GSHP Section 4.8, complete safety meeting form found in the GSHP
5. Plan-of-the-Day (POD) Meeting	Daily During Work	GSHP Section 4.9, document meeting attendance.
6. Quality Control Preparatory Phase Inspection Meeting	Before each Definable Feature of Work	GSHP Section 4.11
7. Recordkeeping	Before Work Start	GSHP Section 4.12

**TABLE A-3
MINIMUM PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS BY TASK**

Site	Activity	PPE
Anoka Park	1. Site Preparatory Work. 2. Decontamination 3. Utility Survey. 4. Piezocone Sounding. 5. Ground-Water Sampling and Analysis. 6. Surveying 7. Site Restoration. 8. Waste management.	1. Level D. See Note 1. 2. Modified Level D. 3. Level D 4. Level D 5. Level D, Modified Level D for handling samples and grouting. See Note 2. 6. Level D. 7. Level D. 8. Level D for construction debris, Modified Level D where direct contact with waste water is possible.

Notes:

1. Level D = work coveralls or equivalent, hardhat, safety glasses with side shields, steel-toed boots, and leather or cloth work gloves. Hard hat may be deleted where bump and falling objects is not a concern.
2. Modified Level D for sampling = same as Level D, add chemical resistant outer gloves and where minor splash and particulate protection is necessary, use water resistant outer garments with gloves or standard Tyvek®. Rubber is satisfactory as the outer garment. Use approved half-face air purifying respirator with HEPA cartridges when visible dusts are generated during preparation of grout mixtures containing crystalline silica > 1%.

ATTACHMENT A

ACTIVITY HAZARD ANALYSIS (AHA)

ACTIVITY HAZARD ANALYSIS (AHA)

Activity: Site Preparatory Work (all areas) including Utility Surveys.		Analyzed By/Date: Frank J. Petrik 8/22/97	Reviewed By/Date: <i>William Simpson 10/22/97</i>
1.0 Principal Steps	Potential Hazards	Recommended Controls	
1.1 Walk area down, establish work zones.	1.1. Struck by and struck against physical objects during site preparation and slips, trips and falls.	1.1a. Preplan work layout and establish work zones. Communicate emergency response items at project kickoff safety or pre-con meeting. Use correct hand and power tools for job and good housekeeping practices. MK SSHO to identify areas that require special attention to pedestrian and/ or vehicle safety.	
1.2 Equipment to be Used	Inspection Requirements	Training Requirements	
1.3 Hand and power tools.	Daily inspection by Sub, prior to use, per manufacturer's recommendation. Initial safety inspection of all Subcontractor equipment to be completed by MK SSHO.	OSHA 1910.320 40-Hour Training - 3 day OJT - 8 hours Supervisory - 8 hour Refresher - Site Safety and Health Plan (Project Kickoff Site Specific) - Hazard Communication - POD.	

ACTIVITY HAZARD ANALYSIS (AHA)

Activity: Decontamination and Waste Management.		Analyzed By/Date: Frank J. Petrik 8/22/97	Reviewed By/Date: <i>Willie R. Pagan</i> 10/22/97
2.0 Principal Steps	Potential Hazards	Recommended Controls	
2.1 Stage waste material, prepare for offsite shipment. 2.2 Equipment Decontamination.	Struck by and struck against physical objects - slips, trips and falls during waste handling and decontamination - contact with contaminated groundwater.	Preplan all waste handling/decontamination and select proper containers and disposal methods. No oil or grease soaked rags in construction debris containers, use proper receptacles. Remove construction debris from work areas on a daily basis. Level D PPE, modify where necessary as determined by MK SSHO. Insure all waste containers are marked per OSHA hazard communication and DOT for off-site shipment. Use Modified Level D during equipment decontamination where contact with contaminated material is possible. The CPT has automatic built-in hot water decontamination system for probe equipment.	
Equipment to be Used	Inspection Requirements	Training Requirements	
2.3. Material handling equipment and containers. Decontamination equipment.	Inspect all work areas on daily basis and maintain good housekeeping practices.	OSHA 1910.120 40-Hour Training - 3 day OJT - 8 hours Supervisory - 8 hour Refresher - Site Safety and Health Plan (Project Kickoff Site Specific) - Hazard Communication - POD.	

ACTIVITY HAZARD ANALYSIS (AHA)

Activity: Piezocone sounding - Ground-water sampling and analysis		Analyzed By/Date: Frank J. Petrik 8/22/97	Reviewed By/Date: <i>William Pinyon</i> 10/22/97
3.0 Principal Steps	Potential Hazards	Recommended Controls	
3.1 Position CPT vehicle, commence ground penetrations, complete Piezocone sounding, obtain groundwater samples, grout holes, or install micro-wells or monitor wells.	<ul style="list-style-type: none"> A. Struck by and struck against incidents during material handling tasks and direct contact with underground utility. B. Overturn CPT vehicle. C. Organic vapors enter CPT vehicle work space. Direct contact with TCE contaminated groundwater during groundwater sample management. D. Inhalation of particulates and direct contact with cement and bentonite compounds. E. Slip, trips and falls caused by finished well configuration. 	<ul style="list-style-type: none"> A. Preplan material handling, mechanize where possible. Insure clear walkways and entry/exit points. Excavation and Trenching Permit in place for all subsurface penetrations and utility / process lines identified and marked. B. CPT requires level and stable ground and outriggers positioned for stability per manufacturers requirements. C. No direct route for ground vapors to enter CPT vehicle via penetration subsystem. Any unusual odors will require shut-down, evacuation of vehicle and subsequent investigation of source. Groundwater samples will be managed with Level D PPE. D. MSDSs will be reviewed for each component. Disposable dust masks for nuisance particulates will be used if dust generation during preparation of batch is evident and material does not contain crystalline silica. Chemical resistant gloves will be available for use during grout batch preparation. E. Finished well will be inspected for compliance with MRC 4725.6650 including markings and protective covers. 	
3.2 Equipment to be Used	Inspection Requirements	Training Requirements	
3.3 CPT vehicle and hand tools.	Daily, prior to use per manufacturer's recommendation.	OSHA 1910.120 40-Hour Training - 3 day OJT - 8 hours Supervisory - 8 hour Refresher - Site Safety and Health Plan (Project Kickoff Site Specific) - Hazard Communication - POD.	

ACTIVITY HAZARD ANALYSIS (AHA)

Activity: Surveying and Site Restoration.		Analyzed By/Date: Frank J. Petrik 8/22/97	Reviewed By/Date: <i>Willie Pearson</i>
4.0 Principal Steps	Potential Hazards	Recommended Controls	
4.1 Complete field surveying. Remove all field equipment. Remove all signs and barriers. Fill rutted areas with topsoil and seed.	A. Struck by and struck against incidents during surveying and material handling tasks. Slip, trips and falls.	A. Preplan material handling, mechanize where possible. Insure clear walkways and entry/exit points. Surveyors to wear high visibility vests if working near active roadways.	
4.2 Equipment to be Used	Inspection Requirements	Training Requirements	
4.3 Dumptruck and handtools, and surveying equipment.	Daily, prior to use per manufacturer's recommendation.	OSHA 1910.120 40-Hour Training - 3 day OJT - 8 hours Supervisory - 8 hour Refresher - Site Safety and Health Plan (Project Kickoff Site Specific) - Hazard Communication - POD.	

**APPENDIX B
QUALITY CONTROL DOCUMENTATION**

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<u>TITLE</u>	<u>CHECKLIST NUMBER</u>	<u>PAGE</u>
Certificate of Satisfactory Completion	N/A	B-3
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Decontamination	DE-01	2 pages
Utility Survey	US-01	1 page
Piezocone Sounding	PS	1 page
Ground-water Sampling	GS-01	1 page
Sample Preparation and Analysis	SA-01	1 page
Waste Management	WM-01	1 page
Regulatory Compliance	RG-01	1 page

Certificate of Satisfactory Completion

DATA ACQUISITION WORK

Naval Industrial Reserve Ordnance Plant Fridley, Minnesota

Naval Facilities Engineering Command, Southern Division
ERAC Contract Number: N62467-93-D-1106
Delivery Order Number: 0014
Statement of Work: 015

The following personnel acknowledge the satisfactory completion of piezocone sounding and ground-water sampling in accordance with the Work Plan and approved changes at Naval Industrial Reserve Ordnance Plant (NIROP) Fridley, Minnesota.

Morrison Knudsen Corporation

Name: _____

Signature: _____

Title: _____

Date: _____

NIROP

Name: _____

Signature: _____

Title: _____

Date: _____

TESTING PLAN AND LOG

Definable Feature of Work	Inspection Checklist	Three Phases of Control (Enter Dates that Inspections are Performed)			Test or Inspection Results	Comments
		Preparatory	Initial	Follow-up		
Site Preparatory Work	SP-01					
Decontamination	DE-01					
Utility Survey	US-01					
Piezocone Sounding	PS-01					
Ground-water Sampling and Analysis	GS-01 SA-01					
Surveying	SV-01					
Site Restoration	SR-01					
Waste Management	WM-01					
Regulatory Compliance	RG-01					



Checklist Title		Checklist No.	Revision	Checklist
Site Preparatory Work		SP-01	Rev. 0	Page 1 of 1
Item No.	Item Checked	Accept/Reject	Remarks	Verified By /Date
Preparatory Inspection				
1	Perform preparatory phase meeting prior to initiating work.			
2	Verify Work Zone is clearly delineated.			
3	Verify completion of any initial surveys.			
4	Verify that a review of safety requirements is performed as part of the preparatory inspection. (Briefing by Site Safety & Health Officer).			
5	Ensure that housekeeping and maintenance requirements are understood.			
Initial Inspections				
1	Confirm work areas have been located within the limits of established stakes, lines or monuments.			
2	Verify that protection of items not to be removed or disturbed has been provided, as necessary.			
3	Verify removal from the construction area of debris and other deleterious materials.			
4	Ensure compliance with the plans identified in the Preparatory Phase.			
Follow-Up Inspections				
1	Ensure that needed revisions to the Work Plan are documented and approved by the Project Manager and the REICC.			
2	Verify continuing compliance with the approved plans identified during the Preparatory Phase inspection.			
3	Verify completion of site preparatory activities is complete and in accordance with the Work Plan.			

Additional Notes or comments: Use Additional Sheets as necessary

Specific Item Identification or Location, as applicable:

MK Project JP Fridley	Delivery Order Number 0014-015	Checklist Title Site Preparatory Work SP-01	Page 1 of <u>1</u>
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Checklist Title Decontamination		Checklist No. DE-01	Revision Rev. 0	Checklist Page 1 of 2
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Item No.	Item Checked	Accept/ Reject	Remarks	Verified By /Date
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Preparatory Inspection

1	Verify Subcontractor Decontamination Plan is submitted and it conforms with the Technical Specification.			
2	Review the specification requirements regarding decontamination equipment.			
3	Review the requirement for visual inspection of the decontamination equipment and documentation requirements.			
4	Review decontamination procedures for the external surfaces of field equipment as contained in the Work Plan/Technical Specifications			
5	Verify that container for storage of decontamination water is established and of adequate size.			
6	Verify Subcontractor has required supplies for decontamination activities.			
7	Review Site Safety & Health Plan requirements for the Personnel Decontamination Facility. (Briefing by the Site Safety & Health Officer).			

Initial Inspections

1	Verify that the decontamination equipment is provided as shown in the approved decontamination plan.			
2	Perform an initial inspection of the decontamination equipment for evidence of leakage.			
3	Verify decontamination activities are performed in accordance with the Work Plan and Technical Specifications.			

Additional Notes or comments: Use Additional Sheets as necessary

Specific Item Identification or Location, as applicable:

MK Project DP Fridley	Delivery Order Number 0014-015	Checklist Title Decontamination DE-01	Page 1 of <u>2</u>
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**MORRISON KNUDSEN CORPORATION**

ENGINEERING, CONSTRUCTION, ENVIRONMENTAL GROUP

FIELD INSPECTION CHECKLIST

Checklist Title

Decontamination

Checklist No.
DE-01Revision
Rev. 0Checklist
Page 2 of 2

Item No.

Item Checked

Accept/
Reject

Remarks

Verified By
/Date

Follow-up Inspections

1	Monitor on-going decontamination operations to verify compliance with the Work Plan/Technical Specifications.			
2	Verify that inspections of the decontamination equipment are performed and documented.			
3	Verify that records of any leakage are promptly repaired are documented.			
4	Verify decontamination wastes are disposed of properly.			

Additional Notes or comments: Use Additional Sheets as necessary

Specific Item Identification or Location, as applicable:

Project

Delivery Order Number

Checklist Title

NIROP Fridley

0014-015

Decontamination DE-01

Page 2 of 2



Checklist Title			Checklist No.	Revision	Checklist
Utility Survey			US-01	Rev. 0	Page 1 of 1
Item No.	Item Checked	Accept/Reject	Remarks		Verified By /Date
Preparatory Inspection					
1	Perform preparatory phase meeting.				
2	Review the Work Plan and Specification for Utility Survey.				
3	Verify that underground utility drawings have been obtained.				
4	Verify that a review of safety requirements (energy control) is performed as part of the preparatory inspection.				
Initial Inspections					
1	Ensure that the utility locator has been notified to provide surface markings.				
2	Ensure that the REICC has been notified.				
Follow-Up Inspections					
1	Ensure that surface markings have been completed by the utility locator.				
2	Verify that metal detectors are used to locate underground anomalies.				
3	Verify that drilling and well installation are conducted at least five feet away from the utility lines.				

Additional Notes or comments: Use Additional Sheets as necessary

Specific Item Identification or Location, as applicable:

MK Project JP Fridley	Delivery Order Number 0014-015	Checklist Title Utility Survey US-01	Page 1 of <u>1</u>
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Checklist Title Piezocone Sounding		Checklist No. PS-01	Revision Rev. 0	Checklist Page 1 of 1
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Item No.	Item Checked	Accept/ Reject	Remarks	Verified By /Date
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Preparatory Inspection

1	Perform preparatory phase meeting.			
2	Review the drawings and specification for Piezocone Sounding.			
3	Verify that a utility clearance has been completed.			
4	Verify that the driller has obtained a well contractor or monitoring well contractor license from the state.			
5	Verify that the well installation permit has been approved by the state.			
6	Verify that an excavation permit has been obtained from the REICC.			

Initial Inspections

1	Verify that piezocone sounding locations are correct and approved by the Project Manager.			
2	Verify that the piezocone sounding equipment meets the specification.			

Follow-Up Inspections

1	Ensure that piezocone sounding is performed per ASTM D 3441.			
2	Ensure that the hole is grouted as specified.			
3	Verify that printout of the sounding of each well is available as soon as the sounding is completed.			
4	Ensure that sounding data are stored in the computer for retrieval at a later date.			

Additional Notes or comments: Use Additional Sheets as necessary

Specific Item Identification or Location, as applicable:

MK Project NIROP Fridley	Delivery Order Number 0014-015	Checklist Title Piezocone Sounding PS-01	Page 1 of <u>1</u>
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Checklist Title Ground-water Sampling		Checklist No. GS-01	Revision Rev. 0	Checklist Page 1 of 1
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Item No.	Item Checked	Accept/ Reject	Remarks	Verified By /Date
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Preparatory Inspection

1	Perform preparatory phase meeting.			
2	Review the drawings and specification for Ground-water Sampling.			
3	Verify that a utility clearance has been completed.			
4	Verify that the driller has obtained a well contractor or monitoring well contractor license from the state.			
5	Verify that the well installation permit has been approved by the state.			
6	Verify that an excavation permit has been obtained from the REICC.			

Initial Inspections

1	Verify that ground-water sampling locations are correct and approved by the Project Manager.			
2	Verify that the piezocone and ground-water equipment meets the specification.			

Follow-Up Inspections

1	Ensure that groundwater sampling is performed per specifications.			
2	Ensure that groundwater samples are collected from depths approved by the Project Manager.			
3	Ensure that the hole is grouted as specified.			

Additional Notes or comments: Use Additional Sheets as necessary

Specific Item Identification or Location, as applicable:



Checklist Title Sample Preparation and Analysis		Checklist No. SA-01	Revision Rev. 0	Checklist Page 1 of 1
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Item No.	Item Checked	Accept/Reject	Remarks	Verified By /Date
<i>Preparatory Inspection</i>				
1	Schedule Preparatory Phase Meeting prior to initiating field analytical sampling activities.			
2	Verify that analytical field laboratory services have been procured.			
3	Verify that sample containers, coolers, chain-of-custody records (COCs), labels, seals and all necessary sampling equipment is present.			
<i>Initial Inspections</i>				
1	Verify that sampling equipment is properly protected from possible contamination prior to sample collection.			
2	Verify that the correct sample containers are used for sample collection.			
<i>Follow-Up Inspections</i>				
1	Ensure that samples are properly field-preserved.			
2	Ensure that sample containers are properly identified with labels.			
3	Ensure that COCs and receipt for sample forms are properly completed. REVIEW ALL COCs PRIOR TO SAMPLE SHIPMENT.			
4	Ensure that the results of analyses are received.			

Additional Notes or comments: Use Additional Sheets as necessary

Specific Item Identification or Location, as applicable:

Project JP Fridley	Delivery Order Number 0014-015	Checklist Title Sample Preparation and Analysis SA-01	Page 1 of <u>1</u>
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Checklist Title			Checklist No.	Revision	Checklist
Surveying			SV-01	Rev. 0	Page 1 of 1
Item No.	Item Checked	Accept/Reject	Remarks		Verified By /Date
Preparatory Inspection					
1	Perform preparatory phase meeting.				
2	Review the drawings and specification for surveying.				
Initial Inspections					
1	Verify that locations of soundings, sampling points and monitoring wells are clearly marked at the site.				
2	Verify that survey is initiated from a permanent bench mark.				
Follow-Up Inspections					
1	Ensure that the state coordinate system is used for surveying.				
2	Ensure that field notes are available.				
3	Ensure that all sounding, sampling, and monitoring well locations are included in the survey.				

Additional Notes or comments: Use Additional Sheets as necessary

Specific Item Identification or Location, as applicable:

MK Project	Delivery Order Number	Checklist Title	Page 1 of <u>1</u>
OP Fridley	0014-015	Surveying SV-01	



Checklist Title		Checklist No.	Revision	Checklist Page
Site Restoration		SR-01	Rev. 0	Page 1 of 1
Item No.	Item Checked	Accept/Reject	Remarks	Verified By /Date
Preparatory Inspection				
1	Perform preparatory phase meeting.			
2	Review the specifications for site restoration.			
Initial Inspections				
1	Ensure that the work areas have been inspected and any damage caused by piezocone sounding and monitoring well installation have been identified.			
2	Ensure that a site restoration plan is prepared and approved by the Project Manager.			
Follow-Up Inspections				
1	Ensure that the site restoration is completed per approved plan.			
2	Ensure that work completion is signed-off by REICC.			

Additional Notes or comments: Use Additional Sheets as necessary

Specific Item Identification or Location, as applicable:

**MORRISON KNUDSEN CORPORATION**

ENGINEERING, CONSTRUCTION, ENVIRONMENTAL GROUP

FIELD INSPECTION CHECKLIST

Checklist Title		Checklist No.	Revision	Checklist Page
Waste Management		WM-01	Rev. 0	1 of 1
Item No.	Item Checked	Accept/Reject	Remarks	Verified By /Date
Preparatory Inspection				
1	Coordinate with Public Works to identify storage areas for potential hazardous waste.			
2	Verify that appropriate waste containers are available.			
3	Verify that the disposal/treatment facility is approved by the Project Manager.			
Initial Inspections				
1	Verify that all containers are labeled with the source and generation date.			
2	Verify that drums are placed on pallets for shipment and that the drums are banded together with non-metallic banding.			
3	Ensure that waste manifests are completed.			
4	Verify that a log is kept of generated wastes.			
Follow-Up Inspections				
1	Verify that containers are transported to the proper staging areas.			
2	Verify that a copy of the waste log is provided to the REICC on a weekly basis.			

Additional Notes or comments: Use Additional Sheets as necessary

Specific Item Identification or Location, as applicable:

Project TRUMP FRIDLEY	Delivery Order Number 0014-015	Checklist Title Waste Management WM-01	Page 1 of 1
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MORRISON KNUDSEN CORPORATION

ENGINEERING, CONSTRUCTION, ENVIRONMENTAL GROUP

FIELD INSPECTION CHECKLIST

Checklist Title		Checklist No.	Revision	Checklist
Regulatory Compliance		RG-01	Rev. 0	Page 1 of 1
Item No.	Item Checked	Accept/Reject	Remarks	Verified By /Date
Preparatory Inspection				
1	Review applicable environmental regulations identified in the Work Plan.			
2	Verify that all personnel handling hazardous substance are trained per 29 CFR 1910.120 and training is up-to-date.			
Initial Inspections				
1	Verify that training certificates of workers are received in accordance with 29 CFR 1910.120 and 29 CFR 1926.65 prior to start of work.			
2	Verify that all workers handling hazardous waste are trained per 49 CFR 172.704 and 29 CFR 1910.120.			
Follow-Up Inspections				
1	Ensure regular inspections are performed on hazardous waste accumulation areas per 40 CFR 262.			

Additional Notes or comments: Use Additional Sheets as necessary

Specific Item Identification or Location, as applicable:

MK Project

OP Fridley

Delivery Order Number

0014-015

Checklist Title

Regulatory Compliance R.-01

**APPENDIX C
ENVIRONMENTAL PROTECTION PLAN**

**APPENDIX C
ENVIRONMENTAL PROTECTION PLAN**

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2.0 ENVIRONMENTAL COMPLIANCE	C-4
2.1 LAND PROTECTION	C-4
2.2 PROTECTION OF WATER RESOURCES	C-4
2.3 REMOVAL OF TEMPORARY CONSTRUCTION FACILITIES	C-4

1.0 INTRODUCTION

This Plan describes the environmental protection measures MK proposes to use at NIROP Fridley. The project involves piezocone sounding and installation of wells using the Cone Penetrometer Technology (CPT). Penetrations into the ground will be to a depth of 100 feet by up to two inch diameter steel cones. The penetrations will be grouted after completion. Therefore, the data acquisition work will have minimal impact on existing air, water and soil conditions at the site.

2.0 MEASURES FOR PROTECTING NATURAL RESOURCES

2.1 LAND PROTECTION

Except for the vehicular traffic required to access the work locations, the land areas will be preserved in their present condition. Any damage or depression to the surface caused by vehicular traffic will be restored by backfilling and seeding. The work will not require clearing or grubbing.

2.2 PROTECTION OF WATER RESOURCES

There are no streams or bodies of water in the work area. The Mississippi River lies adjacent to the Anoka County Park. However, the data acquisition work will not affect the river.

As mentioned previously, the boreholes for piezocone sounding and ground-water sampling will be grouted after completion of work. The impact of the piezocone sounding and sampling on ground water will be minimal.

2.3 REMOVAL OF TEMPORARY CONSTRUCTION FACILITIES

The piezocone equipment truck and temporary facilities will be removed after work activities are completed. All disturbed areas will be returned to their original condition.

**APPENDIX D
WASTE MANAGEMENT PLAN**

**APPENDIX D
WASTE MANAGEMENT PLAN**

TABLE OF CONTENTS

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2.0 WASTE STREAMS	D-4
2.1 DECONTAMINATION LIQUIDS	D-4
2.2 DISPOSABLE PERSONAL PROTECTIVE EQUIPMENT	D-4

1.0 INTRODUCTION

This plan describes methods to manage the various waste streams generated during this project. All generated wastes, decontamination water, and drummed PPE will be handled, stored, transported, and disposed of in accordance with all applicable federal, state and local regulations. The Material Safety Data Sheets (MSDSs) for the materials used during construction and installation will be available on site.

MK is responsible for the following activities:

- Ensuring that all waste streams are managed in accordance with the procedures in this plan
- Providing field oversight and ensuring Subcontractor compliance with the procedures in this plan
- Ensuring that appropriate waste containers are provided
- Ensuring all waste containers are properly labeled and managed in accordance with state and federal laws and regulations
- Maintaining waste records for the field effort

The Navy will be the Generator of the wastes and MK will prepare all manifests before they are signed by the REICC or United Defense representative. Copies of all the manifests will be transmitted to the Navy United Defense.

All personnel handling hazardous waste will be trained per 49 CFR 172.704 and 29 CFR 1910.120. All personnel responsible for waste labeling, inspecting, profiling, manifesting, and transportation preparation will be trained per 49 CFR 172.704, 29 CFR 1910.120, HM-181, and HM-126.

2.0 WASTE STREAMS

Waste streams expected to be generated during work activities include:

- Decontamination liquids
- Disposable personal protective equipment and clothing

2.1 DECONTAMINATION LIQUIDS

Liquids generated during decontamination will be transported and pumped to sanitary sewer at NIROP facility for subsequent treatment at the Publicly Owned Treatment Works (POTW). This is in accordance with the current practice of pumping ground water from the extractions wells to the POTW.

2.2 DISPOSABLE PERSONAL PROTECTIVE EQUIPMENT

Used personal protective equipment (PPE) includes disposable Tyvek suits, gloves, booties, and plastic sheeting. The quantity of PPE generated depends upon the schedule and the number of times PPE is discarded daily. Contaminated PPE will be placed in a plastic-lined 55-gallon drum immediately after use and the drum will be labeled to identify its contents and source of generation. Used PPE will be disposed of at an off-site landfill.