2021 Hazardous Waste Scanning Project

File Form Naming Convention.

(*File_Type*).(*Program*).(*Site_Number*).(*YYYY-MM-DD*).(*File_Name*).pdf

Note 1: Each category is separated by a period "."
Note 2: Each word within category is separated by an underscore "_"

Specific File Naming Convention Label:

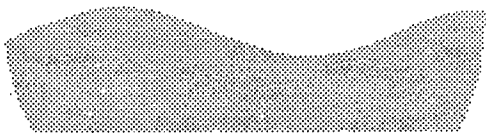
Workplan, HW.93020.1991-04-08. Contamination_Extent.pdf

E.C. JORDAN CO. ENGINEERS & SCIENTISTS

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SUPERFUND STANDBY CONTRACT

LOVE CANAL
Operable Units 18 and B9
Niagara Falls, Niagara County, New York
WORK ASSIGNMENT NO. D002472-7



CONTAMINATION EXTENT
CONCEPTUAL DESIGN
WORK PLAN

JANUARY 1991

NYSDEC SUPERFUND STANDBY CONTRACT

LOVE CANAL
WORK ASSIGNMENT NO. D002472-7

SUBMITTED TO:

NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
ALBANY, NEW YORK 12233-7010

SUBMITTED BY:

E.C. JORDAN CO.
PORTLAND, MAINE 04101

MARCH 1991

Submitted By:

Charles H. Horstmann, P.E.
Project Manager
E.C. Jordan Co.

Approved By:

William J. Weber
NSSC Program Manager
E.C. Jordan Co.

LOVE CANAL
OPERABLE UNITS 18 AND B9

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LOVE CANAL

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1.0 INTRODUCTION

E.C. Jordan (Jordan), under contract to New York State Department of Environmental Conservation (NYSDEC), has prepared this Work Plan for three of the seven tasks of Work Assignment No. D002472-7, Love Canal (Operable Units 18 and B9). NYSDEC has requested that only Tasks 1, 2, 3, and 7 be completed at this time. Future amendments to this Work Assignment will address the remaining tasks at the Love Canal Site. Task 1 includes the development of this Work Plan for completion of Tasks 2, 3, and 7 which involve engineering services to provide remedial measures for Operable Unit No. 18, Frontier Avenue storm sewer. Additional tasks to be defined later will include remedial design and construction oversight of Operable Unit No. 18 and engineering services for Operable Unit No. B9, Soil Removal in Love Canal Neighborhood Area No. 4.

1.1 SITE DESCRIPTION

The Love Canal Site, located within the City of Niagara Falls, Niagara County, is an inactive hazardous waste landfill site. Within the Love Canal Emergency Declaration Area (EDA), a number of operable units have been created to address the various remedial activities required. This Work Plan addresses Operable Unit No. 18, the Frontier Avenue storm sewer.

Frontier Avenue is located at the southern boundary of the Love Canal Site. Contaminated storm sewer pipe bedding was discovered during past investigation of the storm sewer located in Frontier Avenue, west of 100th Street as shown in Figure 1-1. The contamination is assumed to have come from historic migration from the Love Canal Site prior to remediation. Previous work to address this situation has included replacement of pipe bedding and installation of trench cutoff walls to isolate the contaminants and stop further migration. Until recently, it had not been proven that contaminants in the pipe bedding had migrated up to manhole 412, located at the intersection of 100th Street and Frontier Avenue. However, during the installation of an additional cutoff wall at the upstream (west) side of manhole 412, additional contamination was discovered in the storm sewer pipe bedding. Based on that discovery, four test pits were excavated downstream (east) of manhole 412 to manhole 406 (located between 100th and 101st Streets) to provide a limited indication of the extent of migration. Additional contamination was discovered in the pipe bedding in three of the four test pit excavations including the pit on the downstream (south) side of manhole 406. The only test pit where evidence of contaminated pipe bedding was not discovered was the pit directly east of manhole 412. The storm sewer in this pit was encased in concrete which was assumed to be part of the "poured-in-place" concrete base of the manhole. It is assumed that the reason for finding no visual evidence of contamination in the pipe bedding of this test pit was because the pit was too close to

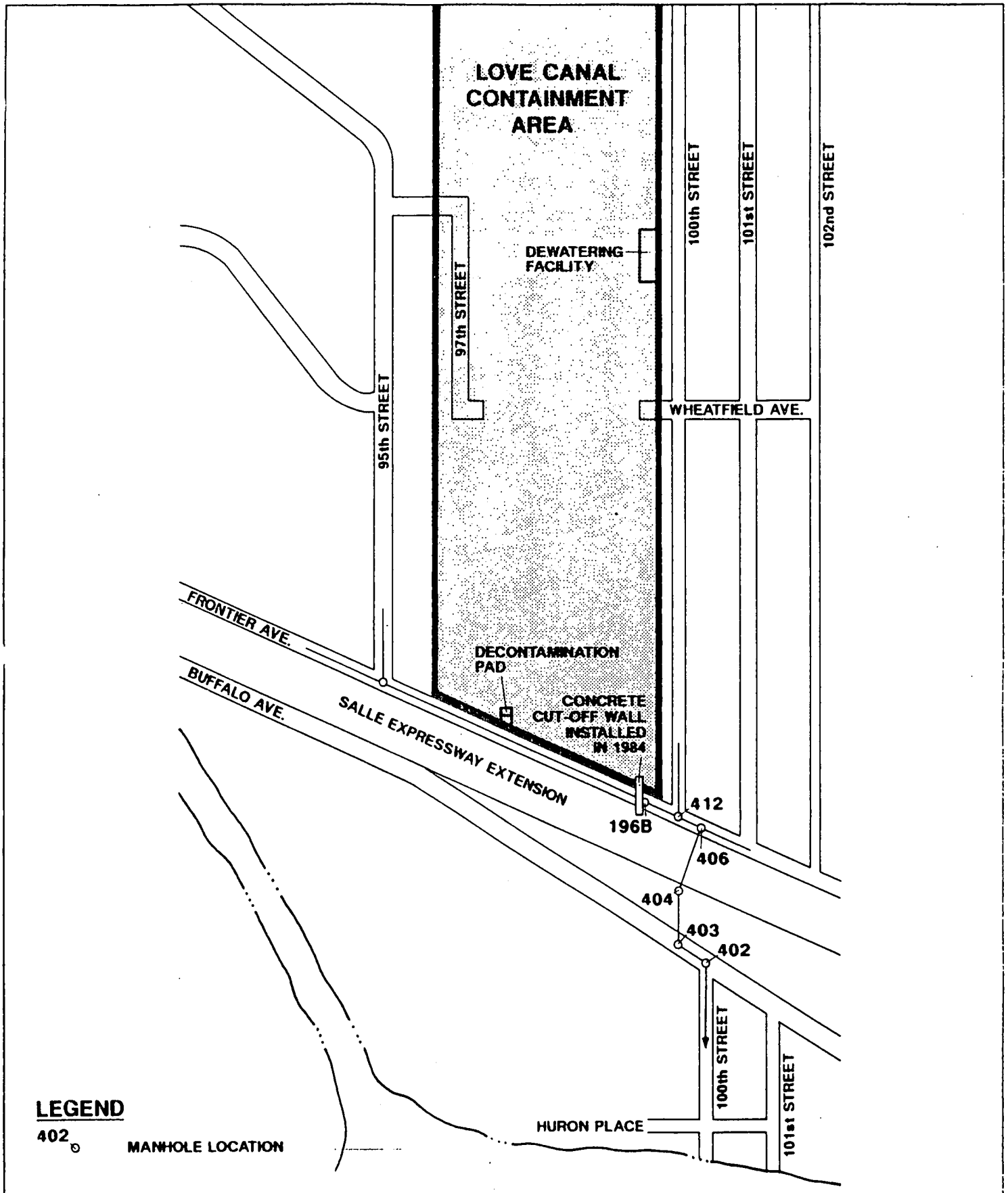

FIGURE 1-1
MANHOLE LOCATION MAP
LOVE CANAL SITE
NEW YORK STATE DEC

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6609-00

the manhole. The bedding material of the large "poured-in-place" manhole base may have allowed a different migration path past the test pit.

1.2 TASK DESCRIPTION

As described previously, NYSDEC has requested completion of three tasks associated with the Frontier Avenue storm sewer. Task 1 includes preparing this Work Plan for Tasks 2 and 3; future amendments to Work Assignment D002472-7 will address remaining tasks. Task 7 described in paragraph 1.2.4 relates to Program Management activities.

1.2.1 Task 1 - Detailed Work Plan

This Work Plan was developed to describe work required to complete Tasks 2, 3, and 7. Task 2, a test pitting program designed to delineate the extent of contamination in the storm sewer, is described in detail in Section 3.0. Areas of work requiring subcontracting for this task are also described. Task 3, the conceptual design, is described in Section 4.0. Program management activities are described in Section 5.0 Task 7. Section 6.0, Project Management Plan, presents a staffing plan identifying management and technical staff to be assigned and their areas of responsibility. The proposed progress schedule for Tasks 2 and 3, including anticipated milestones are described in Section 7.0. Section 8.0 describes the proposed Work Assignment budget for Tasks 1, 2, 3, and 7.

Appendices to this Work Plan include the Quality Assurance Project Plan (QAPP) and a preliminary Health and Safety Plan (HASP) for the project. A detailed HASP for the test pit excavation, environmental sampling, and backfill will be prepared as part of Task 2.

1.2.2 Task 2 - Test Pit Investigation

As a result of the discovery of additional migration of contaminants in the Frontier Avenue storm sewer pipe bedding, the NYSDEC requested a test pit investigation of the storm sewer pipe bedding located in the southern drainage basin of the Love Canal EDA.

This task will include final preparation of contract documents and specifications for procuring a subcontractor to perform a test pit investigation. The investigation will aid in identifying the extent of migration and contaminants in the storm sewer pipe bedding, including various non-obvious migration paths.

The goals of the investigation are to:

1. Determine the upstream extent of contaminated pipe bedding in the southern drainage basin of the Love Canal EDA of which, at a minimum, the western boundary will be 100th Street and the eastern boundary will be 102nd Street. The eastern boundary may change depending on the extent of migration discovered. In this case, the southern drainage basin of the EDA 1 and 2 is defined as those storm sewers and drainage paths draining from Neighborhood Areas No. 1 and 2 south and discharging into the Niagara River.

2. Determine if contamination has migrated in the pipe bedding under the LaSalle Expressway by performing test pits on the south side of the LaSalle Expressway in Neighborhood Area No. 1. The southern boundary of this portion of the investigation will be the northern boundary of the 102nd Street Landfill site, NYSDEC Site No. 9-32-031.

3. Gather sufficient field information during the test pit investigation to assist in the development of remedial alternatives and implementation of the remediation of the storm sewer.

Visual inspection will be performed at each test pit to determine the extent of contamination, including the exploration of non-obvious migration paths, if any. Environmental sampling from selected test pits of the pipe bedding and groundwater in the pit will be collected for analysis. The field reports and results of the test pit, sampling, and survey programs will be categorized and presented in a brief report.

1.2.3 Task 3 - Conceptual Design and Recommended Plan of Action

This task will consist of preparing a brief report which presents the results of the test pit and sampling investigations and presents the limits of storm drain bedding contamination on a drawing of the storm sewer layout. Jordan understands that NYSDEC has performed evaluations and has chosen an alternative which consists of removing the storm drain system in the area of contaminated bedding and replacing the storm drain and bedding in these specific sections. If contamination is documented in sections under the LaSalle Expressway NYSDEC plans to isolate the bedding through the use of a liner and cutoff walls. Jordan will also prepare a conceptual estimate of constructed costs for the chosen alternative.

1.2.4 Task 7 - Program Management

This task will consist of activities that are common to standby work assignments and are best handled at the program level. These tasks are described in Section 5.0.

2.0 TASK 1 - DETAILED WORK PLAN

The initial task of Work Assignment Number 7 is the development of a detailed Work Plan for Tasks 2, 3, and 7. The Work Plan includes the following:

1) Description of major tasks.

2) Detailed work assignment progress schedule with milestones.

3) Identification of areas of work requiring subcontracting.

4) A detailed work assignment budget broken down by tasks.

5) A staffing plan identifying management and technical staff to be assigned and their areas of responsibility.

In order to sufficiently describe the scope of work for the field investigation, Task 2, a Quality Assurance Project Plan (QAPP) and a Health and Safety Plan (short form) are required. These are included in the Work Plan Appendices A and B respectively.

Also included as part of Task 1 activities are preparation of specifications and contract documents for subcontractor services. Bid packages are required for subcontractor test pitting.

A cost comparison was also made for analytical services from proposed standby laboratories.

3.0 TASK 2 - TEST PIT INVESTIGATION OF STORM SEWER IN THE SOUTHERN DRAINAGE BASIN OF THE EDA

As a result of the discovery of unexpected migration of contaminants in the Frontier Avenue storm sewer pipe bedding, the NYSDEC has requested Jordan to perform a test pit investigation of the storm sewer pipe bedding located in the southern drainage basin of the Love Canal EDA.

This work includes; performing a test pit investigation to identify the extent of migration of contaminants in the storm sewer pipe bedding, including the exploration of various non-obvious migration paths.

The objectives of the investigation are to:

1. Determine the upstream extent of contaminated pipe bedding in the southern drainage basin of the Love Canal EDA of which, at a minimum, the western boundary will be 100th Street, the eastern boundary will be 102nd Street, and the southern drainage basin of the EDA as defined as those storm sewers and drainage paths draining south and discharging into the Niagara River. The eastern and southern boundaries may change depending on the extent of contaminant migration discovered.

2. Determine if contamination has migrated in the pipe bedding under the LaSalle Expressway by performing test pits on the south side of the LaSalle Expressway in Neighborhood Area No. 1 of the Love Canal EDA. The southern boundary of this portion of the investigation will be the northern boundary of the 102nd Street Landfill site, NYSDEC Site No. 9-32-031.

3. Gather sufficient field information during the test pit investigation to assist in the conceptual design and implementation of the remediation of the storm sewer such as extent of contamination and location of test pits.

Visual inspections will be performed at each test pit to determine the extent of contamination, including the exploration of non-obvious migration paths, if any. Environmental samples of the pipe bedding and groundwater will be collected for analysis from selected test pits. Jordan will conduct the in pit environmental sampling according to procedures described in Section 3.2.3. Samples collected for laboratory analysis will be shipped via overnight express carrier to the analytical laboratory. Samples for chemical analysis shall be labeled and handled according to the procedures described in the QAPP in Appendix A. Analytes of concern and specific detection limits are provided in the QAPP, Appendix A, of this work plan.

It is anticipated that 11 test pits approximately 8 to 12 feet deep will be excavated and that the test pit exploration program will be completed within 15 working days if there are no delays for inclement weather or equipment malfunction. Jordan will provide inspection and construction oversight duties for the test pit excavations. Concrete plugs will be installed around the outside of the storm drain in the bedding to act as a temporary means for preventing upstream migration of contamination.

3.1 PROJECT PLANNING

Exploration and analyses to determine the extent of contamination in the storm drain bedding requires planning for the field, laboratory, and office activities. Jordan will perform the test pitting, survey, sampling, and analyses with its own personnel and through subcontractors. Jordan will subcontract for excavation of test pits. Jordan will use its own laboratory for chemical analysis and will provide the analytical data to NYSDEC who will perform the task of data validation.

As part of Task 2, Jordan will finalize contracts, plans, and specifications for the test pit excavation and backfill. A subcontract will be secured with a firm who has performed similar services at the Love Canal Site or similar sites.

An expanded project-specific Health and Safety Plan (HASP) will be developed prior to any field activities. The HASP will contain quidelines and procedures necessary to ensure the health and safety of those persons assigned to the site. It will specify levels of protection for specific site activities based on the expected hazards, as well as provisions for upgrading protection during activities such as test pit excavation and sampling when unexpected levels of contamination may be encountered.

3.2 FIELD INVESTIGATION

3.2.1 On-site Facilities and Access

The test pit field exploration program will consist of excavation and survey of up to 11 test pits and associated storm sewer manholes. These activities will be performed by personnel from Jordan and Jordan's subcontractors. Personnel decontamination, equipment decontamination and staging facilities are needed to support on-site personnel conducting the storm sewer test pit exploration program.

A personnel decontamination trailer/office will be set up and supplied with appropriate utilities on the east side of the Love Canal and north of the Love Canal dewatering facility. The personnel decontamination trailer will be equipped with showers, toilet facilities, lavatories, and areas for equipment storage.

The decontamination trailer/office will serve as the central base for all off-site and on-site operations. The decontamination facility will serve as a staging area for all site exploration activities.

A heavy equipment decontamination area will be established at the concrete platform (decontamination pad) at the Love Canal Wastewater Treatment facility on the west side of the Canal. Initial and final decontamination of heavy equipment used during the test pit program will be completed in this area.

In addition to these fixed facilities, at least one mobile van will be utilized at each test pit excavation. The van will be equipped with necessary health and safety, monitoring, and emergency equipment needed for each test pit excavation as described in the Love Canal Site Health and Safety Plan.

Each test pit location/work area will be fenced off using orange snow fence or other adequate barriers. Each work area will be divided into exclusion zone (test pit and immediate area around the test pit), support zone (area immediately adjacent to exclusion zone and will contain decontamination equipment), and clean zone (all other areas outside of the exclusion and support zones). The zones will be clearly marked and separated with orange fencing. Generally, personal protection equipment (PPE) will be Level C for all personnel in the exclusion zone, with increased protection in the test pit. PPE will be upgraded to Level B if air monitoring in the exclusion zone breathing zone exceeds 5 ppm total VOC's. Level B PPE will be utilized for personnel working below ground surface in the test pits. Levels of PPE will be evaluated on a site by site basis and levels used will be based on site and weather conditions and conditions and materials encountered in each test pit.

Traffic flow will be diverted around the test pit exploration sites. Traffic control barricades will be placed at appropriate intersections to provide a "traffic free" work area between intersections. Jordan and its subcontractors will work with appropriate City of Niagara Falls departments to coordinate traffic control activities.

3.2.2 Test Pit Excavations

Up to 11 test pits are to be excavated in the southern drainage basin of the Love Canal EDA. The planned area for test pitting is defined by 100th Street as the western boundary, 102nd Street as the eastern boundary, and the northern boundary of 102nd Street Landfill as the southern boundary. The test pit locations shall be determined in the field and will be located as much as possible to avoid sanitary sewer, water, electric, and gas utility mains as well as sewer leads and service connections located above the sewer.

The test pit explorations will be used to determine the most northerly extent of contaminant migration in the storm sewer bedding material from Frontier Avenue northward up 100th, 101st, and 102nd Streets as well as southward from Frontier Avenue towards the 102nd Street Landfill.

It is anticipated that the need for personnel to enter the test pit to perform environmental sampling and inspection of the pipe bedding will only be required for those test pits that, upon cursory inspection, show no evidence of contaminated pipe bedding.

Generally test pit excavation will proceed from suspected contaminated areas to areas suspected to be clean. Initially, individual test pits will be excavated on one side of the storm sewer pipe. If visual observation and photoionization detector (PID) screening of the backhoe excavated pipe bedding reveals the presence of contaminants, then the test pit will be immediately backfilled according to the procedures for excavating and backfilling the test pits. If visual observation and PID screening of the pipe bedding shows no obvious or monitored evidence of contamination, and it is decided by Jordan and NYSDEC that the test pit is to be identified as the suspected upstream limit of contaminant migration, the test pit will be enlarged to include both sides of the storm sewer and a trench box will be installed by the excavation subcontractor. Jordan sampling personnel will then enter the test pit and collect two soil samples and one water sample. Bottom of pipe elevation will be measured and recorded. Close inspection of the pipe bedding under the storm drain will be made for possible contamination. If the first upstream test pit is suspected to be clean by Jordan and NYSDEC, the excavation subcontractor will install a concrete plug around the storm sewer pipe to provide a barrier to contaminant migration through the bedding material. The concrete bedding plug will be formed by excavating a 3-foot wide trench below and perpendicular to the storm sewer pipe. After excavating beneath the storm sewer, the subcontractor will remove the trench box. The subcontractor will then replace some of the backfill at each end of the test pit to reduce the volume of concrete needed to form the concrete plug. The area below the pipe and the test pit will then be backfilled to the pipe springline with concrete.

Each test pit will generally be excavated according to the following procedures.

1. Cut asphalt and concrete subbase to permit excavation of soils below the roadbed.

2. All broken asphalt and concrete subbase will be segregated out and disposed of by the subcontractor as construction debris.

3. Excavation of material down to the top of the storm sewer will be completed with a backhoe.

4. Excavation of material overlying the storm sewer pipe by backhoe will be segregated and temporarily placed on suitable 40 ml plastic sheeting and not directly on ground.

5. Excavation of pipe bedding will be performed by backhoe and will be segregated and placed on 40 ml plastic sheeting in a separate pile from the overlying backfill. Bedding will be staged near the test pit so that liquid draining from the bedding will be directed to the excavation.

6. Material removed from the excavation will be placed back into the pit as backfill in the sequence it was removed with the exception of the broken concrete subbase and asphalt. Compaction will be completed during placement of pipe bedding and trench backfill. Any remaining lift of backfill needed to reach street grade will be suitable roadbase material imported for this work.

7. All excavations will be repaired and patched to match existing street conditions including concrete subbase and asphalt finish course.

8. Excavation of obvious flow paths, such as sewer laterals and water service leads, will be performed only as ordered by NYSDEC with backhoe and hand tools. It is not the intent of the test pit investigation to investigate utility laterals and service leads.

A Jordan engineer or earth scientist (i.e., geologist or soil scientist) will be present during the excavation of the test pits. The engineer or earth scientist will log the stratigraphy and record the nature and types of materials encountered in each test pit when the completion depth is reached. This information will be recorded on the test pit log as provided in Figure 3-1. In addition, the total depth of the test pit, depth to the top of the storm sewer, and depth to pipe bedding material will also be determined and recorded. Depth measurements will be made relative to a painted reference mark that will be placed on the pavement adjacent to the completed test pit.

3.2.3 Environmental Sampling, Air Monitoring, and Analysis

Any test pit suspected to be clean, as previously discussed in Section 3.2.2, will require soil and water samples collected from within the pipe bedding material and analyzed for the analytes of concern as identified in the QAPP, Appendix A. Jordan sampling personnel will enter the test pits in Level B personal protection.

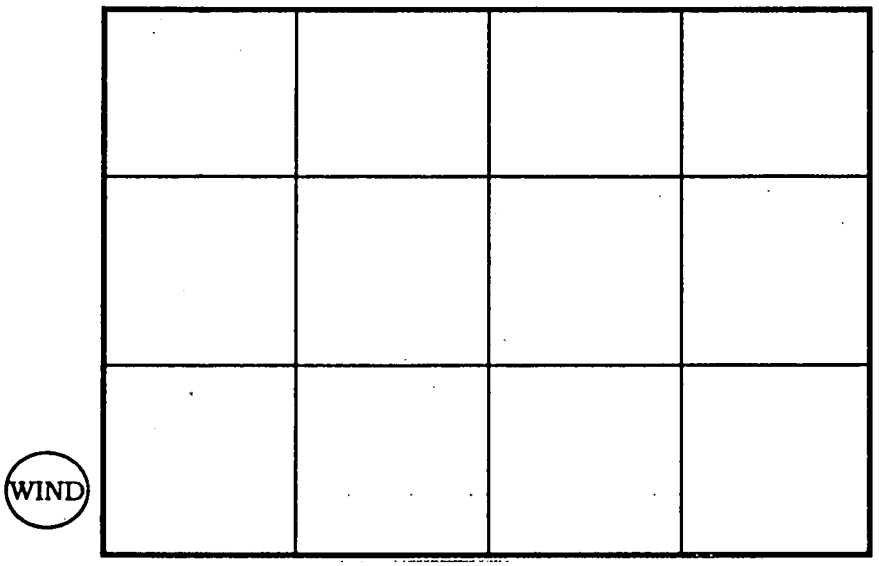
LOVE CANAL TEST PIT RECORD

SITE _____

TEST PIT _____ DATE _____ TIME _____ END _____

COORDINATES _____ GRID ELEMENT _____

SKETCH MAP OF TEST PIT SITE



SCALE 1" = _____FT.

NOTES: _____

CREW MEMBERS:

1.

2.

3.

4.

5.

6.

MONITOR EQUIPMENT:

PI Meter	Y	N
Explosive Gas	Y	N
Avail. Oxygen	Y	N
OVA	Y	N

Other _____

Photographs, Roll _____

Exposure _____

JOB#: _____

DATE: _____

SIGNATURE: _____

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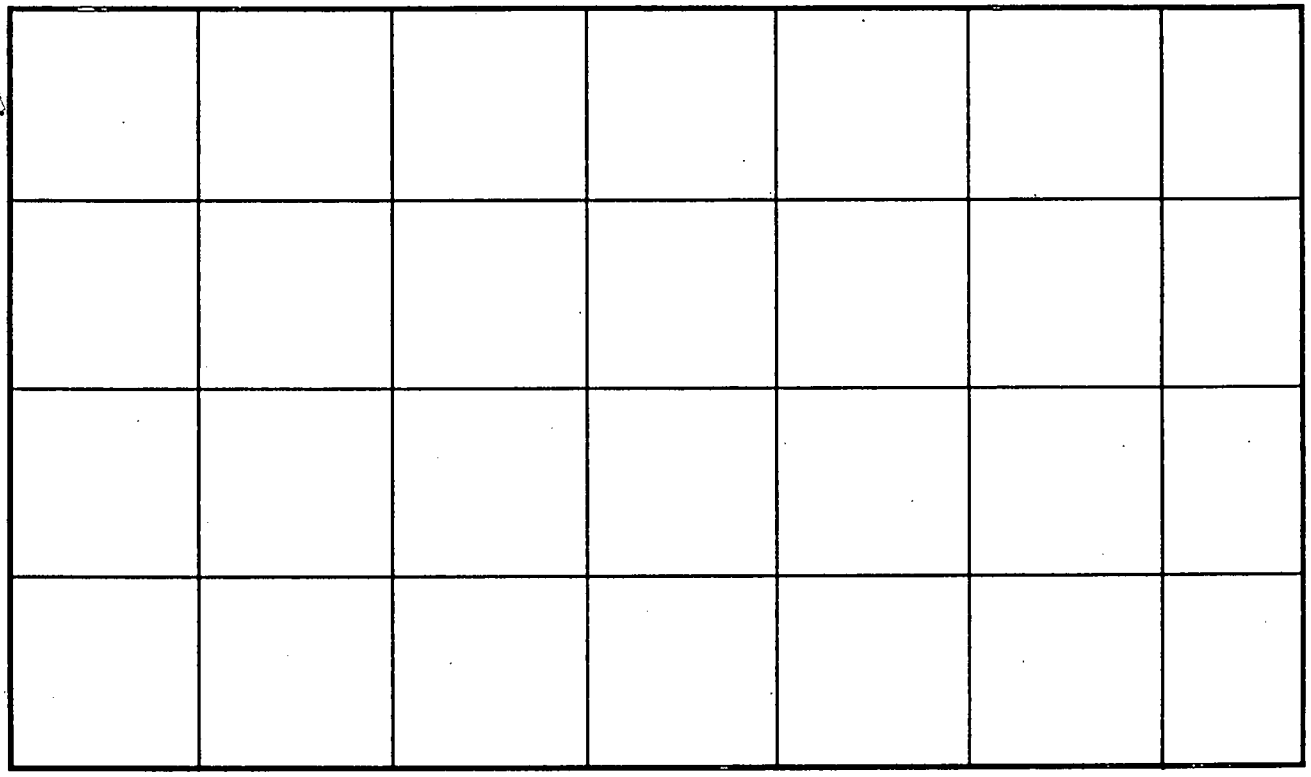
FIGURE 3-1(a)

LOVE CANAL TEST PIT RECORD

Profile Along Test Pit- _____

SITE _____

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = _____FT.
DEPTH (FT.)

NOTES: _____

SAMPLES OBTAINED:

No.	Depth (Ft.)	Int. Ser. No.	HD. SP. VOA PPM
S-1			
S-2			
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: Field Book, Pg. _____

Date: _____
Job#: _____

SIGNATURE: _____

9012071T

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FIGURE 3-1(b)

The contractor will provide a method of safe ingress and egress to the test pit. Sample collection will be performed within the pit of the pipe bedding material and groundwater, if present. The bedding material will be collected and placed directly in sample bottles. Stainless steel spoons will be used for the sample collection. The volatile organic sample will be directly placed into the containers without mixing of any type.

Any soil/bedding material or groundwater not required for the sample will then be placed back into the test pit prior to closure. All sampling tools and containers will then be decontaminated and wrapped in aluminum foil prior to the next test pit sample.

Prior to and during test pit excavation, a PID and a respirable dust meter will be deployed around the test pit location for ambient air monitoring, all data monitored will be recorded along with the pertinent weather conditions. Wind direction will be continuously monitored at each site and organic vapor and respirable dust emissions will be continuously recorded during test pit excavation and sampling. If ambient air monitoring registers 5 ppm total organic vapor concentration above background or 150 $\mu g/m^3$ of respirable dust, immediate backfilling of the test pit will begin. During the test pit excavation, sampling, and during backfilling or plug placement, monitoring and data recording will take place.

3.2.4 Decontamination of Test Pit Equipment

After the excavation of each test pit, the backhoe bucket and hand tools will be decontaminated over the excavated test pit utilizing the following methods/procedures:

1. The backhoe bucket will be decontaminated using a steam cleaning device such as a Steam Jenny to reduce the amount of water entering the excavation.

2. The bucket will be surrounded by a plastic, disposable shield to contain any steam and over spray that misses the bucket and deflect it into the excavation. The shield can be used from excavation to excavation, if not grossly contaminated, with ultimate disposal in a 55-gallon drum to be stored at the Love Canal Site.

3. Steam cleaning will be completed after the pipe bedding has been exposed, inspected and placed back into the excavation. Steam cleaning will not be allowed to take place after the excavation is completely backfilled unless measures are taken to fully contain the procedure and collect the water.

Final decontamination/cleaning of the backhoe and other equipment will be performed at the decontamination pad located on the east side of the Love Canal Treatment Facility at the end of each work day. During travel between test pits or within the EDA over local streets, the backhoe's tires will be cleaned and scraped of any excess soil.

Contaminated materials that cannot be easily cleaned by steam cleaning procedures will be containerized, transported, and staged at the Love Canal Site. At the end of each day, used protective equipment clothing and plastic sheeting will be placed in large plastic bags (to be supplied by NYSDEC) for crushing and disposal. Hard stock materials, such as sampling equipment will be drummed and labeled, transported and staged as described in the Love Canal Hazardous Waste Drum Handling Procedures, May 1990.

3.2.5 Survey

Each test pit excavated during the exploration program will be located for both horizontal location and vertical elevation. Jordan intends to perform the test pit depth and location with its field personnel. The test pit locations will be established by taping from such structures as manholes, fire hydrants and utility poles. Additionally, the depths of each test pit will be referenced from the painted reference mark placed on the pavement adjacent to the test pit.

3.2.6 Field Report

Jordan will compile the field records, field results of test pit sampling and analyses and field test pit location and depth into a brief report which presents this data. The reporting of the laboratory analyses from the test pit sampling will be done as part of Task 4.0 Conceptual Design and Recommended Plan of Action.

4.0 TASK 3
CONCEPTUAL DESIGN AND RECOMMENDED PLAN OF ACTION

Jordan understands that in order to expedite remedial action NYSDEC has performed evaluations and has chosen an alternative consisting of removal and replacement of sections of the storm drain and bedding materials together with isolating other sections of the bedding and lining these sections of the storm drain. Therefore, Jordan will not evaluate other alternatives. Jordan will establish the limits of bedding contamination based on the test pit program and will conceptually design the sections of storm drain which will serve the sections where contamination is found to exist. No development or screening of technologies or alternatives will be conducted and no risk assessment will be performed as part of this task. The brief report presenting the conceptual design, estimate of construction cost and recommended plan of action will be prepared to give NYSDEC a basis for decision making.

4.1 DATA INTERPRETATION

Using data collected during the Jordan test pit program (Task 2) and from the NYSDEC test pit program conducted in August 1990, the extent of contamination in the pipe bedding of the Frontier Avenue Storm Sewer will be evaluated. A drawing will be produced that indicates the location of test pits, and the approximate extent of contamination in the storm sewer bedding as determined from the test pit program. Volume estimates of material requiring remediation will be made based on this evaluation of data.

4.2 CONCEPTUAL DESIGN

Jordan will provide conceptual design of the consistent with the NYSDEC selected approach described in the following paragraphs. As stated previously, Jordan understands that NYSDEC has performed evaluations and has chosen an alternative consisting of replacement of sections of the existing storm drain following removal of contaminated pipe bedding in those sections. Other sections of bedding, such as under the LaSalle Expressway, would be cut off to isolate the contaminated bedding and the storm drain would be lined to prevent contamination from entering the storm drain. Jordan will develop this approach into a conceptual design.

A conceptual estimate of construction cost will be prepared for the conceptual design. A more detailed estimate of construction costs will be prepared during the final design, Task 4.

The conceptual design will not include a review of ARARs/SPSAGDs, a risk assessment or input for a Record of Decision. Jordan understands that NYSDEC has performed these reviews, and has determined that the selected alternative meets all ARARs/SPSAGDs.

The conceptual design will be presented in a brief report which will outline the recommended plan of action and present the results of date interpretation. This report will compare installing the new storm drain in the existing trench to placing it at another location on the streets. The map and report will delineate the extent of bedding contamination.

The storm drain replacement and bypass will be of the same pipe diameter and approximate slope as the existing storm sewer. No hydrologic or hydraulic studies or designs are included as part of this task. No studies for disposal of contaminated materials will be undertaken. Jordan understands that all contaminated materials will be taken to the Occidental Chemical facilities or to the storage area adjacent to the leachate treatment plant for disposal by NYSDEC.

5.0 TASK 7 - PROGRAM MANAGEMENT

Program Management and control is carried out through the Program Manager and program support staff. Program Management has overall responsibility to organize and set operating procedures with NYSDEC and to assure consistency between the various Work Assignments. Program Management will establish and oversee all standby subcontracts, i.e., laboratory, drilling services, engineering, and survey. The Program Manager and his staff will ensure that special equipment or resource needs are fulfilled and that conflicts do not develop between the Work Assignments. An equipment tracking system will be developed and maintained by the program staff to support usage rates for assignments. The Program Manager and staff will also coordinate efforts to meet the M/WBE goals of the contract and report progress to the NYSDEC EEO office. All task activities will be monitored to ensure compliance with schedule, fiscal and technical objectives. The Program Manager will also help prepare progress reports and ensure that appropriate records are maintained. The hours proposed for this task reflects the proportionate level of effort for the Love Canal Operable Unit 18 in supporting this activity.

6.0 PROJECT MANAGEMENT PLAN

The Love Canal Operable Unit 18 consists of two tasks. The first task consists of investigating the storm sewer bedding through a program of test pits, sampling, and analyses to determine the limits of contaminated bedding. The second task consists of evaluating the results of the field and laboratory investigations of the bedding contamination, evaluating the extent of contamination and recommendation of a Plan of Action for remediating the contamination.

6.1 PROJECT ORGANIZATION AND APPROACH

The services discussed herein will be directed out of Jordan's corporate headquarters located in Portland, Maine. Mr. James Atwell, P.E., Vice President Environmental Services, will be the Corporate Officer directly responsible for all Jordan activities performed for this project.

The Program Manager for the NYSDEC Program is William J. Weber. The Program Manager has overall responsibility to organize and set operating procedures with NYSDEC.

The project organization for the Love Canal Operable Unit 18 Work Assignment is depicted in Figure 6-1. Resumes will be provided in the Work Plan for all project team members not previously approved by NYSDEC. Jordan's Project Manager is responsible for the overall day-to-day technical administration of the project and will be the primary technical contact with NYSDEC on the Love Canal Operable Unit 18 Work Assignment. The Project Manager is responsible for the following:

- initiation of project activities;
- identification of project staff, equipment, and other resource requirements;
- interfacing with NYSDEC on costs, contractual, personnel, and other administrative matters;
- monitoring task activities, and adjusting efforts on resources, as required, to help assure that established budgets schedules, and work programs are maintained;
- regular briefings on the status of the project and preparation of monthly reports showing both technical progress and cost status;
- providing assurance that project technical and financial records are kept according to the requirements of NYSDEC and Jordan; and

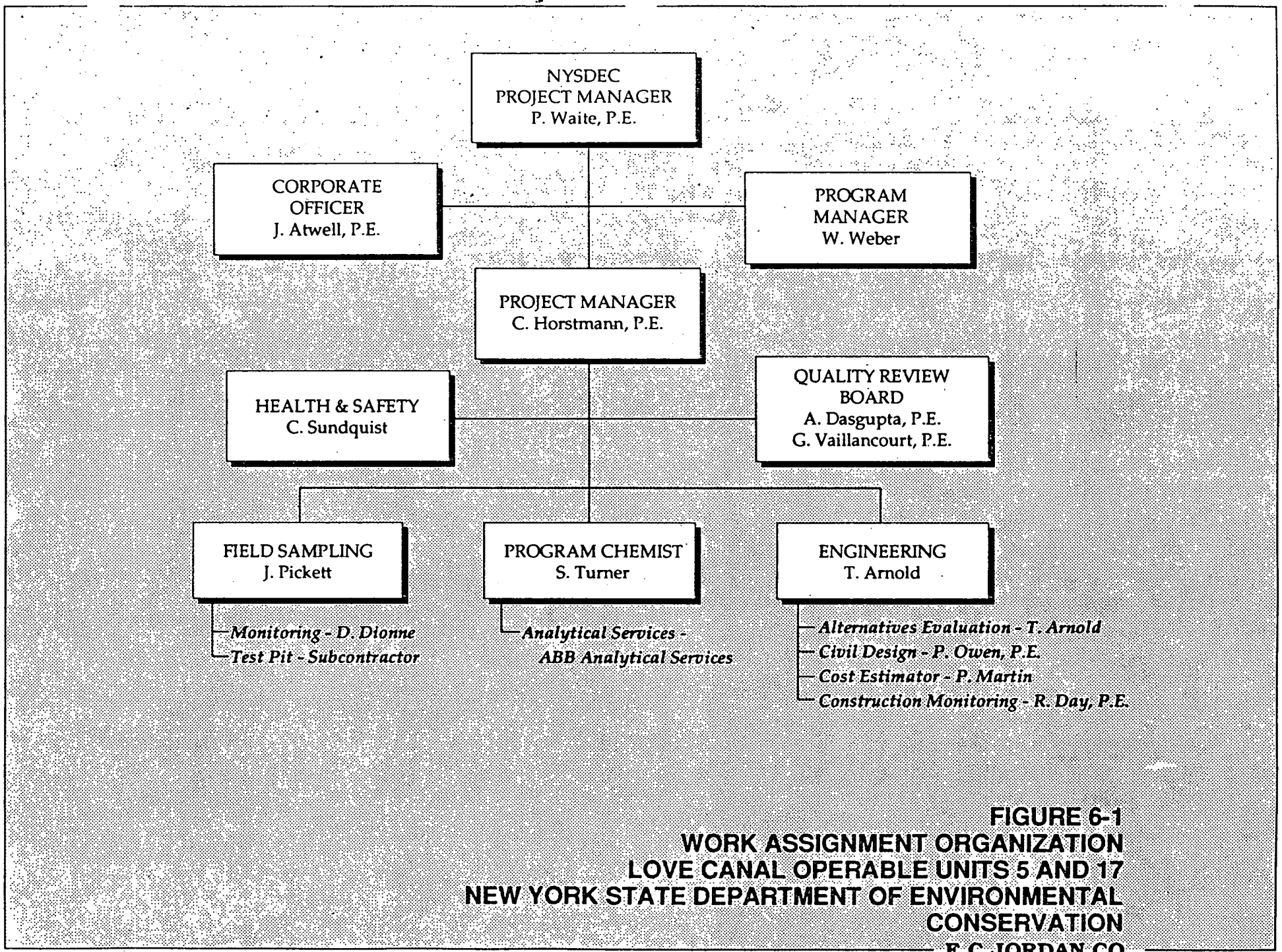


FIGURE 6-1
WORK ASSIGNMENT ORGANIZATION
LOVE CANAL OPERABLE UNITS 5 AND 17
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
E.C.JORDAN CO.

9012033D

TABLE 6-1

LOVE CANAL IRM PROJECT TEAM

JORDAN PERSONNEL	TITLE	NSPE GRADE LEVEL
J.S. Atwell, P.E.	Corporate Officer	9
G.W. Vaillancourt, P.E.	Technical Reviewer	8
W.J. Weber	Program Manager	8
A. Dasgupta	Senior Project Manager	8
C. Beal, P.E.	Senior Civil Engineer	7
C. Horstmann, P.E.	Project Manager	7
R. Burger	Manager Environmental Eng.	6
R. Day	Manager Construction Services	6
P. Martin	Cost Estimator	6
C. Sundquist	Health & Safety Officer	6
P. Owen	Civil Engineer	5
S. Pendleton	Air Quality Specialist	5
J. Pickett	Field Operations Leader	5
S. Turner	QA Coordinator	4
T. Arnold	Project Engineer	3
R. Dilworth	ARARs Specialist	3
D. Dionne	Field Support	3
C. White	Technician	3
R. Parkman	Assistant Project Engineer	2
D. Sullivan	Contract Administrator	3
B. Furey	Senior Graphics Technician	1
J. Gemmell	Technician	1
D. Gilpatrick	Senior Graphics Technician	1
L. Turkington	Technician	1
M.J. Wellington	Technician	1

- implementation of subcontracting as required.

Charles H. Horstmann, P.E., will be Project Manager for the Love Canal Operable Unit 18 Work Assignment.

Functional Task Leaders will be responsible for all technical activities on the project including interfacing with NYSDEC concerning technical matters, and supervising the performance of the project staff and field subcontractors. The Task Leaders are Jeffrey Pickett for the Test Pit Investigations (Task 2) and Tracy L. Arnold for the Evaluation of Alternatives (Task 3).

The Quality Review Board will review the project work at appropriate stages to provide an independent senior staff-level assessment of the completeness, consistency, and overall quality of the data and interpretations. Avijit Dasgupta, P.E., Department Manager of Hazardous Waste Engineering and Guy W. Vaillancourt, P.E., Manager of Environmental Engineering and Design Sector comprise the Review Committee.

6.2 MBE/WBE PLAN

For the subcontract services described in Section 7.5 Jordan has been unable to obtain bids from MBE/WBE firms. The only subcontractor services in this contract are for test pit excavation and backfill. Jordan contacted by phone ten firms to determine their interest in bidding on this work. Jordan was familiar with the qualifications of these firms and considered them potentially acceptable for bidding. One of these firms was American Auger and Ditching a WBE firm. American Auger chose not to bid because they would have had to subcontract the work. Jordan was unable to identify another MBE/WBE firm to bid on the test pitting. Jordan did consider subcontracting analytical services and reviewed the analytical costs for the program for three laboratories, one of which was E3I an MBE firm. The Jordan laboratory provided the lowest price and was chosen for this work element.

Jordan understands the goals of this contract with respect to MBE/WBE utilization, however we have not been successful in obtaining interest from or competetive bids from MBE/WBE firms. We do, however, anticipate additional work on subsequent work assignments (e.g., Tasks 5 and 6 as described in the Work Assignment Scope of Work) but which have not been assigned to date. For these activities Jordan will solicit the services of MBE/WBE survey, laboratory, and data validation as needed.

6.3 PROJECT MANAGEMENT CONTROLS

The following sections summarize Jordan's approach to managing the proposed project, including lines of authority and communications;

schedule maintenance; cost allocation, control, and reporting; quality assurance; and problem prevention and resolution.

6.3.1 Communications

The Project Manger will be the primary contact for NYSDEC and will be responsible for maintaining project documentation and facilitating communications between the Quality Review Board, the Health and Safety Coordinator, the Task Leaders, and the project staff. Project status reports and related information will be conveyed within Jordan's project team and between Jordan and NYSDEC by a variety of mechanisms, including status briefings, monthly progress reports, project review meetings, telephone calls, and miscellaneous project-related memoranda.

6.3.2 Schedule Maintenance

Jordan understands NYSDEC's commitment to complete this project in accordance with a realistic, mutually agreed-upon schedule. This can only be accomplished by establishing realistic task schedules and by frequent schedule maintenance. The frequent project review meetings will facilitate identifying and implementing changes. Adherence to approved work schedules will be the responsibility of the Project Manger. Schedule maintenance will be accomplished by a variety of means, including the following:

- Frequent communications between Jordan and NYSDEC to anticipate potential problems, identify and resolve existing problems, and smoothly implement adjustments in work focus or workloads.

- Frequent communications between the Project Manger and the Task Leaders to coordinate work schedules and manpower requirements (this is particularly effective when redirections of efforts are desirable).

- Monthly forecasts of staff requirements and manpower availability to make certain that adequate project support will be accessible under a variety of workload scenarios.

- Access to corporate-level and senior technical support as required for rapid problem resolution.

6.3.3 Cost Allocation, Control, and Reporting

To provide adequate cost control, Jordan will establish an account number for tasks associated with the Love Canal Operable Unit 18 Work Assignment. Costs will be allocated to the account number as they are incurred. In general, externally billed non-labor costs (e.g., postage, field subsistence expenses, subcontracting, travel costs, long-distance telephone) are allocated daily, labor costs

are allocated weekly, and in-house non-labor costs (e.g., photocopying, equipment rental) are allocated monthly. Allocated labor costs are reported to the Project Manager weekly, typically within three working days of the last work week reported. Other direct costs are reported monthly, typically within four working days of the end of the reporting period. Jordan's computerized cost accounting system has been used successfully on a variety of project types, ranging in value from a few thousand dollars to over five million dollars.

6.3.4 Quality Assurance

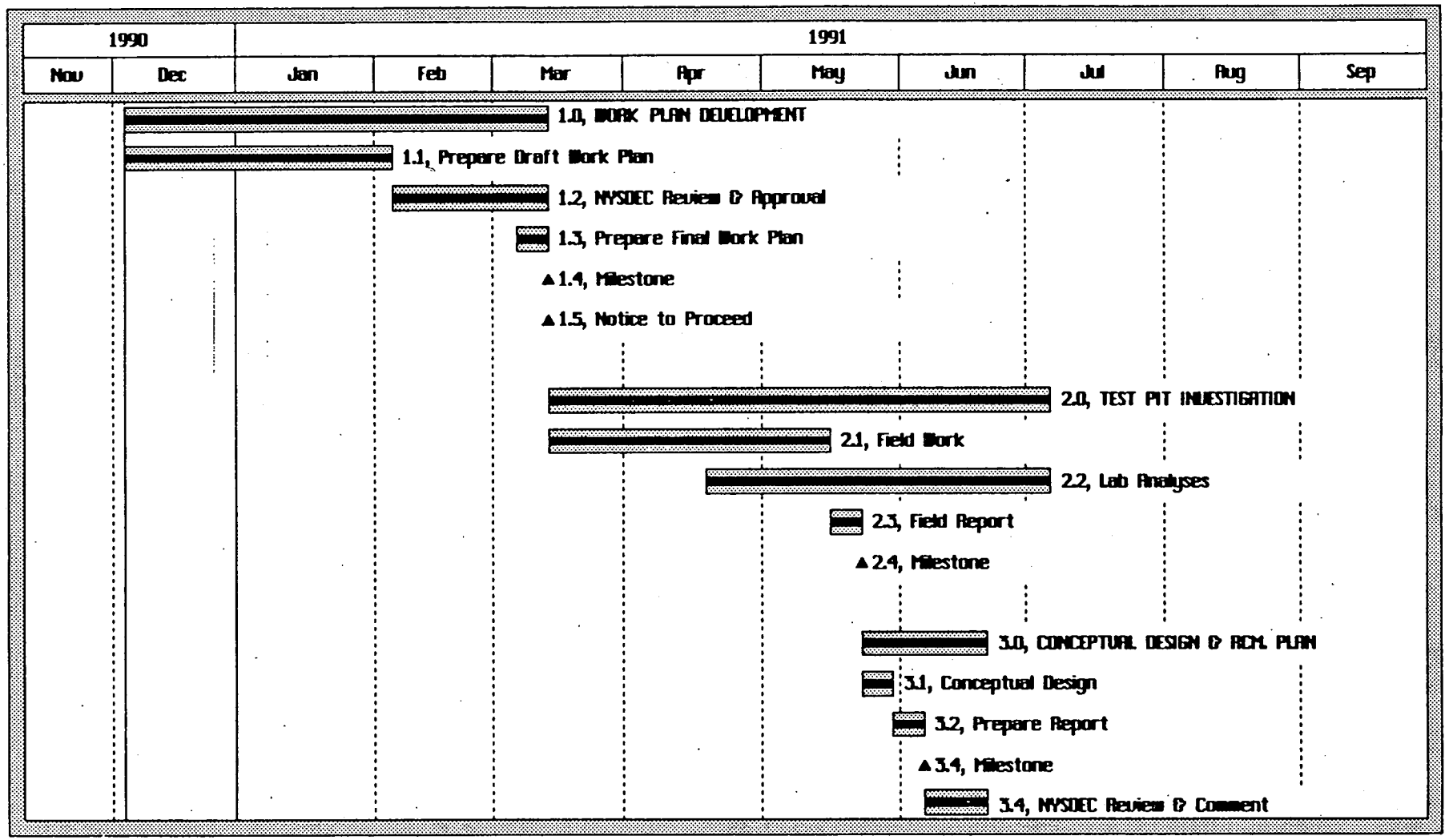
Quality assurance is an essential component of project management and is the responsibility of the Project Manger. Some of the management-related quality assurance measures to be undertaken on the propose project include the following:

- The Project Manger will present periodic briefings to the Quality Review Board and other company officials to evaluate project progress and to identify potential problems so that plans can be made to avert them.
- The Project Manager and Task Leaders will hold frequent project staff meetings to ensure work consistency and completeness and to facilitate information transfer.
- The Quality Review Board and the Project Manager will review all project deliverables to evaluate their technical quality.
- The Project Manager and Quality Review Board will meet before (and as needed after) all public hearings to discuss Jordan's role in the meeting and any subsequent activities.
- NYSDEC will have the opportunity to review deliverables to further verify the quality.
- The Project Manager will maintain a file of all project documentation so that project procedures, decisions, and events can be reconstructed, if needed, after project closeout.

6.4 PROJECT SCHEDULE

The project schedule illustrated in Figure 6-2 shows the tasks and activities for the Love Canal Work Assignment. The schedule for the field investigation is dependent on NYSDEC approval of this Work Plan, and on availability of the subcontractor by February 1991. The schedule assumes ready access to the site. The schedule also assumes there will be no delays due to the securing of required permits, and that the health and safety personnel

FIGURE 6-2
LOVE CANAL
PROGRESS SCHEDULE



▲ MILESTONES FOR PERFORMANCE EVALUATION

E.C. JORDAN CO.

protective requirements are Level B for all workers below ground level in the test pits and Level C for all workers in the Exclusion Zone. The level of protection in the Exclusion Zone will be upgraded to Level B if air monitoring so indicates. It also assumes that severe weather conditions or equipment malfunction may cause delays and, therefore, deviations from the budget, with the approval of NYSDEC. The schedule presented for test pit investigation field work consists of six weeks, one week for establishing subcontract agreements, one week mobilization, two weeks for test pitting, one week for test pitting extension resulting from bad weather, and one week for test pit location and demobilization.

7.0 WORK ASSIGNMENT BUDGET

The budget for the Work Assignment has been prepared in accordance with the NYSDEC Superfund Standby Contract and reflects the scope of work described in this Work Plan. The budget includes the followings sections:

- Price Breakdown
- Direct Labor
- Other Direct Costs
- Travel and Equipment Charges
- Subcontracts

The costs presented represent all reasonable available facts related to the completion of Tasks 1, 2, 3, and 7 of Work Assignment No. D002472-7.

7.1 PRICE BREAKDOWN

A summary of the costs for the services discussed in the work plan is presented by task in Table 1.0. The Table 1 series provides the necessary information for Schedule 2.11(a). Tables include the following cost breakdown:

- Direct Labor (raw)
- Indirect Labor (plus overhead)
- Travel and Subsistence
- Other Direct Costs
- Subcontracts
- Other Project Costs

A fixed fee of 10 percent is applied to the sum of the estimated total direct and indirect salary costs. The Table 2 series provides the necessary information for Schedule 2.11(b). The Table 3 series provides the necessary information for Schedule 2.11(c), and the Table 4 series provides the necessary information for Schedule 2.11(d). Schedules 2.11(e) and (f) are also provided for cost plus fixed fee subcontracts and unit cost subcontracts, respectively.

7.2 DIRECT LABOR

Direct labor for the project has been segregated into the following categories:

Labor Classification	Professional Responsibility Levels
IX	Principal, Vice President
VIII	Senior Project Manger, Division Manager, Senior Consultant
VII	Senior Engineer, Senior Scientist, Project Manager
VI	Senior Engineer, Senior Scientist
V	Engineer/Scientist, Senior Scientist
IV	Engineer/Scientist
III	Junior Engineer/Junior Scientist
II	Junior Engineer/Junior Scientist/Senior Technician
I	Technician

The average reimbursement rates, as specified in Schedule 2.10(a) of the contract, were used to develop the estimate.

7.3 TRAVEL AND SUBSISTENCE

Summaries of travel and subsistence costs related to the conduct of the Work Plan are shown in Tables 3.1, 3.2, and 3.7. Backup for unit costs shown are based on available quotations and New York State allowances.

7.4 OTHER DIRECT COSTS

Other direct costs for each task are summarized in Tables 4.1 through 4.3 and Table 4.7. Backup for some unit costs are provided in the attached Schedules 2.11(d)2, 2.11(d)3, and 2.11(d)5.

7.5 SUBCONTRACTS

Subcontracts are to be issued for test pitting. Evaluation of the bids for this item is presented in the following paragraph.

7.5.1 Test Pitting

opunit No 18 POW 3/8/91

The following firms submitted bids to perform the test pitting services at the Love Canal IRM - Operable Unit 5: Firstrhyme Construction Corp, Sevenson Environmental Services and Mathes Associates. A summary of the bids is presented in Table 5-1. All

bids assumed that prevailing wage rates do apply. Firstrhyme Construction Corporation submitted the low bid of $73,040. The program as bid consists of 15 test pits with an approximate depth of 12 feet. At a meeting at NYSDEC's Albany, New York offices on February 21, 1991 between NYSDEC, E.C. Jordan and Firstrhyme all parties agreed to eliminate the four confirmation test pits and thereby reduce the subcontract price from $73,040 to $63,040. For budgeting purpose it was assumed that any manual work in the test pit would require Level B PPE and work outside the test pit would require Level C PPE. The test pit program is anticipated to require three weeks of test pitting plus one week each for mobilization and demobilization. Provision was made in the bids for up to 80 hours of additional subcontractor time to allow for bad weather or equipment malfunction. Jordan has budgeted its time to match the subcontractors schedule, but as agreed to at the February 21, 1991 meeting included only 40 hours of additional field time. If unforseen delays in the test pitting extend this period Jordan will request negotiation of amendment to the contract to reflect the change in cost.

LIST OF COST SCHEDULES

SCHEDULE 2.11(a)
SUMMARY OF WORK ASSIGNMENT PRICE
LOVE CANAL
WORK ASSIGNMENT NUMBER D-002472-7

03/20/91
REV. 1

1 ..... DIRECT SALARY COSTS (Schedules 2.10(a) and 2.11(b))	$52,283
2 ..... INDIRECT COSTS (Schedule 2.10(g))	$72,359
3 ..... DIRECT NON-SALARY COSTS (Schedules 2.10(d)(e)(f) and 2.11(c)(d))	$63,298

SUBCONTRACT COSTS
COST-PLUS-FIXED-FEE SUBCONTRACTS
(Schedule 2.10(e) and 2.11(e))

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
A.		
B.		
C.		
4 ..... TOTAL COST-PLUS-FIXED-FEE SUBCONTRACTS		$0

UNIT PRICE SUBCONTRACTS
(Schedule 2.10(f) and 2.11(f))

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
A. FIRSTRHYME CONST. CORP.	TEST PITTING	$63,040
B.		
C.		$0
D.		$0
E.		$0
5 ..... TOTAL UNIT PRICE SUBCONTRACTS		$63,040

6 ..... TOTAL SUBCONTRACT COSTS (Lines 4 + 5)	$63,040
7 ..... FIXED FEE (Schedule 2.10(h))	$12,464
8 ..... TOTAL WORK ASSIGNMENT PRICE (Lines 1 + 2 + 3 + 6 + 7)	$263,444

TABLE 1.0
SUMMARY OF PROJECT COSTS
LOVE CANAL

03/20/91
REV. 2

TASK	1 DIRECT LABOR (a)	2 INDIRECT COSTS	3 TRAVEL & SUB-SISTENCE (b)	4 OTHER DIRECT COSTS (c)	5 SUB-CONTRACTS (d)	COLUMNS 1-5
TASK 1 - WORK PLAN DEVELOPMEN	$6,849	$9,479	$942	$3,046	$0	$20,317
TASK 2 - TEST PIT INVESTIGATION	$36,452	$50,449	$19,591	$38,092	$63,040	$207,624
TASK 3 - CONCEPTUAL DESIGN	$1,485	$2,056	$0	$490	$0	$4,031
TASK 4 - REMEDIAL DESIGN	$0	$0	$0	$0	$0	$0
TASK 5 - REVIEW SAMPLING	$0	$0	$0	$0	$0	$0
TASK 6 - SOIL REMOVAL DESIGN	$0	$0	$0	$0	$0	$0
TASK 7 - PROGRAM MANAGEMENT	$7,496	$10,375	$947	$190	$0	$19,008
SUBTOTAL		$72,359				
FIXED FEE (10%)		$12,464				$12,464
TOTALS	$52,283	$84,823	$21,480	$41,818	$63,040	$263,444

NOTES:
(a) See Schedule 2.11(b)
(b) See Table 3.0
(c) See Table 4.0
(d) See Schedule 2.11(f)

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TABLE 2.0
SCHEDULE 2.11(b)
DIRECT LABOR HOURS BUDGETED
LOVE CANAL

03/20/91
REV. 2

LABOR CLASSIFICATION AVERAGE RAW LABOR RATE	IX $40.79	VIII $36.38	VII $28.81	VI $26.00	V $21.80	IV $19.47	III $16.84	II $15.52	I $11.89	LABOR HOURS	DIRECT LABOR
TASK 1 - WORK PLAN DEVELOPMENT	0	18	117	58	35	6	16	0	14	264	$6,849
TASK 2 - TEST PIT INVESTIGATION	0	8	322	338	40	67	624	20	429	1848	$36,452
TASK 3 - CONCEPTUAL DESIGN	0	4	32	8	0	0	4	0	12	60	$1,485
TASK 4 - REMEDIAL DESIGN	0	0	0	0	0	0	0	0	0	0	$0
TASK 5 - REVIEW SAMPLING	0	0	0	0	0	0	0	0	0	0	$0
TASK 6 - SOIL REMOVAL DESIGN	0	0	0	0	0	0	0	0	0	0	$0
TASK 7 - PROGRAM MANAGEMENT	0	146	0	0	0	0	88	0	59	293	$7,496
TOTAL LABOR HOURS	0	176	471	404	75	73	732	20	514	2465	
TOTAL LABOR COST	$0	$6,403	$13,570	$10,504	$1,635	$1,421	$12,327	$310	$6,113		$52,283

TABLE 3.0
DETAILED ESTIMATE OF TRAVEL AND SUBSISTENCE
LOVE CANAL

03/20/91
REV. 2

TASK	1 AIR	2 CAR	3 CUBE VAN	4 ECONOLINE VAN	5 SUBSIS-TENCE	6 OTHER	COLUMNS (1-6)
TASK 1 - WORK PLAN DEVELOPMENT	$868	$34	$0	$0	$0	$40	$942
TASK 2 - TEST PIT INVESTIGATION	$9,536	$1,360	$0	$1,140	$7,055	$500	$19,591
TASK 3 - CONCEPTUAL DESIGN	$0	$0	$0	$0	$0	$0	$0
TASK 4 - REMEDIAL DESIGN	$0	$0	$0	$0	$0	$0	$0
TASK 5 - REVIEW SAMPLING	$0	$0	$0	$0	$0	$0	$0
TASK 6 - SOIL REMOVAL DESIGN	$0	$0	$0	$0	$0	$0	$0
TASK 7 - PROGRAM MANAGEMENT	$868	$34	$0	$0	$0	$45	$947
TOTALS	$11,272	$1,428	$0	$1,140	$7,055	$585	$21,480

NOTES:
1. Air, Car, Van, and Truck, See Schedule 2.11(c)
2. Other includes Parking, Gas, Mileage; See Schedule 2.11(c)
3. Subsistence, See Schedule 2.11(c)

TABLE 4.0
SUMMARY OF OTHER DIRECT COSTS
LOVE CANAL

03/20/91
REV. 2

TASK	1 PRINTING & REPRODUCE	2 TELEPHONE & SHIPPING	3 MATERIALS & SUPPLIES	4 COMPUTER & OTHER	5 FIELD EQUIP. & SUPPLIES	6 LEVEL D	6 LEVEL C	6 LEVEL B	COLUMNS (1-6)
TASK 1 - WORK PLAN DEVELOPMENT	$1,651	$1,395	$0	$0	$0	$0	$0	$0	$3,046
TASK 2 - TEST PIT INVESTIGATION	$1,220	$7,925	$0	$15,725	$8,985	$788	$1,350	$2,100	$38,092
TASK 3 - CONCEPTUAL DESIGN	$200	$230	$0	$60	$0	$0	$0	$0	$490
TASK 4 - REMEDIAL DESIGN	$0	$0	$0	$0	$0	$0	$0	$0	$0
TASK 5 - REVIEW SAMPLING	$0	$0	$0	$0	$0	$0	$0	$0	$0
TASK 6 - SOIL REMOVAL DESIGN	$0	$0	$0	$0	$0	$0	$0	$0	$0
TASK 7 - PROGRAM MANAGEMENT	$100	$90	$0	$0	$0	$0	$0	$0	$190
TOTALS	$3,171	$9,640	$0	$15,785	$8,985	$788	$1,350	$2,100	$41,818

NOTES
1. Print, Phone, Ship, Supplies, Computer; See Schedule 2.11(d)5
2. Field Equipment, See Schedules 2.11(d)2, 2.11(d)3, 2.11(d)5
3. Level D: $22.50/person/day; Level C; $45.00/person/day; Level B: $70.00/person/day.

TABLE 5.1
SCHEDULE 2.11(f)
UNIT PRICE SUBCONTRACTS (Continued)
LOVE CANAL OPERABLE UNIT 18

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	LEVEL D UNIT PRICE	LEVEL C UNIT PRICE	LEVEL B UNIT PRICE	TOTAL COST
10.	Snow removal (Includes incidental clean-up) per event	4	$50	NA	NA	$200
11.	Extra work - laborer (Including hand tools and supervision) hours	80	NA	$50	NA	$4,000
12.	Extra work - backhoe (including operation & supervision) hours	40	NA	$76	NA	$3,040
					TOTAL	$73,040

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TABLE 5.0
SCHEDULE 2.11(f)
UNIT PRICE SUBCONTRACTS
LOVE CANAL OPERABLE UNIT 18
WORK ASSIGNMENT NUMBER D-002472-7

TASK	NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
TASK 2	Firstrhyme Construction Corp.	Test Pitting	$63,040
		TOTAL SUBCONTRACTOR COSTS	$63,040

*NOTE: Jordan, NYSDEC and Firstrhyme agreed at a February 21, 1991 meeting in Albany, NY, that Firstrhyme's contract price will be reduced by $10,000 because confirmation test pits are to be excluded.

TABLE 5.1
SCHEDULE 2.11(f)
UNIT PRICE SUBCONTRACTS
LOVE CANAL OPERABLE UNIT 18

03/05/91
REV. 1

TASK 2

SUBCONTRACTOR: FIRSTRHYME CONSTRUCTION CORP.
SERVICES TO BE PROVIDED: TEST PITTING
SUBCONTRACT PRICE: $73,040

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	LEVEL D UNIT PRICE	LEVEL C UNIT PRICE	LEVEL B UNIT PRICE	TOTAL COST
1.	Mobilization & Demobilization of backhoe & all necessary personnel and equipment to complete the Test Pit Investigations	1	$13,800	NA	NA	$13,800
2.	Excavation of "contaminated" test pits	7	NA	NA	$2,500	$17,500
3.	Excavation of double-wide Test Pits with installation of concrete cut-off wall in the excavated test pit	4	NA	$3,500	NA	$14,000
4.	Excavation of confirmation of Test Pits	4	NA	$2,500	NA	$10,000
5.	Decontamination of equipment between Test Pits (including end of day decontamination)	15	NA	$30	NA	$450
6.	Supply transport & stage spec. 17 DOT 55-gallon drums	20	$75	NA	NA	$1,500
7.	Mobilize, setup, provide, & maintain an office/ equipment storage/shower trailer	1	$3,000	NA	NA	$3,000
8.	Standby Time (max. 8 hrs/day)	80	$60	NA	NA	$4,800
9.	Standby office equipment/ storage trailer/per week	3	$250	NA	NA	$750

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Engineer: E.C. JORDAN CO.
Contract #: D-002472
Project Name: LOVE CANAL
Work Assignment #: 7
Task #/Name: . WORK PLAN
Complete: 0.0%

SCHEDULE 2.11(g)

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Date Prepared: 20-Mar-91
Billing Period:
Invoice #:

		A	B	C	D	E	F	G	H
	Expenditure Category	Costs Claimed This Period	Paid To Date	Total Disallowed To Date	Total Costs Incurred To Date (A+B+C)	Estimated Costs To Completion	Estimated Total Work Assignment Price (A+B+E)	Approved Budget	Estimated Under/Over (G-F)
1.	Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	6849.00	0.00
2.	Indirect Costs 138.4%	0.00	0.00	0.00	0.00	0.00	0.00	9479.00	0.00
3.	Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	16328.00	0.00
4.	Travel	0.00	0.00	0.00	0.00	0.00	0.00	942.00	0.00
5.	Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	3046.00	0.00
6.	Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	3988.00	0.00
7.	Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8.	Total Contract Cost	0.00	0.00	0.00	0.00	0.00	0.00	20316.00	0.00
9.	Fixed Fee *	0.00	0.00	0.00	0.00	0.00	0.00	1633.00	0.00
10.	Total Contract Price	0.00	0.00	0.00	0.00	0.00	0.00	21950.00	0.00

Program Manager _____ Date _____

Engineer: E.C. JORDAN CO.
Contract #: D-002472
Project Name: LOVE CANAL
Work Assignment #: 7
Task #/Name: ALL TASKS
Complete: 0.0%

SCHEDULE 2.11(g)

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Date Prepared: 20-Mar-91
Billing Period:
Invoice #:

	Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+C)	E Estimated Costs To Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1.	Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	52283.00	0.00
2.	Indirect Costs 138.4%	0.00	0.00	0.00	0.00	0.00	0.00	72359.00	0.00
3.	Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	124642.00	0.00
4.	Travel	0.00	0.00	0.00	0.00	0.00	0.00	21480.00	0.00
5.	Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	41818.00	0.00
6.	Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	63298.00	0.00
7.	Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	63040.00	0.00
8.	Total Contract Cost	0.00	0.00	0.00	0.00	0.00	0.00	250980.00	0.00
9.	Fixed Fee *	0.00	0.00	0.00	0.00	0.00	0.00	12464.00	0.00
10.	Total Contract Price	0.00	0.00	0.00	0.00	0.00	0.00	263444.00	0.00

Program Manager _____ Date _____

Engineer: E.C. JORDAN CO.
Contract #: D-002472
Project Name: LOVE CANAL
Work Assignment #: 7
Task #/Name: TEST PIT
Complete: 0.0%

SCHEDULE 2.11(g)

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Date Prepared: 20-Mar-91
Billing Period:
Invoice #:

	Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+C)	E Estimated Costs To Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1.	Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	36452.00	0.00
2.	Indirect Costs 138.4%	0.00	0.00	0.00	0.00	0.00	0.00	50449.00	0.00
3.	Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	86901.00	0.00
4.	Travel	0.00	0.00	0.00	0.00	0.00	0.00	19591.00	0.00
5.	Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	38092.00	0.00
6.	Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	57683.00	0.00
7.	Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	63040.00	0.00
8.	Total Contract Cost	0.00	0.00	0.00	0.00	0.00	0.00	207624.00	0.00
9.	Fixed Fee *	0.00	0.00	0.00	0.00	0.00	0.00	8690.00	0.00
10.	Total Contract Price	0.00	0.00	0.00	0.00	0.00	0.00	216314.00	0.00

Program Manager

Date

Engineer: E.C. JORDAN CO.
Contract #: D-002472
Project Name: LOVE CANAL
Work Assignment #: 7
Task #/Name: CONCEPTUAL DESIGN
Complete: 0.0%

SCHEDULE 2.11(g)

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Date Prepared: 05-Mar-91
Billing Period:
Invoice #:

	Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+C)	E Estimated Costs To Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1.	Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	1485.00	0.00
2.	Indirect Costs 138.4%	0.00	0.00	0.00	0.00	0.00	0.00	2056.00	0.00
3.	Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	3541.00	0.00
4.	Travel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.	Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	490.00	0.00
6.	Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	490.00	0.00
7.	Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8.	Total Contract Cost	0.00	0.00	0.00	0.00	0.00	0.00	4031.00	0.00
9.	Fixed Fee	0.00	0.00	0.00	0.00	0.00	0.00	354.00	0.00
10.	Total Contract Price	0.00	0.00	0.00	0.00	0.00	0.00	4385.00	0.00

Program Manager

Date

Engineer: E.C. JORDAN CO.
Contract #: D-002472
Project Name: LOVE CANAL
Work Assignment #: 7
Task #/Name: PROGRAM MANAGEMENT
Complete: 0.0%

SCHEDULE 2.11(g)

MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Date Prepared: 20-Mar-91
Billing Period:
Invoice #:

		A	B	C	D	E	F	G	H
	Expenditure Category	Costs Claimed This Period	Paid To Date	Total Disallowed To Date	Total Costs Incurred To Date (A+B+C)	Estimated Costs To Completion	Estimated Total Work Assignment Price (A+B+E)	Approved Budget	Estimated Under/Over (G-F)
1.	Direct Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	7496.00	0.00
2.	Indirect Costs 138.4%	0.00	0.00	0.00	0.00	0.00	0.00	10375.00	0.00
3.	Subtotal Direct Salary Costs and Indirect Costs	0.00	0.00	0.00	0.00	0.00	0.00	17871.00	0.00
4.	Travel	0.00	0.00	0.00	0.00	0.00	0.00	947.00	0.00
5.	Other Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	190.00	0.00
6.	Subtotal Direct Non-Salary Costs	0.00	0.00	0.00	0.00	0.00	0.00	1137.00	0.00
7.	Subcontractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8.	Total Contract Cost	0.00	0.00	0.00	0.00	0.00	0.00	19008.00	0.00
9.	Fixed Fee *	0.00	0.00	0.00	0.00	0.00	0.00	1787.00	0.00
10.	Total Contract Price	0.00	0.00	0.00	0.00	0.00	0.00	20795.00	0.00

Program Manager _____ Date _____

Engineer: E. C. Jordan
Contract #: D-002472
Project Name: Love Canal
Work Assignment #: 7

MONTHLY COST CONTROL REPORT: SCHEDULE 2.11(h)
SUMMARY OF LABOR HOURS
NUMBER OF DIRECT LABOR HOURS EXPENDED TO DATE/
ESTIMATED NUMBER OF DIRECT LABOR HOURS TO COMPLETION

Date Prepared: 20-Mar-91
Billing Period:
Invoice #:

LABOR CLASSIFICATIO	IX		VIII		VII		VI		V		IV		III		II		II		TOTAL NO. OF DIRECT LABOR HOURS	
SALARY RATE		40.79		36.68		28.81		26.00		21.80		19.47		16.84		15.52		11.89		
	EXP	EST	EXP	EST	EXP	EST	EXP	EST	EXP	EST	EXP	EST	EXP	EST	EXP	EST	EXP	EST	EXP	EST
Task 1	0.0	0.0	0.0	16.0	0.0	117.0	0.0	58.0	0.0	35.0	0.0	6.0	0.0	16.0	0.0	0.0	0.0	14.0	0.0	264.0
Task 2	0.0	0.0	0.0	8.0	0.0	322.0	0.0	338.0	0.0	40.0	0.0	67.0	0.0	624.0	0.0	20.0	0.0	429.0	0.0	1848.0
Task 3	0.0	0.0	0.0	4.0	0.0	32.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	12.0	0.0	60.0
Task 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Task 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Task 6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Task 7	0.0	0.0	0.0	148.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	88.0	0.0	0.0	0.0	59.0	0.0	293.0
TOTAL	0.0	0.0	0.0	176.0	0.0	471.0	0.0	404.0	0.0	75.0	0.0	73.0	0.0	732.0	0.0	20.0	0.0	514.0	0.0	2465.0
Community Relations																				
TOTAL PROJECT	0.0	0.0	0.0	176.0	0.0	471.0	0.0	404.0	0.0	75.0	0.0	73.0	0.0	732.0	0.0	20.0	0.0	514.0	0.0	2465.0

Labor Classification Key:

IX: Principal, Vice President
VIII: Senior Project Manager, Division Manager, Senior Consultant
VII: Senior Engineer, Senior Scientist, Project Manager
VI: Senior Engineer, Senior Scientist
V: Engineer/Scientist, Senior Scientist
IV: Engineer/Scientist
III: Junior Engineer/Junior Scientist
II: Junior Engineer/Junior Scientist, Senior Technician
I: Technician

TABLE 1.1
SUMMARY OF PROJECT COSTS
TASK 1
LOVE CANAL

03/20/91

TASK	1 DIRECT LABOR (a)	2 INDIRECT COSTS	3 TRAVEL & SUB-SISTENCE (b)	4 OTHER DIRECT COSTS (c)	5 SUB-CONTRACTS (d)	COLUMNS 1-5
TASK 1 - WORK PLAN DEVELOPMENT						
WORK PLAN DEVELOPMENT	$6,849	$9,479	$942	$3,046	$0	$20,317
SUBTOTAL		$9,479				
FIXED FEE (10%)		$1,633				$1,633
TOTALS	$6,849	$11,112	$942	$3,046	$0	$21,950

NOTES:
(a) See Schedule 2.11(b)
(b) See Table 3.0
(c) See Table 4.0
(d) See Schedule 2.11(f)

TBL134

TABLE 1.2
SUMMARY OF PROJECT COSTS
TASK 2
LOVE CANAL

03/20/91

TASK	1 DIRECT LABOR (a)	2 INDIRECT COSTS	3 TRAVEL & SUB-SISTENCE (b)	4 OTHER DIRECT COSTS (c)	5 SUB-CONTRACTS (d)	COLUMNS 1-5
TASK 2 - TEST PIT INVESTIGATION						
TEST PIT INVESTIGATION	$36,452	$50,449	$19,591	$38,092	$63,040	$207,624
SUBTOTAL		$50,449				
FIXED FEE (10%)		$8,690				$8,690
TOTALS	$36,452	$59,139	$19,591	$38,092	$63,040	$216,314

NOTES:
(a) See Schedule 2.11(b) (b) See Table 3.0 (c) See Table 4.0 (d) See Schedule 2.11(f)

TBL134

TABLE 1.3
SUMMARY OF PROJECT COSTS
TASK 3
LOVE CANAL

03/20/91

TASK	1 DIRECT LABOR (a)	2 INDIRECT COSTS	3 TRAVEL & SUB-SISTENCE (b)	4 OTHER DIRECT COSTS (c)	5 SUB-CONTRACTS (d)	COLUMNS 1-5
TASK 3 - CONCEPTUAL DESIGN						
CONCEPTUAL DESIGN	$1,485	$2,056	$0	$490	$0	$4,031
SUBTOTAL		$2,056				
FIXED FEE (10%)		$354				$354
TOTALS	$1,485	$2,410	$0	$490	$0	$4,386

NOTES:
(a) See Schedule 2.11(b) (b) See Table 3.0 (c) See Table 4.0 (d) See Schedule 2.11(f)

TBL134

TABLE 1.7
SUMMARY OF PROJECT COSTS
TASK 7
LOVE CANAL

TASK	1 DIRECT LABOR (a)	2 INDIRECT COSTS	3 TRAVEL & SUB-SISTENCE (b)	4 OTHER DIRECT COSTS (c)	5 SUB-CONTRACTS (d)	COLUMNS 1-5
TASK 7 - PROGRAM MANAGEMENT						
PROGRAM MANAGEMENT	$7,496	$10,375	$947	$190	$0	$19,008
SUBTOTAL		$10,375				
FIXED FEE (10%)		$1,787				$1,787
TOTALS	$7,496	$12,162	$947	$190	$0	$20,795

NOTES:
(a) See Schedule 2.11(b) (b) See Table 3.0 (c) See Table 4.0 (d) See Schedule 2.11(f)

TBL134

TABLE 2.1
SCHEDULE 2.11(b)
DIRECT LABOR HOURS BUDGETED
TASK 1
LOVE CANAL

03/20/91

LABOR CLASSIFICATION AVERAGE RAW LABOR RATE	IX $40.79	VIII $36.38	VII $28.81	VI $26.00	V $21.80	IV $19.47	III $16.84	II $15.52	I $11.89	LABOR HOURS	DIRECT LABOR
TASK 1 - WORK PLAN DEVELOPMENT											
WORK PLAN DEVELOPMENT	0	18	117	58	35	6	16	0	14	264	$6,849
TOTAL LABOR HOURS	0	18	117	58	35	6	16	0	14	264	
TOTAL LABOR COST	$0	$655	$3,371	$1,508	$763	$117	$269	$0	$166		$6,849

TABLE 2.2
SCHEDULE 2.11(b)
DIRECT LABOR HOURS BUDGETED
TASK 2
LOVE CANAL

03/20/91
REV. 1

LABOR CLASSIFICATION AVERAGE RAW LABOR RATE	IX $40.79	VIII $36.38	VII $28.81	VI $26.00	V $21.80	IV $19.47	III $16.84	II $15.52	I $11.89	LABOR HOURS	DIRECT LABOR
TASK 2 - TEST PIT INVESTIGATION											
TEST PIT INVESTIGATION	0	8	322	338	40	67	624	20	429	1848	$36,452
TOTAL LABOR HOURS	0	8	322	338	40	67	624	20	429	1848	
TOTAL LABOR COST	$0	$291	$9,277	$8,788	$872	$1,304	$10,508	$310	$5,101		$36,452

TABLE 2.3
SCHEDULE 2.11(b)
DIRECT LABOR HOURS BUDGETED
TASK 3
LOVE CANAL

LABOR CLASSIFICATION AVERAGE RAW LABOR RATE	IX $40.79	VIII $36.38	VII $28.81	VI $26.00	V $21.80	IV $19.47	III $16.84	II $15.52	I $11.89	LABOR HOURS	DIRECT LABOR
TASK 3 - CONCEPTUAL DESIGN											
CONCEPTUAL DESIGN	0	4	32	8	0	0	4	0	12	60	$1,485
TOTAL LABOR HOURS	0	4	32	8	0	0	4	0	12	60	
TOTAL LABOR COST	$0	$146	$922	$208	$0	$0	$67	$0	$143		$1,485

TABLE 2.7
SCHEDULE 2.11(b)
DIRECT LABOR HOURS BUDGETED
TASK 7
LOVE CANAL

LABOR CLASSIFICATION AVERAGE RAW LABOR RATE	IX $40.79	VIII $36.38	VII $28.81	VI $26.00	V $21.80	IV $19.47	III $16.84	II $15.52	I $11.89	LABOR HOURS	DIRECT LABOR
TASK 7 - PROGRAM MANAGEMENT											
PROGRAM MANAGEMENT	0	146	0	0	0	0	88	0	59	293	$7,496
TOTAL LABOR HOURS	0	146	0	0	0	0	88	0	59	293	
TOTAL LABOR COST	$0	$5,311	$0	$0	$0	$0	$1,482	$0	$703		$7,496

TABLE 3.1
DETAILED ESTIMATE OF TRAVEL AND SUBSISTENCE
TASK 1
LOVE CANAL

03/20/91

TASK	1 AIR	2 CAR	3 CUBE VAN	4 ECONOLINE VAN	5 SUBSIS-TENCE	6 OTHER	COLUMNS (1-6)
TASK 1 - WORK PLAN DEVELOPMENT							
WORK PLAN DEVELOPMENT	$868	$34	$0	$0	$0	$40	$942
TOTALS	$868	$34	$0	$0	$0	$40	$942

NOTES:
1. Air, Car, Van, and Truck, See Schedule 2.11(c)
2. Other includes Parking, Gas, Mileage; See Schedule 2.11(c)
3. Subsistence, See Schedule 2.11(c)

TBL134

TABLE 3.2
DETAILED ESTIMATE OF TRAVEL AND SUBSISTENCE
TASK 2
LOVE CANAL

03/20/91

TASK	1 AIR	2 CAR	3 CUBE VAN	4 ECONOLINE VAN	5 SUBSIS-TENCE	6 OTHER	COLUMNS (1-6)
TASK 2 - TEST PIT INVESTIGATION							
TEST PIT INVESTIGATION	$9,536	$1,360	$0	$1,140	$7,055	$500	$19,591
TOTALS	$9,536	$1,360	$0	$1,140	$7,055	$500	$19,591

NOTES:
1. Air, Car, Van, and Truck, See Schedule 2.11(c)
2. Other includes Parking, Gas, Mileage; See Schedule 2.11(c)
3. Subsistence, See Schedule 2.11(c)

TABLE 3.3
DETAILED ESTIMATE OF TRAVEL AND SUBSISTENCE
TASK 3
LOVE CANAL

03/05/91

TASK	1 AIR	2 CAR	3 CUBE VAN	4 ECONOLINE VAN	5 SUBSIS-TENCE	6 OTHER	COLUMNS (1-6)
TASK 3 - CONCEPTUAL DESIGN							
CONCEPTUAL DESIGN	$0	$0	$0	$0	$0	$0	$0
TOTALS	$0	$0	$0	$0	$0	$0	$0

NOTES:

1. Air, Car, Van, and Truck, See Schedule 2.11(c)
2. Other includes Parking, Gas, Mileage; See Schedule 2.11(c)
3. Subsistence, See Schedule 2.11(c)

TABLE 3.7
DETAILED ESTIMATE OF TRAVEL AND SUBSISTENCE
TASK 7
LOVE CANAL

TASK	1 AIR	2 CAR	3 CUBE VAN	4 ECONOLINE VAN	5 SUBSIS-TENCE	6 OTHER	COLUMNS (1-6)
TASK 7 - PROGRAM MANAGEMENT							
PROGRAM MANAGEMENT	$868	$34	$0	$0	$0	$45	$947
SUBTOTAL							
FIXED FEE (12%)							
	$868	$34	$0	$0	$0	$45	$947

NOTES:
1. Air, Car, Van, and Truck, See Schedule 2.11(c)
2. Other includes Parking, Gas, Mileage; See Schedule 2.11(c)
3. Subsistence, See Schedule 2.11(c)

TBL134

TABLE 4.1
SUMMARY OF OTHER DIRECT COSTS
TASK 1
LOVE CANAL

TASK	1 PRINTING & REPRODUCE	2 TELEPHONE & SHIPPING	3 MATERIALS & SUPPLIES	4 COMPUTER & OTHER	5 FIELD EQUIP. & SUPPLIES	6 LEVEL D	6 LEVEL C	6 LEVEL B	COLUMNS (1-6)
TASK 1 - WORK PLAN DEVELOPMENT									
WORK PLAN DEVELOPMENT	$1,651	$1,395	$0	$0	$0	$0	$0	$0	$3,046
TOTALS	$1,651	$1,395	$0	$0	$0	$0	$0	$0	$3,046

NOTES
1. Print, Phone, Ship, Supplies, Computer; See Schedule 2.11(d)5
2. Field Equipment, See Schedules 2.11(d)2, 2.11(d)3, 2.11(d)5
3. Level D: $22.50/person/day; Level C; $45.00/person/day; Level B: $70.00/person/day.

TABLE 4.2
SUMMARY OF OTHER DIRECT COSTS
TASK 2
LOVE CANAL

TASK	1 PRINTING & REPRODUCE	2 TELEPHONE & SHIPPING	3 MATERIALS & SUPPLIES	4 COMPUTER & OTHER	5 FIELD EQUIP. & SUPPLIES	6 LEVEL D	6 LEVEL C	6 LEVEL B	COLUMNS (1-6)
TASK 2 - TEST PIT INVESTIGATION									
TEST PIT INVESTIGATION	$1,220	$7,925	$0	$15,725	$8,985	$788	$1,350	$2,100	$38,092
TOTALS	$1,220	$7,925	$0	$15,725	$8,985	$788	$1,350	$2,100	$38,092

NOTES
1. Print, Phone, Ship, Supplies, Computer; See Schedule 2.11(d)5
2. Field Equipment, See Schedules 2.11(d)2, 2.11(d)3, 2.11(d)5
3. Level D: $22.50/person/day; Level C; $45.00/person/day; Level B: $70.00/person/day.

TABLE 4.3
SUMMARY OF OTHER DIRECT COSTS
TASK 3
LOVE CANAL

TASK	1 PRINTING & REPRODUCE	2 TELEPHONE & SHIPPING	3 MATERIALS & SUPPLIES	4 COMPUTER & OTHER	5 FIELD EQUIP. & SUPPLIES	6 LEVEL D	6 LEVEL C	6 LEVEL B	COLUMNS (1-6)
TASK 3 - CONCEPTUAL DESIGN									
CONCEPTUAL DESIGN	$200	$230	$0	$60	$0	$0	$0	$0	$490
TOTALS	$200	$230	$0	$60	$0	$0	$0	$0	$490

NOTES
1. Print, Phone, Ship, Supplies, Computer; See Schedule 2.11(d)5
2. Field Equipment, See Schedules 2.11(d)2, 2.11(d)3, 2.11(d)5
3. Level D: $22.50/person/day; Level C; $45.00/person/day; Level B: $70.00/person/day.

TABLE 4.7
SUMMARY OF OTHER DIRECT COSTS
TASK 7
LOVE CANAL

TASK	1 PRINTING & REPRODUCE	2 TELEPHONE & SHIPPING	3 MATERIALS & SUPPLIES	4 COMPUTER & OTHER	5 FIELD EQUIP. & SUPPLIES	6 LEVEL D	6 LEVEL C	6 LEVEL B	COLUMNS (1-6)
TASK 7 - PROGRAM MANAGEMENT									
PROGRAM MANAGEMENT	$100	$90	$0	$0	$0	$0	$0	$0	$190
SUBTOTAL									
FIXED FEE (12%)									
TOTALS	$100	$90	$0	$0	$0	$0	$0	$0	$190

NOTES
1. Print, Phone, Ship, Supplies, Computer; See Schedule 2.11(d)5
2. Field Equipment, See Schedules 2.11(d)2, 2.11(d)3, 2.11(d)5
3. Level D: $22.50/person/day; Level C; $45.00/person/day; Level B: $70.00/person/day.

SITE: LOVE CANAL
D-002472-8

SCHEDULE 2.11(c)
DIRECT NON-SALARY COSTS

03/20/91
REV. 2

	TOTAL NO. NIGHTS	LODGING RATE (1)	TOTAL COST	TOTAL NO. DAYS	MEAL RATE (2)	TOTAL COST	TOTAL SUBSISTENCE
TASK 1 -							
WORK PLAN DEVELOPMENT			$0			$0	$0
			$0			$0	$0
			$0			$0	$0
			$0			$0	$0
			$0			$0	$0
			$0			$0	$0
			$0			$0	$0
			$0			$0	$0
TOTAL	0		$0	0		$0	$0

ASSUMPTIONS:

	TOTAL NO. NIGHTS	LODGING RATE (1)	TOTAL COST	TOTAL NO. DAYS	MEAL RATE (2)	TOTAL COST	TOTAL SUBSISTENCE
TASK 2 -							
TEST PIT INVESTIGATION	85	$57.00	$4,845	85	$26.00	$2,210	$7,055
			$0			$0	$0
			$0			$0	$0
			$0			$0	$0
			$0			$0	$0
			$0			$0	$0
			$0			$0	$0
			$0			$0	$0
TOTAL	85		$4,845	85		$2,210	$7,055

ASSUMPTIONS:

(1) Maximum Lodging Rate $57/night

(2) Maximum Meal Rate $26/day

(1) MAXIMUM REIMBURSEMENT RATE - SCHEDULE 2.10(c)

SITE: Love Canal
D-002472-8

SCHEDULE 2.11(c)
DIRECT NON-SALARY COSTS

03/20/91
REV. 2

	CAR RENTAL		CUBE VAN RENTAL		ECONOLINE RENTAL		OTHER			TOTAL
	NO. DAYS	COST	NO. DAYS	COST	NO. DAYS	COST	GAS	MILEAGE	PARKING	OTHER
TASK 1 -										
WORK PLAN DEVELOPMENT	1	$34						$40		$40
										$0
										$0
										$0
										$0
										$0
										$0
										$0
TOTAL	1	$34	0	$0	0	$0	$0	$40	$0	$40

ASSUMPTIONS:
(1) Car Rental @ $34/day
(2) Taxi: 2 people x 2 round trips @ $10/one-way trip

	CAR RENTAL		CUBE VAN RENTAL		ECONOLINE RENTAL		OTHER			TOTAL
	NO. DAYS	COST	NO. DAYS	COST	NO. DAYS	COST	GAS	MILEAGE	PARKING	OTHER
TASK 2 -										
TEST PIT INVESTIGATION	40	$1,360			30	$1,140	$200	$300		$500
										$0
										$0
										$0
										$0
										$0
										$0
										$0
TOTAL	40	$1,360	0	$0	30	$1,140	$200	$300	$0	$500

ASSUMPTIONS:
(1) Car Rental @ $34/day; Econoline Van Rental @ $38/day
(2) Taxi: 5 people x 3 weeks x $10/one-way trip

	CAR RENTAL		CUBE VAN RENTAL		ECONOLINE RENTAL		OTHER			TOTAL
	NO. DAYS	COST	NO. DAYS	COST	NO. DAYS	COST	GAS	MILEAGE	PARKING	OTHER
TASK 7 -										
PROGRAM MANAGEMENT	1	$34					$5	$40		$45
										$0
										$0
										$0
										$0
										$0
										$0
										$0
TOTAL	1	$34	0	$0	0	$0	$5	$40	$0	$45

ASSUMPTIONS:

(1) Car Rental @ $34/day

SITE: Love Canal
D-002472-8

SCHEDULE 2.11(c)
DIRECT NON-SALARY COSTS
COMMERCIAL AIR

03/20/91
REV. 2

	DESTINATION	TOTAL NO. TRIPS	AIRFARE	COST
TASK 1 -				
WORK PLAN DEVELOPMENT	Albany	2	$434	$868
				$0
				$0
				$0
				$0
				$0
				$0
				$0
TOTAL		2		$868

ASSUMPTIONS:

	DESTINATION	TOTAL NO. TRIPS	AIRFARE	COST
TASK 2 -				
TEST PIT INVESTIGATION	Buffalo	16	$596	$9,536
				$0
				$0
				$0
				$0
				$0
				$0
				$0
TOTAL		16		$9,536

ASSUMPTIONS:

	DESTINATION	TOTAL NO. TRIPS	AIRFARE	COST
TASK 7 -				
PROGRAM MANAGEMENT	Albany	2	$434	$868
				$0
				$0
				$0
				$0
				$0
				$0
				$0
TOTAL		2		$868

ASSUMPTIONS:

Thomas Cook

Thomas Cook Travel
480 Congress Street
Portland, Maine 04101

Telex: 800-888-6144
(207) 772-8450
Fax: (207) 775-5648

12/21/90

TO: Lee Turkington
FROM: Connie Burke/Thomas Cook Travel
RE: Rate Quotes Portland ME - Buffalo NY

Scheduled Airlines: only 2 airlines service Portland/Buffalo. U.S Air and Continental. Both have the same $596.00 round trip coach fare.

Charter Airlines: Portland ME - Niagara Falls NY

Maine Aviation: 6 psgr plane $1,650.00 round trip hanger to hanger.
Downeast Flying Service: 6 psgr plane $1,924.00 round trip.
Northeast Air Charter: 6 psgr plane $2700.00 round trip.

Cars: Compact:

Hertz - 34.00 per day 150 free miles per day .23 per mile after.
Avis - 36.00 per day 150 free miles per day .26 per mile after.
National - 48.00 per day 100 free miles per day .33 per mile after.

Mini Van:

Hertz - 38.00 per day 150 free miles per day .23 per mile after
Avis - 41.00 per day 150 free miles per day .23 per mile after.
National- 60.00 per day 100 free miles per day .33 per mile after.

If you have any further questions or you need further information please don't hesitate to give me a call at ext. 1475.

Thank you,
Thomas Cook Travel

Connie Burke
Senior Travel Agent

Thomas Cook

Thomas Cook Travel
480 Congress Street
Portland, Maine 04101

Telex: 800-888-6144
(207) 772-8450
Fax: (207) 775-5648

TO: LEE TURKINGTON
FROM: CONNIE - THOMAS COOK TRAVEL
RE: RATES FOR ALBANY NY

Per our phone conversation the rates offered between Portland ME and Albany NY are all the same at 434.00 round trip. This fare has no penalties for change or cancellation. The following airlines service this route: U.S.Air, Northwest, Delta, and Continental.

If you need any further information please give me a call at ext. 1475.

Connie

Connie Burke
Senior Travel Agent

SITE: LOVE CANAL
D-002472-8

SCHEDULE 2.11(d) 5
CONSUMMABLE SUPPLIES

03/20/91
REV. 2

	PRINTING & REPRO.	TELEPHONE & FAX	SHIPPING	TOTAL SHIP&PHONE	MATERIALS &SUPPLIES	COMPUTER	OTHER	TOTAL COMP&OTH
TASK 1 -								
WORK PLAN DEVELOPMENT	$1,651.00	$360.00	$1,035.00	$1,395.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
TOTAL	$1,651.00	$360.00	$1,035.00	$1,395.00	$0.00	$0.00	$0.00	$0.00

ASSUMPTIONS:

(1) Printing/Repro: 292 pg x 12 x 2 copies x $.07/pg - Work Plan; 150 pgs x 5 copies x 2 x $.07/pg - Data Validation; 200 pgs x 12 copies x 2 x $.07/pg; 1,000 pgs x $.07/pg - Budget: 200 sheets x $.07; Sepias; 30 x 20 x$1/pg + 12 covered $3/pg - Prints; Phone/Fax: 18 calls x $5/call; 135 pgs x $2/pg; Shipping : 40 pkgs @ $15/pkg; 5 pkgs @ $15/pkg; 18 pkgs @ $20/pkg.

	PRINTING & REPRO.	TELEPHONE & FAX	SHIPPING	TOTAL SHIP&PHONE	MATERIALS &SUPPLIES	COMPUTER	OTHER(2)	TOTAL COMP&OTH
TASK 2 -								
TEST PIT INVESTIGATION	$1,220.00	$1,225.00	$6,700.00	$7,925.00		$145.00	$15,580.00	$15,725.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
TOTAL	$1,220.00	$1,225.00	$6,700.00	$7,925.00	$0.00	$145.00	$15,580.00	$15,725.00

ASSUMPTIONS:

(1) Printing/Repro: 17,428 copies @ $.07/pg; Tel/Fax: 145 calls @ $5/call; 250 pgs @ $2/pg; Computer: 66 hrs non-NYSDEC @ $1.50/hr; CAD 6 hrs @ $7.50/hr

(2) Shipping: MOB 50 packs @ $50/pk; Test Pit 60 packs @ $25/pk; Sampling 13 packs @ $50/pk; DEMOB 20 packs @ $100/pk; Report 2 packs @ $25/pk

(3) Lab Cost: $15,580 (see attached table for backup)

	PRINTING & REPRO.	TELEPHONE & FAX	SHIPPING	TOTAL SHIP&PHONE	MATERIALS &SUPPLIES	COMPUTER	OTHER	TOTAL COMP&OTH
TASK 3 -								
CONCEPTUAL DESIGN	$200.00	$150.00	$80.00	$230.00		$60.00		$60.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
TOTAL	$200.00	$150.00	$80.00	$230.00	$0.00	$60.00	$0.00	$60.00

ASSUMPTIONS:

(1) Printing/Repro: 2,400 pgs @ $.07/pg; 32 sheets @ $1; Phone/Fax: 10 calls @ $5/call; 100 pgs @ $1; Shipping: 4 pkgs @ $20/pkg; CAD - 8 hrs @ $7.50/hr

	PRINTING & REPRO.	TELEPHONE & FAX	SHIPPING	TOTAL SHIP&PHONE	MATERIALS &SUPPLIES	COMPUTER	OTHER	TOTAL COMP&OTH
TASK 4 -								
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
TOTAL	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

ASSUMPTIONS:

	PRINTING & REPRO.	TELEPHONE & FAX	SHIPPING	TOTAL SHIP&PHONE	MATERIALS &SUPPLIES	COMPUTER	OTHER	TOTAL COMP&OTH
TASK 5 -								
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
TOTAL	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

ASSUMPTIONS:

	PRINTING & REPRO.	TELEPHONE & FAX	SHIPPING	TOTAL SHIP&PHONE	MATERIALS &SUPPLIES	COMPUTER	OTHER	TOTAL COMP&OTH
TASK 6 -								
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
TOTAL	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

ASSUMPTIONS:

	PRINTING & REPRO.	TELEPHONE & FAX	SHIPPING	TOTAL SHIP&PHONE	MATERIALS &SUPPLIES	COMPUTER	OTHER	TOTAL COMP&OTH
TASK 7 -								
PROGRAM MANAGEMENT	$100.00	$50.00	$40.00	$90.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
				$0.00				$0.00
TOTAL	$100.00	$50.00	$40.00	$90.00	$0.00	$0.00	$0.00	$0.00

ASSUMPTIONS:

(1) Printing/Repro: 1,400 pgs @ $.07/pg; 2 sheets @ $1; Phone/Fax: 10 calls @ $5/call; Shipping: 4 pkgs @ $10/pkg

PROJECT: LOVE CANAL IRM

Analytical Method	No. of Samples	Field Duplicates	Sampler Blanks	Trip (1) Blanks	MS/MSD Spikes Analysis (2)	Total No. of Analysis
CLP Methods – TCL						
VOCs Water	4	0	0	4	3	11
B/N/A Water	4	0	0		3	7
Pest/PCB Water	4	0	0		3	7
VOCs Soil	8	1	0		3	12
B/N/A Soil	8	1	0		3	12
Pest/PCB Soil	8	1	0		3	12
TOTAL						

1. Enter estimated number of coolers that will contain water sample for VOCs
2. MS/MSD spike sample requires one additional set of sample bottles

PROJECT: LOVE CANAL IRM

	Total No. of Sample Analysis	ABB-ES Price Per Sample	ABB-ES Total	E3I Price Per Sample	E3I Total	NYTEST Price Per Sample	NYTEST Total
CLP Methods - TCL							
VOCs Water	11	$195	$2,145.00	$235	$2,585.00	$185	$2,035.00
B/N/A Water	7	$370	$2,590.00	$450	$3,150.00	$500	$3,500.00
Pest/PCB Water	7	$185	$1,365.00	$185	$1,295.00	$185	$1,295.00
VOCs Soil	12	$205	$2,460.00	$250	$3,000.00	$185	$2,220.00
B/N/A Soil	12	$380	$4,560.00	$480	$5,760.00	$500	$6,000.00
Pest/PCB Soil	12	$205	$2,460.00	$210	$2,520.00	$185	$2,220.00
			$15,580.00		$18,310.00		$17,270.00

SCHEDULE 2.11(d) 2
CONSULTANT OWNED EQUIPMENT

TASK 2 - TEST PIT INVESTIGATION

ITEM	QUANTITY	USAGE RATE	TOTAL COST
NSSC EQUIPMENT		(PER DAY)	
GEOTECH INLINE FILTER		$2.00	$0.00
WILDCO SEDIMENT CORE SAMPLER		$23.00	$0.00
NORWELL TEFLON BAILER		$7.00	$0.00
KECK SUB. PUMP SP-81		$46.00	$0.00
ISCO 1580		$18.00	$0.00
ISCO NICAD BATERIES		$3.00	$0.00
ISCO POWER PACK		$3.00	$0.00
SPLIT SPOON SAMPLER		$25.00	$0.00
BOMB SAMPLER		$11.00	$0.00
YSI 3500 PH/COND/TEMP METER		$24.00	$0.00
HNU 101 PHOTO. METER		$45.00	$0.00
PHOTOVAC TIP1		$35.00	$0.00
PHOTOVAC 10550		$112.00	$0.00
TEI PID METER	25	$40.00	$1,000.00
DRAEGER PUMP	18	$6.00	$108.00
RADIATION METER		$4.00	$0.00
O2 DEFICIENCY/L.E.L. METER	21	$10.00	$210.00
GASCOPE MODEL 60		$12.00	$0.00
ESCAPE RESPIRATOR	75	$4.00	$300.00
H2O LEVEL METER		$3.00	$0.00
BALANCE		$19.00	$0.00
VWR OVEN		$5.00	$0.00
COLEMAN COOLER	250	$1.00	$250.00
OTHER EQUIPMENT			
HERMIT DATA LOGGER		$15.00	$0.00
TRANSDUCER		$19.00	$0.00
STAINLESS STEEL BUCKETS		$10.00	$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
			$0.00
TOTAL			$1,868.00

HEALTH AND SAFETY – PERSONAL PROTECTION & SITE SAFETY EQUIPMENT

TASK 2	TOTAL DAYS	LUMP SUM	TOTAL COST
PERSONAL PROTECTION		($PER PERSON PER DAY)	
LEVEL D - Daily Rate Includes (2):	35	$22.50 (1)	$787.50
• STEEL TOE BOOTS • COVERALLS	• NITRILE GLOVES • HARD HAT W/SHIELD		
LEVEL C - Daily Rate Includes (2):	30	$45.00 (1)	$1,350.00
• STEEL TOE BOOTS • OUTER BOOTS • TYVEK SUIT • NITRILE GLOVES	• DISPOSABLE GLOVES • RESPIRATOR • CARTRIDGE		
LEVEL B - Daily Rate Includes (2):	30	$70.00 (1)	$2,100.00
• STEEL TOE BOOTS • OUTER BOOTS • COVERALLS • TYVEK SUIT	• NITRILE GOLVES • DISPOSABLE GLOVES • SCBA & SPARE TANK • AIRLINE		
TOTAL (1)			$4,237.50

NOTES:
1) HEALTH & SAFETY PERSONAL PROTECTION EQUIPMENT COSTS ARE NOT INCLUDED IN TOTAL EQUIPMENT COSTS, SEE SUMMARY TABLE 4.0

2) DAILY HEALTH MONITORING COSTS ARE INCLUDED IN OVERHEAD

OTHER H&S EQUIPMENT		(PER EVENT)	
PORTABLE EYE-WASH STATION	2	$7.00	$14.00
FIRE EXTINGUISHER	2	$10.00	$20.00
FIRST AID KIT	2	$15.00	$30.00
FIRST AID KIT		$7.00	$0.00
EMERGENCY HORN	4	$7.00	$28.00
EMERGENCY LIGHT	2	$10.00	$20.00
FLASHLIGHT	1	$0.00	$0.00
STRETCHER	1	$10.00	$10.00
TOTAL			$122.00

ESTIMATOR'S INITIALS: JP

SCHEDULE 2.11(d) 5
CONSUMABLE SUPPLIES

TASK 2

ITEM	QUANTITY	UNIT	UNIT COST	TOTAL COST
GENERAL				
GLOVES, BUTYL	12	PAIR	$11.25	$135.00
TAPE, DUCT	12	ROLL	$8.00	$96.00
TAPE, 2 INCH	10	ROLL	$6.00	$60.00
TAPE, FILAMENT	6	ROLL	$8.00	$48.00
DECONTAMINATION SUPPLIES:				
-DEIONIZED WATER	50	GAL	$1.00	$50.00
-LIQUINOX				$0.00
-WASH BRUSHES	8	EACH	$5.00	$40.00
-SPRAYERS	8	EACH	$7.00	$56.00
-WASHTUBS	8	EACH	$4.00	$32.00
-SHEETING	5	ROLL	$24.00	$120.00
-SQUIRT BOTTLES	4	EACH	$4.00	$16.00
KIMWIPES	5	BOX	$1.40	$7.00
BAGGIES	20	BOX	$1.60	$32.00
ICE	40	BAG	$1.30	$52.00
BUBBLE PACK	150	FOOT	$0.20	$30.00
STAINLESS STEEL SPATULAS	20	EACH	$1.00	$20.00
STAINLESS STEEL SPOONS	20	EACH	$7.00	$140.00
ALUMINUM FOIL	2	BOX	$0.80	$1.60
LOG BOOK	2	EACH	$9.75	$19.50
SAMPLE PRESERVATION KIT		EACH	$10.00	$0.00
pH BUFFERS		EACH	$3.50	$0.00
CONDUCTIVITY STANDARDS		EACH	$7.00	$0.00
ETHYL ALCOHOL				
VERMICULITE		BAG	$12.00	$0.00
.45um FILTER PAPERS		PKG	$87.00	$0.00
TUBING				
-TEFLON		FOOT	$1.23	$0.00
-SILICON		FOOT	$3.22	$0.00
POWER PACK		EACH	$3.00	$0.00
RESPIRATOR CARTRIDGES	120	PAIR	$12.50	$1,500.00
COMPRESSED AIR BOTTLES	40	EACH	$13.80	$552.00
TOPOGRAPHIC MAPS		EACH	$5.50	$0.00
AERIAL PHOTOGRAPHS		EACH	$15.00	$0.00
TOTAL				$3,007.10

TASK 2 REV. 1

ITEM	QUANTITY	UNIT	UNIT COST	TOTAL COST
GC EXPENDABLE SUPPLIES:				
SYRINGES		EACH	$40.00	$0.00
SYRINGE NEEDLES		PKG	$11.00	$0.00
SYRINGE PLUNGER TIP		PKG	$15.00	$0.00
GC STANDARDS		EACH	$15.00	$0.00
DRAM VIALS		PKG	$75.00	$0.00
SEPTUM		EACH	$1.00	$0.00
CAP. COL. SLEEVES		EACH	$20.00	$0.00
GAS TUBING		50 FT	$50.00	$0.00
TUBING FITTINGS		PKG	$50.00	$0.00
DEIONIZED WATER	50	GAL	$1.00	$50.00
P/T METHANOL		GAL	$57.50	$0.00
H2SO4		GAL	$50.00	$0.00
HEXANE	3	GAL	$50.00	$150.00
PIPETTES, DISPOSABLE		EACH	$0.10	$0.00
40 ML. VIALS	40	EACH	$3.50	$140.00
COL. FERRULES		EACH	$15.00	$0.00
SPARE DET PARTS		PKG	$90.00	$0.00
SPARGER VESSEL		EACH	$35.00	$0.00
P/T TRAPS		EACH	$25.00	$0.00
INK CARTRIDGE		EACH	$11.00	$0.00
CHART PAPER		ROLL	$13.75	$0.00
KIMWIPES	4	EACH	$1.40	$5.60
LOG BOOK	3	EACH	$12.00	$36.00
LABELS	2	PKG	$15.00	$30.00
ELECTRICAL CON.		PKG	$25.00	$0.00
SNOOP		EACH	$6.00	$0.00
GC GASES		EACH	$100.00	$0.00
GLASSWARE		EACH	$1.00	$0.00
PROBE CLEANING		EACH	$6.00	$0.00
SILICONE TUBING		L.F.	$4.50	$0.00
JACKHAMMER		EACH	$35.00	$0.00
JACK		EACH	$15.00	$0.00
GAS		GAL	$1.00	$0.00
TOTAL				$411.60

TASK 2 REV. 1

ITEM	QUANTITY	UNIT	UNIT COST	TOTAL COST
SAMPLE CONTAINERS:				
GLASS:**				
1 L AMBER	25	EACH	$5.00	$125.00
1 L WIDE MOUTH		EACH	$6.50	$0.00
2 OZ	25	EACH	$3.50	$87.50
4 OZ	50	EACH	$5.00	$250.00
16 OZ	10	EACH	$5.00	$50.00
2.5 GALLON		EACH	$20.00	$0.00
40 ML VIALS	18	EACH	$3.50	$63.00
PLASTIC:				
60 ML		EACH		$0.00
125 ML		EACH	$3.50	$0.00
250 ML		EACH	$3.50	$0.00
500 ML		EACH	$3.50	$0.00
1 L		EACH	$5.00	$0.00
				$0.00
				$0.00
				$0.00
				$0.00
TOTAL				$575.50

**Includes 5% Breakage

TASK 2

REV. 1

ITEM	QUANTITY	UNIT	UNIT COST	TOTAL COST
FIELD OFFICE SUPPLIES:				
PENCILS	1	DOZ	$3.12	$3.12
PENS	1	DOZ	$5.00	$5.00
PENS, MARKING	4	EACH	$1.10	$4.40
EXTRA FINE PILOT PENS		EACH	$1.29	$0.00
THICK SHARPIES	12	EACH	$0.89	$10.68
HI LITERS	2	EACH	$0.79	$1.58
FILM & DEVELOPMENT	25	ROLL	$13.24	$331.00
TRASH CAN	2	EACH	$20.00	$40.00
TRASH BAGS	4	BOX	$4.00	$16.00
PAPER TOWELS	14	ROLL	$1.70	$23.80
MESSAGE PADS	1	EACH	$1.20	$1.20
SCOTCH TAPE	1	ROLL	$2.76	$2.76
FILE BOXES	4	EACH	$20.00	$80.00
FILE FOLDERS	2	BOX	$11.00	$22.00
EXPANDABLE FOLDERS	10	EACH	$2.00	$20.00
RUBBER BANDS	1	BOX	$5.35	$5.35
STAPLER	2	EACH	$13.95	$27.90
STAPLES	1	BOX	$2.00	$2.00
PAPER CLIPS	2	BOX	$0.55	$1.10
BINDER CLIPS - SMALL	2	BOX	$1.00	$2.00
BINDER CLIPS - LARGE	2	BOX	$5.15	$10.30
CALENDAR	1	EACH	$9.00	$9.00
EXTENSION CORD	2	EACH	$5.90	$11.80
MULTI OUTLET STRIP		EACH	$20.95	$0.00
COPIER PAPER	1	REAM	$9.00	$9.00
TONER		EACH	$15.00	$0.00
PAPER PADS		DOZ	$15.00	$0.00
COMPUTER DISKS		BOX	$36.50	$0.00
BULLETIN BOARD		EACH	$29.50	$0.00
TACKS	1	BOX	$3.00	$3.00
BROOM	2	EACH	$7.50	$15.00
DUST PAN	2	EACH	$5.00	$10.00
GATORAID	125	EACH	$2.50	$312.50
SODA		EACH	$0.60	$0.00
POST-IT NOTE PADS	2	EACH	$1.07	$2.14
ENVELOPES - SMALL	1	BOX	$5.75	$5.75
ENVELOPES - LARGE	1	BOX	$7.69	$7.69
TOILET PAPER	20	ROLL	$0.50	$10.00
SPRAY PAINT	4	CAN	$3.50	$14.00
FLAGGING	4	EACH	$2.00	$8.00
STAKES		EACH	$0.75	$0.00
PAINT (CANS)		GAL	$9.00	$0.00
ICE	45	BAG	$1.00	$45.00
BAGGIES	4	BOX	$1.60	$6.40
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
TOTAL				$1,079.47

Work Assignment No: D-032472-8
Site: Love Canal

SCHEDULE 2.11(d) 3
VENDOR-RENTED EQUIPMENT

03/05/91
REV. 1

TASK 2

ITEM	USAGE	UNIT	RENTAL RATE	TOTAL RENTAL COST
GEOPHYSICS INSTRUMENT RENTAL:				
EM-31 TERRAIN CONDUCTIVITY UNIT		DAY	$117.00	$0.00
SEISMIC - ES-2415		DAY	$400.00	$0.00
RESIST - BISON 2350b		DAY	$70.00	$0.00
MAGNETOMETER - EDA		DAY	$200.00	$0.00
GSSI SIR SYSTEM III GPR		DAY	$422.00	$0.00
M.D. - FISHER TW-6	23	DAY	$29.17	$670.91
T.C. - EM34.3		DAY	$84.00	$0.00
T.C - EM31		DAY	$51.00	$0.00
RESPIRABLE DUST MONITOR	5	WEEKS	$210.00	$1,050.00
				$0.00
				$0.00
TOTAL				$1,720.91

GC/SOIL GAS EQUIPMENT RENTAL				
HP-5890 CAP.		DAY	$41.00	$0.00
HP-5890 PKD		DAY	$41.00	$0.00
HP-3396 INT		DAY	$11.00	$0.00
TECHKAR P/T		DAY	$35.00	$0.00
HP AUTOSAMPLER		DAY	$35.00	$0.00
OVEN		DAY	$4.00	$0.00
WATER BATH		DAY	$2.00	$0.00
REFRIGERATOR		DAY	$3.00	$0.00
CAPILLARY COL		DAY	$10.00	$0.00
PACKED COLUMN		DAY	$2.00	$0.00
GSA REGULATORS		DAY	$2.00	$0.00
FUME HOOD		DAY	$7.00	$0.00
VORTEX		DAY	$3.00	$0.00
CENTRIFUGE		DAY	$3.00	$0.00
BALANCE		DAY	$6.00	$0.00
WASTE TANK		DAY	$2.00	$0.00
GENERATOR		DAY	$35.00	$0.00
INTERFACE CABLES		DAY	$2.50	$0.00
TOTAL				$0.00

TASK 2

ITEM	USAGE	UNIT	RENTAL RATE	TOTAL RENTAL COST
FIELD TRAILER OFFICE EQUIPMENT:				
RADIOS	18	EA	$29.50 /WEEK	$531.00
TELEPHONE:				
-INSTALLATION		L.S.	*	$0.00
-MONTHLY CHARGE		MO.	*	$0.00
COMPUTER		WEEK	*	$0.00
TRAILER:				
-OFFICE TRAILER		MO.	* *[SIZE]*	$0.00
-MOBILIZATION/DEMOBILIZATION		L.S.	*	$0.00
-SET UP/TEAR DOWN		L.S.	*	$0.00
-CLEANING		L.S.	*	$0.00
PORT-A-JOHN		WEEK	*	$0.00
ELECTRICITY:			*	
-MATERIALS (INSTALL SERVICE)		L.S.	*	$0.00
-ELECTRICIAN		HOUR	*	$0.00
GENERATOR		DAY	*	$0.00
COPIER	1	MO.	$200.00	$200.00
FACSIMILE		MO.	*	$0.00
		* *UNIT RATES SHOULD BE*		
		DETERMINED ON A SITE SPECIFIC		
		BASIS - CALL FOR QUOTES		
		IN YOUR AREA		
TOTAL				$200.00

ESTIMATOR'S INITIALS: ____

GRAND TOTAL EQUIPMENT AND SUPPLIES	
CONSULTANT OWNED EQUIPMENT	$1,868.00
SITE SAFETY EQUIPMENT	$122.00
GENERAL CONSUMMABLE SUPPLIES	$3,007.10
GC EXPENDABLE SUPPLIES	$411.60
SAMPLE CONTAINERS	$575.50
FIELD OFFICE SUPPLIES	$1,079.47
GEOPHYSICAL INSTRUMENT RENTAL	$1,720.91
GC/SOIL GAS EQUIPMENT RENTAL	$0.00
FIELD TRAILER OFFICE RENTAL	$200.00
TOTAL	$8,984.58

HEALTH & SAFETY - PERSONAL PROTECTION (COSTS ARE SUMMARIZED IN TABLE 4)	
LEVEL D	$787.50
LEVEL C	$1,350.00
LEVEL B	$2,100.00

APPENDIX A

QUALITY ASSURANCE PROJECT PLAN

PGW
2/12/91

1.0

QUALITY ASSURANCE PROJECT PLAN

TEST PIT INVESTIGATION

LOVE CANAL IRM
NIAGARA FALLS
NIAGARA COUNTY, NEW YORK

Revised 3/8/91
PGW

APPROVED FOR:
E.C. JORDAN CO.

James S. Atwell 2/4/91
Date

Corporate Officer
James S. Atwell, P.E.

Willard A. Murray 2/1/91
Date

QA Director
Willard A. Murray, Ph.D

Stephen A. Turner 1-29-91
Date

QA Manager
Stephen A. Turner

APPROVED FOR:
NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION

OK PGW 4/4/91
Date

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2.0 TABLE OF CONTENTS (CONTINUED)

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3.0 PROGRAM DESCRIPTION

3.1 PURPOSE

The purpose of this Quality Assurance Project Plan (QAPP) is to identify and assign responsibilities, and outline the requirements necessary for assuring that the specific tasks and actions undertaken by E.C. Jordan Co. (Jordan) during the Test Pit Investigation of the Frontier Avenue storm sewer in the southern drainage basin of the Emergency Declaration Area (EDA), Love Canal Site, Niagara Falls, New York are planned and executed in a manner consistent with quality assurance objectives. This QAPP provides guidance and specifications to assure that:

- field determinations and laboratory analytical results are of known quality and valid through the use of approved methods, preventive maintenance, calibration of equipment, and following analytical protocols;

- samples are obtained using appropriate, documented procedures, identified uniquely, and controlled through sample tracking systems and chain-of-custody (COC) protocols;

- records are retained as documentary evidence of the quality of samples, applied processes, equipment, and results;

- generated data are validated and their use in calculations is documented;

- calculations and evaluations are accurate, appropriate and consistent throughout the project; and

- safety is maintained by requiring inclusion of the Health and Safety staff in the project organization.

3.2 SCOPE

This document is intended to supplement the Work Plan for the Love Canal project prepared by Jordan in January 1991. The requirements of this QAPP apply to all Jordan and subcontractor activities as appropriate for each specific activity undertaken.

The prime responsibilities extend to all quality-related controls and activities. The quality control (QC) and quality assurance (QA) elements are aimed at preventing sub-standard or erroneous actions from occurring in essential areas. The content and format of the QAPP is based on "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans - QAMS-005/80" prepared by U.S. Environmental Protection Agency's (USEPA) Office of Research and Development.

3.3 PROJECT SUMMARY

The project summary is presented in Section 1.2 of the Work Plan.

3.4 MAJOR TASK SUMMARY

The major tasks to be completed for the Test Pit Investigation are summarized in Sections 3.0 and 4.0 of the Work Plan.

3.5 DELIVERABLES

The deliverables that are scheduled for submission to DEC are described in Sections 3.2.6 and 4.2 of the Work Plan.

3.6 SCHEDULE

The proposed schedule for the program is presented in Section 6.4 of the Work Plan.

4.0 PROGRAM ORGANIZATION AND RESPONSIBILITIES

4.1 ORGANIZATION

Jordan operates under a matrix system in which personnel belong to functional departments and, at the same time, are assigned to projects. Functional departments are responsible for developing and maintaining Jordan's engineering and scientific disciplines. They provide for personnel training and the establishment of engineering and scientific standards. Each project's organization is responsible for achieving project objectives and complying with program guidelines.

This portion of the QAPP addresses the project organization. Those who are assigned to a project are responsible for properly utilizing functional organization resources. In this way the entire resources of Jordan are made available to each project, but responsibility for initiating services and for ensuring acceptable results remains within the project organization. This responsibility carries with it the authority to initiate, modify, and stop activities, as appropriate for the assurance of project quality. It is the Quality Review Board's (QRB) role to assist the Project Manager (PM) and Task Leaders (TL) in meeting project goals while providing an independent evaluation of product quality.

4.2 SPECIFIC RESPONSIBILITIES

Figure 4-1 shows the project organization and its principal lines of communication. The responsibilities of the Jordan project positions and support organizations are summarized below.

Corporate Officer. The Corporate Officer (CO) is James S. Atwell, Vice-President of Jordan's Environmental Services. He is responsible for establishing a

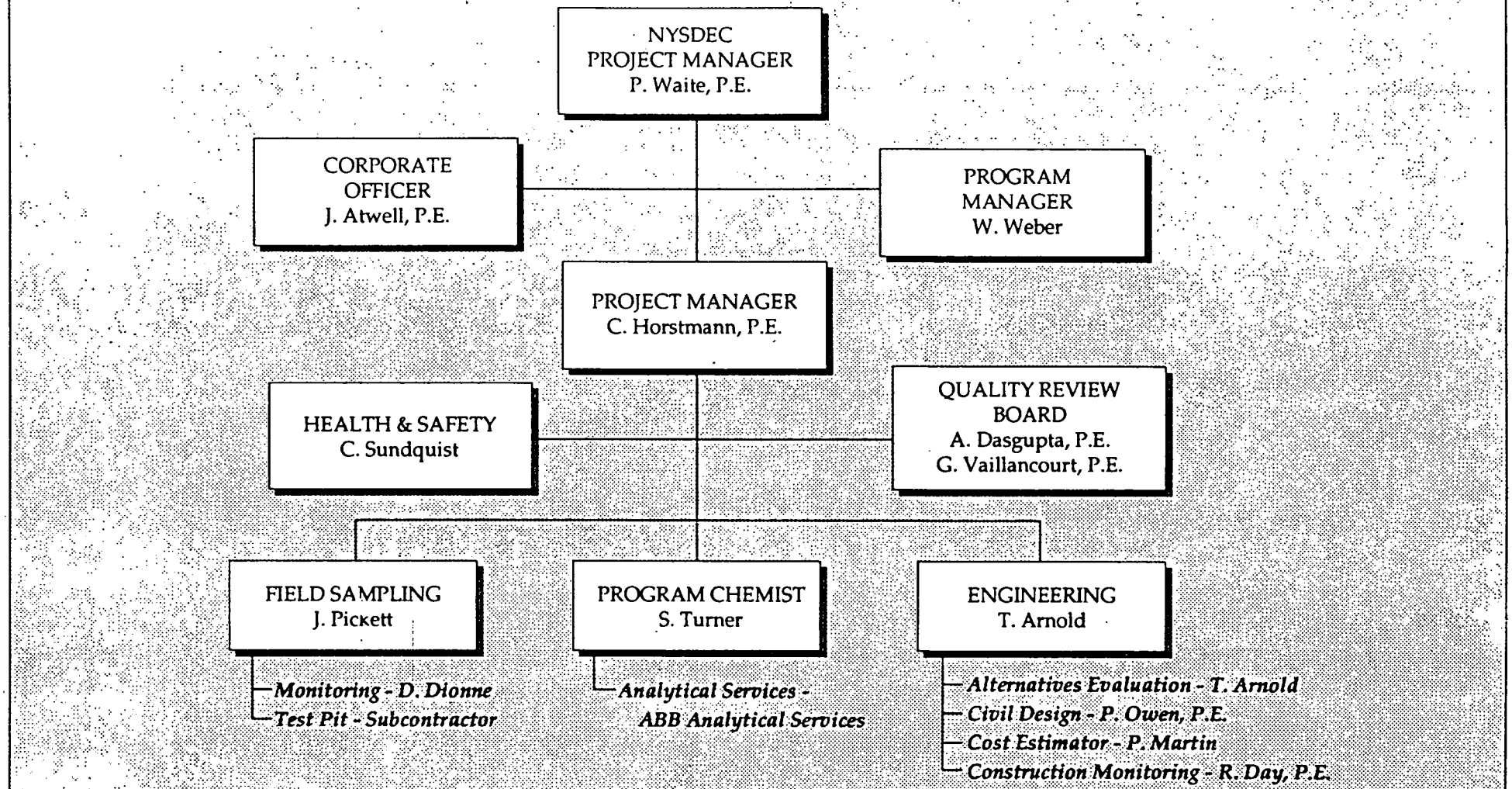


FIGURE 4-1
WORK ASSIGNMENT ORGANIZATION
LOVE CANAL OPERABLE UNITS 5 AND 17
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
E.C.JORDAN CO.

9012033D

contract for the services to be performed, for committing the corporate resources necessary to conduct the program work activities, and for supplying corporate-level input for problem resolution.

Program Manager. The Program Manager for the New York State Superfund Program (NSSC) is William J. Weber. The Program Manager has overall responsibility to organize and set operating procedures with NYSDEC.

Project Manager. The PM, Charles Horstmann, is responsible for the overall and day-to-day technical administration of the project and will be the primary technical contact for NYSDEC. The PM will be responsible for:

- initiation of project activities
- identification of project staff, equipment, and other resource requirements
- interfacing with NYSDEC on all cost, contractual, personnel, and other administrative matters
- monitoring task activities, and adjusting efforts on resources, as required, to help assure that existing budgets, schedules, and work programs are maintained
- providing regular briefings on the status of the project and preparation of monthly reports showing both technical progress and cost status

- providing assurance that project technical and financial records are kept according to the requirements of NYSDEC and Jordan

- implementation of subcontracting as required

Task Leaders. The TLs are responsible for:

- the appropriateness and adequacy of the technical and engineering services provided

- developing the technical approach and level of effort required to address each of the tasks/subtasks

- the day-to-day conduct of the work, including the integration of the input of supporting disciplines and subcontractors, (i.e., drilling or laboratory subcontractors)

- ongoing QC during performance of the work

- the technical integrity as well as the clarity and usefulness of all project work products

The TLs for the test pit program will be Jeff Pickett for the field operations and Tracy Arnold for the engineering studies.

Quality Review Board. A key component in the review process is the designation of a Quality Review Board for each project. The function of this group of senior technical and/or management personnel is to provide guidance on the technical aspects of the project. This is accomplished through periodic reviews of the services provided to ensure they: (1) reflect the accumulated experience of the firm; (2) are being produced in accordance with corporate policy; and (3) most

importantly, meet the objectives of the program as established by NYSDEC. The Quality Review Board also provides support for the QA Manager by implementing technical reviews of work in progress and of deliverables. The Quality Review Board serves as a resource for the QA Manager in evaluating the magnitude of identified QC problems and supporting the development of appropriate corrective action. Members of the QRB are identified in Figure 4-1.

Quality Assurance Manager (QAM). The QAM, Stephen A. Turner, has responsibility for establishing, overseeing, and auditing specific procedures for documenting and controlling analytical and field data quality. Many of the procedures will be implemented by other individuals, but the QAM must ensure that procedures are being implemented properly and the results interpreted correctly. The QAM works with the PM and TLs to ensure that established Jordan and NYSDEC protocols are followed.

Responsibilities of the QAM include:

- monitoring the QA and QC activities of the laboratory to ensure conformance with approved policies, procedures, and sound practices, and recommend improvements as necessary

- informing the PM and TLs and/or Subcontractor Laboratory management of nonconformance to the Approved QC Program

- ensuring that all records, logs, standard procedures, project plans, and analytical results are complete and maintained in a retrievable fashion

- ensuring that copies of standard procedures and project plans are distributed to all appropriate personnel involved in the project

- ensuring that sampling is conducted in a manner consistent with the QC Plan

The QAM will delegate implementation of analytical QC functions as appropriate to the Laboratory Analytical Task manager. The QAM will monitor the proper application of the program through review of all reports on a routine basis.

Laboratory Analytical Task Manager

The responsibility for implementing the laboratory QA Program resides with the Laboratory Analytical Task Manager. This responsibility includes the following duties:

- submitting a detailed Project QC Plan
- supporting the QAM
- providing sufficient equipment, space, resources, and personnel to conduct analyses and implement the project and QA Program
- ensuring that subsampling and other handling procedures are adequate for the sample types received
- overseeing the quality of purchased laboratory materials, reagents, and chemicals to ensure that these supplies do not jeopardize the quality of analytical results
- ensuring implementation of corrective action for any QC deficiencies
- ensuring that analysts are preparing QC samples and implementing and documenting corrective action when necessary

- ensuring that all sampling logs, instrument logs, and QC documents are maintained, completed with the required information, distributed and documented at the required frequency

- maintaining an awareness of the entire laboratory to detect conditions which might directly or indirectly jeopardize controls of the various analytical systems (e.g., improper calibration of equipment or cross-contamination through improper storage of samples)

- auditing sampling documentation and procedures to ensure that samples are labeled, preserved, stored, and transported according to prescribed methods

4.3 SUPPORT SERVICES

Analytical chemistry services will be provided by a laboratory certified by the New York State Department of Health.

5.0 QUALITY ASSURANCE OBJECTIVES

5.1 DATA QUALITY OBJECTIVES

Data Quality Objectives (DQOs) are based on the premise that different data uses require different levels of data quality. Data quality refers to a degree of uncertainty with respect to precision, accuracy, representativeness, completeness, and comparability. Specific objectives for each characteristic are established to develop sampling protocols, and to identify applicable documentation, sample handling procedures and measurement system procedures. These objectives are established based on site conditions, objectives of the project, and knowledge of available measurement systems. Data obtained during the investigation are intended to be used for site characterization, determination of the vertical and horizontal distribution of contaminants, and other uses consistent with an RI. The subsequent use of measurements in calculations and evaluations is also subjected to aspects of this QAPP as described in the following sections.

5.2 REPRESENTATIVENESS

Measurements will be made so that results are as representative of the media (e.g., soil, water) and conditions being measured as possible. Sampling protocols will be developed to assure that samples collected are representative of the media. Sample handling protocols (e.g., storage, transportation) are selected to protect the representativeness of the collected sample. Proper documentation will establish that protocols have been followed and sample identification and integrity assured.

Sample collection and field handling will be in accordance with the standard procedures contained in this QAPP.

5.3 PRECISION AND ACCURACY

Precision, the ability to replicate a value, and accuracy, the ability to obtain a true value, are addressed for all data generated. Data quality objectives for precision and accuracy are established for each major parameter to be measured at the site. These objectives are based on prior knowledge of the capabilities of the measurement system to be employed and are selected in accordance with the requirements of the project. The precision and accuracy requirements vary depending on their intended use. For example, a screening tool to identify the general extent of chemical distribution will not require the same precision and accuracy required to define the exact nature and amount of chemicals present at specific locations.

Calculations performed with the data generated are also checked for accuracy and precision by the TLs or their designees, and approved by the QAM.

5.4 COMPLETENESS

The characteristic of completeness is a measure of the amount of valid data obtained compared to the amount that was expected to be obtained under normal conditions. The amount of valid data expected is established based on the measurements required to accomplish project objectives. Because sampling and waste characterization activities often rely on a field protocol, the work plan provides an upper limit on the number of samples to be collected. For example, multiple depth soil sample collection may be specified, but exploration may be terminated for technical reasons prior to reaching the specified depth. In that case, it would not be possible to obtain a predetermined number of soil samples. The extent of completeness must therefore be reviewed on a relative basis for sample collection activities.

5.5 COMPARABILITY

The characteristic of comparability reflects both internal consistency of measurements made at the site and expression of results in units consistent with other organizations reporting similar data. Each value reported for a given measurement should be similar to other values within the same data set and within other related data sets. Comparability of data and measuring procedures must also be addressed. This characteristic implies operating within the calibrated range of an instrument and utilizing analytical methodologies which produce comparable results (e.g., data obtained for total recoverable phenolics via wet chemistry are not necessarily comparable to data obtained for phenol via Gas Chromatography/Mass Spectrometry (GC/MS)).

Measurements which appear as "outliers" compared to similar measurements will be reassessed. Units of measurement will be externally comparable by utilizing the appropriate standard units for each measurement system.

5.6 DATA QUALITY REQUIREMENTS

Analytical data from soil and water samples will be used to determine the extent of contamination within the site soils and to provide data for the development of alternatives.

Four USEPA levels of data quality applicable to the RI/FS process are described as follows:

- Level I: Qualitative information for identification of sampling locations and health and safety monitoring (e.g., photoionization (PI) meter screening of soil samples).

- Level II: Field analysis data based on qualitative/quantitative

methods performed on-site (e.g., field GC analysis). These data may provide quantitative chemical-specific information, but are not measured under the controlled conditions of a laboratory and do not typically include rigorous QA (e.g., matrix spikes, duplicates, reference standards).

- Level III: Laboratory-generated data obtained using USEPA-approved procedures, but using methods other than Contract Laboratory Program (CLP) Routine Analytical Services protocols. These data are typically used for engineering studies (e.g., treatability testing). These data are both qualitative and quantitative.

- Level IV: These data represent confirmational laboratory information generated using CLP methods and supported by a rigorous QA program, supporting documentation, and data validation procedures. These data are typically used for definitive site characterization, risk assessment, engineering alternative selection and design, and enforcement/litigation activities.

Soil samples will be screened with a PI meter in the field for health and safety and to assist in sample selection, providing Level I data. Laboratory data will be generated using NYSDEC Analytical Services Protocol (ASP) procedures, providing Level IV data quality.

6.0 SAMPLING PROCEDURES

6.1 GENERAL

The quality of sample collection techniques is assured by keying the technique used to both the medium/matrix to be sampled and the analytes of interest. Sample containers provided by Jordan are prepared in a manner consistent with USEPA protocol, as noted below.

Acquisition of environmental samples also requires specialized collection techniques to preserve their integrity and ensure that a representative portion of the source is collected. Media-specific sample collection techniques are specified in the following sections.

Further, unless the proper sample container preparation and sample preservation measures are taken in the field, sample composition can be altered by contamination, degradation, biological transformation, chemical interactions, and other factors during the time between sample collection and analysis. To maintain the in situ characteristics required for analysis, samples will be shipped in coolers packed with ice.

6.1.1 Sample Labels and Records

Sample labels will be prepared prior to initiation of work, using a computerized labeling system. Each sample will require several containers dependent on the intended analysis to be performed. At the time the sample is obtained, a sample record will be completed. In addition to the sample record, documentation will include:

- a plan of the site

- sample label numbers
- a description of the sample site
- other physical descriptors of the sample site (e.g., test pit depth, etc.)
- photographs of the sample site may be taken showing the sampling equipment and/or unusual conditions (orientation of photograph must be shown on sketch map)
- Chain of Custody (COC) documentation (see Section 7)

Identification of samples collected during the field investigation will be labeled with a code indicating sample type, sample identification, depth of sample (if applicable), and designation of duplicate samples.

Samples at the Love Canal site will be labeled using a 14-digit system, as follows:

Digits 1 & 2	Site locator either numbers of letter code
Digits 3 & 4	TP - Test pit soil sample MW - Monitoring well groundwater sample SG - Soil gas sample AS - Air sample QT - Trip blank QS - Sampler blank QF - Filtration blank SA - Screened auger groundwater sample
Digits 5, 6, 7	Horizontal sample locator

Ex: 101 x - to be used as fill in for numbers with less than 3 digits

102
x10
x11

Digits 8, 9, 10-Vertical sample locator

Ex:	xx1	x - used as above
	125	
	xxA	

Digits 11 & 12 Used as sampling event numbers when more than one round of sampling is required

Ex:	x1	Round 1
	x2	

Digits 13 & 14

xx	Regular
xD	Duplicate sample
xR	Replicate sample

6.2 PREPARATION OF SAMPLE CONTAINERS

Sample containers used in Jordan's sampling events are cleaned according to USEPA protocols. Jordan purchases precleaned sample containers through I-Chem, a supplier to the USEPA CLP. The procedures used by I-Chem are detailed below.

6.2.1 Semivolatile Organic Analyte Containers (1-liter amber glass bottles and 4oz. amber glass jars)

1. Wash containers, closures, and teflon liners in hot tap water with laboratory grade non-phosphate detergent.

2. Rinse three times with tap water.

3. Rinse with 1:1 nitric acid.

4. Rinse three times with American Society for Testing and Materials (ASTM) Type II water.

5. Rinse with pesticide-grade methylene chloride.

6. Oven dry.

7. Remove containers, closures, and teflon liners from oven.

8. Place teflon liners in closures and place closures on containers. Attendant to wear gloves and containers not to be removed from preparation room until sealed.

6.2.2 Volatile Organic Analyte Containers (40 ml glass vials and 2-oz glass jars)

1. Wash vials, septa, and closures in hot tap water with laboratory grade non-phosphate detergent.

2. Rinse three times with tap water.

3. Rinse three times with ASTM Type II water.

4. Oven dry vials, septa, and closures.

5. Remove vials, septa, and closures from oven.

6. Place septa in closures, teflon side down, and place on vials. Attendant to wear gloves and vials not to be removed from preparation room until sealed.

6.3 DECONTAMINATION PROCEDURES

Equipment to be decontaminated during the project may include: (1) backhoe; (2) tools; (3) monitoring equipment; and (4) sample containers. All decontamination will be done by personnel in protective gear appropriate for the level of decontamination as determined by the Site Safety Officer.

6.3.1 Backhoe

It is anticipated that the backhoe will be contaminated during borehole activities. After the excavation of each test pit, the backhoe bucket will be decontaminated over the excavated test pit as described in Section 3.2.4 of the Work Plan. It will be cleaned with a portable high pressure steam cleaner. Loose material will be removed by brush. The person performing this activity will be at the same level of health and safety personal protection used during the test pit investigation plus splash protection.

6.3.2 Tools

use disposable tools where applicable

Miscellaneous tools and samplers will be dropped into a plastic pail, tub or other container. The tools will be brushed off and rinsed (outside, if possible) and transferred into a second pail to be carried to further decontamination stations where they will be washed with a detergent solution, rinsed with clean potable water, and finally rinsed with ASTM Type II water.

6.3.3 Monitoring Equipment

Monitoring equipment will be protected as much as possible from contamination by draping, masking or otherwise covering as much of the instrument as possible with plastic without hindering the operation of the unit. The PI meter, for example, can be placed in a clear plastic bag which allows reading of the scale and operation of the knobs. The PI sensor can be partially wrapped, keeping the sensor tip and discharge port clear.

The contaminated equipment will be taken from the drop area and the protective coverings removed and disposed of in the appropriate containers. Any direct or obvious contamination will be brushed or wiped with a disposable paper wipe. The units can then be taken inside in a clean plastic tub, wiped off with damp

disposable wipes and dried. The units will be checked, standardized and recharged as necessary for the next day's operation. They will then be prepared with new protective coverings.

6.3.4 Sample Containers

Exterior surfaces of sample bottles will be decontaminated prior to packing for transportation to the analytical laboratory. Sample containers will be wiped clean at the sample site, taken to the decontamination area to be further cleaned, as necessary, and transferred to a clean carrier. The sample identitification is noted and checked off against the chain-of-custody record. The samples are then stored on ice in a secure area prior to shipment.

6.4 SAMPLING SITE LOCATION

The rationale for each sampling site location is identified in Section 3.2.2 of the Work Plan. To permit proper evaluation of the sample analysis results it is important that the actual location of the samples be properly documented. If possible sampling sites will be marked in the field with stakes or flagging. All sampling site locations will be accurately referenced on a base map. Photographs of sampling sites will be taken as necessary to document site conditions.

6.5 SAMPLING

6.5.1 General Sampling Methodology

Sampling programs are undertaken to define the location, nature, and concentration of contaminants in the subsurface at the site. The location and distribution of contaminants at a given site are governed by many factors, including:

- site operation or waste disposal practices
- site design
- site closure
- waste characteristics
- site topography and surface drainage
- climate
- site geology

Development of a sampling plan that will effectively reveal the distribution and magnitude of contamination at a specific site requires at a minimum:

- an assessment of the factors listed above
- evaluation of the methodology and results of any previous sampling and analysis programs which may have been completed at the site
- definition of the scope and objectives of the project

The sampling procedures for soil and water (described in Section 3.2.3 of the Work Plan) have been selected to provide a practical and efficient means of obtaining samples in a manner consistent with safety protocol and QA/QC requirements. Additionally, they employ equipment that is normally available for use.

Maintaining proper records is a significant aspect of sample taking. At the time samples are obtained, the following must be recorded by the sampler:

- sample site location (e.g., grid coordinates baseline station and offset, or the location plotted on a map or aerial photograph)
- sample type and depth

- date and time of sampling
- project and sample designations
- sampler identification
- analyses requested

Additionally, the sampler must initiate COC procedures and describe the sample site in adequate detail to allow the analytical results to be properly interpreted, if necessary, and to allow collection of additional samples from the same sample site. Jordan uses preprinted labels, standarized record forms and photographs to expedite this process and ensure uniformity of records. The entire soil sampling process is designed and conducted in a manner that provides properly documented samples suitable for the intended analyses.

6.5.2 Test Pit Samples

The procedure for collecting test pit samples is described in Section 3.2.3 of the Work Plan.

6.5.3 Water Samples

Water encountered in the bottom of the test pit excavations will be sampled as described in Section 3.2.3 of the Work Plan.

6.6 PERSONNEL QUALIFICATIONS AND TRAINING

The QAM reviews the assignment of technical staff and the project/program management plan with regard to appropriate qualifications in the technical areas relevant to the project and any associated QC techniques. This involves an

assessment of individual qualifications and a resolution of training needs prior to the commencement of data generation/manipulation activities. Training typically consists of one or more of the following activities:

- general briefings covering all aspects of QA program and project plans
- specific briefings on individual QA project plans
- specific briefings on individual QA and QC procedures or activities
- required reading of pertinent QA-related documents
- participation in USEPA-approved and other training courses

The QAM reassesses personnel training periodically with regard to the fulfillment of this QA program.

Jordan personnel involved with hazardous waste site investigations are required to attend an approved 40-hour health and safety course prior to working on hazardous waste sites. In addition, personnel are required to attend annual 8-hour, in-house refresher health and safety training courses which are used to review: (1) health and safety requirements and principals, (2) sampling procedures, (3) documentation procedures, (4) operational procedures, and (5) safety equipment use and function.

Jordan's policy is to staff projects with fully capable and expertly trained personnel. Jordan typically uses a cross-section of junior-, middle-, and senior-level personnel to implement field sampling and investigation programs. By using this cross section, no personnel are put in a position of responsibility to which they cannot respond.

7.0 SAMPLE CUSTODY

7.1 GENERAL

Jordan has established a program of sample COC that is followed during analytical sample handling activities from the field through laboratory operations. This program is designed to assure that each sample is accounted for at all times. Field data sheets, COC records, and analytical request forms (ARFs) must be completed by the appropriate sampling and laboratory personnel for each sample. The objective of the Jordan sample custody identification and control system is to assure that:

- all samples scheduled for collection, as appropriate for the data required, are uniquely identified
- the correct samples are analyzed and are traceable to their records
- important sample characteristics are preserved
- samples are protected from loss or damage
- a forensic record of sample integrity is established
- client confidentiality is maintained
- all required analytical samples are indicated on labels and shipping manifests

- once the label is affixed to the bottle and covered with clear plastic tape, sample identification is virtually unalterable without evidence

The COC protocol followed by the sampling crews involves:

- Recording sampling locations, sample bottle identification, and specific sample acquisition measures on the appropriate forms.

- Using prepared sample labels to document all information necessary for effective sample tracking.

- Completing standard field data record forms to establish analytical sample custody in the field before sample shipment.

Labels are normally developed for each sample to be collected. Each label is numbered to correspond with the appropriate sample(s) to be collected. A summary of the labels prepared, with space for sample tracking and notations, is also generated. This sample manifest assists sample control in the field and is eventually retained as part of the project file.

The COC record is used to:

- document sample handling procedures including sample location, sample number, and number of containers corresponding to each sample number

- document the sample

- document the COC process

The COC description section requires:

- the sample number and sample bottle identification number, where applicable
- the names of the sampler(s) and the person shipping the analytical samples
- the date and time that the analytical samples were delivered for shipping
- the names of those responsible for receiving the analytical samples at the laboratory

A COC record is shown in Figure 7-1.

The COC record is completed in quadruplicate. Two copies accompany the samples to the laboratory, another is kept by the sample crew chief and transferred to the Laboratory Services Coordinator (LSC), and the last copy is maintained in the project file. Additional copies can be provided if needed for the project.

COC is also assured by the use of custody seals on sample shipments.

7.2 ANALYTICAL SAMPLE TRACKING

Tracking of samples commences at the time of sample container label generation. A site specific database of anticipated sample collection is created, then updated as analytical request forms and chain-of-custody are received from the field. A letter of receipt from the laboratory provides the information to verify:

CHAIN OF CUSTODY RECORD

Page ___ of ___

PROJECT NO. | PROJECT NAME

SAMPLERS (SIGNATURE)

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CON-TAINERS	SAMPLE TYPE	REMARKS INDICATE SOIL/WATER/AIR SEDIMENT/SLUDGE

RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED FOR DISPOSAL BY: (SIGNATURE)	DATE/TIME	REMARKS	

OH-62

ABB Environmental Services, Inc.

FIGURE 7-1

- analytical program
- turnaround time
- laboratory internal identification numbers
- chain-of-custody for shipped samples

Weekly reports are printed in two formats:

- ordered by due date
- ordered by sample identifiers

Missing information is pursued by the LSC.

As analytical data is received, the database is again updated. Data receipt dates are compared to contracted turnaround times for project management control. Weekly reports submitted to the QAM provide a means of identifying and initiating pursuit of missing data packages or missing results within a package.

In addition, the laboratories will complete the NYSDEC tracking, sample preparation, and analysis summary forms (Figures 7-2 through 7-6) to be included with the case narrative.

7.3 ANALYTICAL SAMPLE SHIPPING

Packing

Sample containers are generally packed in picnic coolers for shipment. Bottles are to be packed tightly so that no motion is possible. Styrofoam, vermiculite, and "bubble pack" are suitable packing material for most instances. (High-hazard samples require different packing.) Ice is placed in double "Ziploc" bags and added to the cooler along with all paperwork which is sealed in a separate "Ziploc" bag. The cooler top is then taped shut.

To be included with all lab data and with each workplan

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL REQUIREMENT SUMMARY

Customer Sample Code	Laboratory Sample Code	Analytical Requirements*					
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*Met-als	*Other

* Check Appropriate Boxes

9/89

* CLP, Non-CLP (Please indicate year of protocol)
* HSL, Priority Pollutant

FIGURE 7-2
SAMPLE IDENTIFICATION AND ANALYTICAL REQUIREMENT SUMMARY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
B/N-A
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed

9/89

FIGURE 7-3
B/N-A ANALYSES SUMMARY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS FORM
B/N-A
ORGANIC ANALYSES

Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxilary Clean Up	Dil/Conc Factor

9/89

FIGURE 7-4
B/N-A ORGANIC ANALYSES

9006093D

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOA
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Low Level Med.Level	Date Analyzed

9/89

FIGURE 7-5
VOLATILE ORGANIC ANALYTE
ANALYSIS SUMMARY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PESTICIDE/PCB
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed

9/89

FIGURE 7-6
PESTICIDE/PCB ANALYSES SUMMARY

Shipping

The standard procedure followed for shipping environmental samples to the analytical laboratory is:

1. All shipping of environmental samples collected by Jordan personnel must be done through Federal Express or equivalent overnight delivery service. Samples will be shipped to ensure laboratory receipt within 24 to 48 hours of sampling.

2. Prior to leaving for the field, the person responsible for sample collection must notify the LSC of the number, type and collection and shipment dates for the samples. If the number, type or date of shipment changes due to site constraints or program changes, the TL must notify the LSC of the changes. This notification from the field also needs to occur when sample shipments will arrive on Saturdays. The LSC will coordinate sample pick-up with the laboratory.

3. If prompt shipping and laboratory receipt of the samples cannot be guaranteed (i.e. Sunday arrival), the samplers will be responsible for proper storage of the samples until adequate transportation arrangements can be made.

4. The PM must notify the LSC when samples collected by the clients are going to be shipped to the laboratory.

The LSC keeps the laboratory informed of all field sampling activities. This communication is critical to allow the laboratory enough time to prepare for the samples' arrival.

The samples are shipped to the laboratory together with the COC documents and the ARFs.

8.0 CALIBRATION PROCEDURES AND FREQUENCY

8.1 CALIBRATION PROCEDURES FOR LABORATORY EQUIPMENT

The calibration procedures used by the contract laboratories are specified by the NYSDEC-ASP (Analytical Services Protocol, September 1989) and are addressed in the QA documents for the laboratory subcontractor.

8.2 CONTROL OF MEASURING AND TEST EQUIPMENT

Inspection, measurement, and test equipment shall be controlled, calibrated, adjusted, and maintained at prescribed intervals to ensure accuracy. Critical spare parts will be kept on inventory to minimize downtime. Calibration shall be performed against certified equipment having known valid relationships to nationally recognized standards. If no national standard exists, the basis for calibration shall be documented.

The method and interval of calibration for each item shall be defined and shall be based on equipment type, stability characteristics, required accuracy, and other considerations affecting measurement control. Special calibration shall be performed when accuracy of the equipment becomes suspect. When inspection, measurement, or test equipment are found to be out of tolerance, an evaluation shall be made of the validity and acceptability of items previously inspected or tested. If any inspection, measurement, or test equipment is consistently found to be out of calibration, it shall not be made available for use. Records shall be maintained and equipment shall be suitably marked to indicate calibration status.

8.3 FIELD INSTRUMENT CALIBRATION

Each piece of equipment will be calibrated prior to each day's use or as

specified by its manufacturer. Data is recorded on a form similar to that shown as Figure 8-1. The manufacturer's calibration procedures will be followed. The manufacturer and lot number of all standards will be noted on the field instrument QA record under chemicals used.

FIGURE 8-1

ABB ENVIRONMENTAL SERVICES INC.

FIELD INSTRUMENTATION & QUALITY ASSURANCE RECORD

PAGE _____ OF _____

PROJECT _____ JOB NUMBER _____ DATE _____

FIELD INSTRUMENTATION CALIBRATION DATA

INSTRUMENT TYPE / I.D. # — CALIBRATION INFORMATION

CREW # 1	USE	TEMP COMP.	BUFFERS USED / METER VALUE	CONDUCTIVITY READINGS
_____	☐ pH ☐ TEMPERATURE ☐ CONDUCTIVITY	☐ YES ☐ NO	☐ pH 4 _____ ☐ pH 7 _____ ☐ pH 10 _____	METER VALUE DRY _____ STANDARD VALUE _____ METER VALUE _____
_____	☐ pH ☐ TEMPERATURE ☐ CONDUCTIVITY	☐ YES ☐ NO	☐ pH 4 _____ ☐ pH 7 _____ ☐ pH 10 _____	METER VALUE DRY _____ STANDARD VALUE _____ METER VALUE _____
_____	PHOTOIONIZATION AIR QUALITY MONITORING DEVICE		☐ ZERO W/ BACKGROUND ☐ ZERO W/ ZERO AIR	SPAN GAS VALUE _____ METER VALUE _____
_____	_____		_____	

CREW # 2	USE	TEMP COMP.	BUFFERS USED / METER VALUE	CONDUCTIVITY READINGS
_____	☐ pH ☐ TEMPERATURE ☐ CONDUCTIVITY	☐ YES ☐ NO	☐ pH 4 _____ ☐ pH 7 _____ ☐ pH 10 _____	METER VALUE DRY _____ STANDARD VALUE _____ METER VALUE _____
_____	☐ pH ☐ TEMPERATURE ☐ CONDUCTIVITY	☐ YES ☐ NO	☐ pH 4 _____ ☐ pH 7 _____ ☐ pH 10 _____	METER VALUE DRY _____ STANDARD VALUE _____ METER VALUE _____
_____	PHOTOIONIZATION AIR QUALITY MONITORING DEVICE		☐ ZERO W/ BACKGROUND ☐ ZERO W/ ZERO AIR	SPAN GAS VALUE _____ METER VALUE _____
_____	_____		_____	

FLUIDS / MATERIALS RECORD

DEIONIZED WATER SOURCE: ☐ ABB STAGING ☐ PORTABLE SYSTEM ☐ OTHER _____

DECONTAMINATION FLUIDS: ☐ LIQUI-NOX ☐ TSP SOLUTION ☐ 20 % HNO3 LOT NO. _____ ☐ OTHER _____ LOT NO. _____

CALIBRATION FLUIDS: ☐ pH BUFFER 4 LOT NO. _____ 7 LOT NO. _____ 10 LOT NO. _____ ☐ COND. STANDARD LOT NO. _____

FILTRATION PAPER ID: ☐ IN LINE MANUF. _____ LOT NO. _____ ☐ VACUUM MANF. _____ LOT NO. _____ ☐ PRESSURE MANF. _____ LOT NO. _____

☐ HNO3 LOT NO. _____
☐ H2SO4 LOT NO. _____
☐ HCL LOT NO. _____
☐ NaOH LOT NO. _____
☐ ZnAOC LOT NO. _____
☐ NaTHIO LOT NO. _____
☐ MnSO4 LOT NO. _____
☐ ALK. IODIDE LOT NO. _____
☐ _____ LOT NO. _____
☐ _____ LOT NO. _____

SAMPLE CREW ID

CREW # 1 TYPE _____ NAMES: _____

CREW # 2 TYPE _____ NAMES: _____

MD 08-10-89

SAMPLER SIGNATURE

9.0 ANALYTICAL PROCEDURES

9.1 SELECTION OF PARAMETERS

Laboratory analyses have been scheduled for soil and water samples. Based on historical information regarding potentially hazardous material disposal, previous site information and an analysis of the data objectives, the following parameter groups have been selected for laboratory analysis:

- TCL parameters for soil and water, as defined by the current Statement of Work for NYSDEC ASP including:
  - VOCs
  - SVOCs
  - Pesticides/PCBs

A list of target analytes and their contract required quantitation limits are presented in Appendix A.

9.2 SELECTION OF PROCEDURES

With the exception of field measurements, the analytical procedures to be used for the this program will be as outlined in the 1989 NYSDEC ASP. These analytical protocols and the required laboratory deliverables were developed to provide legally defensible data. The detailed sampling program and associated analytical methods are provided in the site-specific work plan. The analytical methods selected are summarized in Table 9-1. Jordan will notify the NYSDEC project manager prior to any deviations from the work plan, QAPP, or analytical protocols.

TABLE 9-1

SAMPLE CONTAINERS, PRESERVATION, AND HOLDING REQUIREMENTS
QUALITY ASSURANCE PROJECT PLAN
LOVE CANAL IRM SITE

	SOIL				WATER			
PARAMETER	METHOD	CONTAINER	PRESERVATIVE	HOLDING TIME	METHOD	CONTAINER	PRESERVATIVE	HOLDING TIME
Volatiles by gas chromatogrphyl mass spectometry (GC/MS)	NYSDEC 89-1	2-4 oz. wide mouth glass	Cool to 4 C	7 days	NYSDEC 89-1	2-40ml glass vial, teflon lined septa	Cool to 4 C	7 days
Extractable Organics	NYSDEC 89-2 (SVOCs) and NYSDEC 89-3 (pesticides/PCBs)	2-4 oz. wide mouth glass Teflon lined lid	Cool to 4 C	Extract within 5 days, analyze 40 days	NYSDEC 89-2 and NYSDEC 89-3 (pesticides/PCBs)	4-1 liter amber glass	Cool to 4 C	Extract within 5 days, analyze 40 days

TABLE 9-2
LOVE CANAL IRM
SAMPLING PROGRAM

Sample Location	No. of Samples					
	VOCs-water (1)	VOCs-soil (1)	SVOCs-water (2)	SVOCs-soil (2)	Particles/PCBs-water (3)	Pesticides/PCBs-soil (3)
1. Double wide Test Pits						
1	1	2	1	2	1	2
2	1	2	1	2	1	2
3	1	2	1	2	1	2
4	1	2	1	2	1	2
2. Confirmation Test Pits						
1	1	2	1	2	1	2
2	1	2	1	2	1	2
3	1	2	1	2	1	2
4	1	2	1	2	1	2
Field duplicates	0	1	0	1	0	1
Sampler blanks	1	1	1	1	1	1
Trip blanks	4	0	0	0	0	0
MS/MSD/Blank spike (4)	1	1	1	1	1	1
TOTAL	16	21	12	21	12	21

(1) NYSDEC 89-1
(2) NYSDEC 89-2
(3) NYSDEC 89-3
(4) Includes 3 analyses

Rev. 1

9.3 LABORATORY CERTIFICATION

Analyses will be performed by ABB Environmental Services, Inc. This laboratory is certified by the New York State Department of Health ELAP.

9.4 LABORATORY QUALITY CONTROL REPORTS

In addition to the QC documentation required by the NYSDEC ASP, the laboratory will submit weekly QC summary reports to the QAM, as shown in Figures 9-1, 9-2, 9-3, and 9-4 to the QAM for review and approval. These reports will summarize compliance with QC criteria for all samples analyzed the previous week and will be accompanied by a cover letter which highlights the QC problems encountered and the corrective action taken.

ANALYTICAL LABORATORY WEEKLY QUALITY CONTROL SUMMARY
VOLATILE ORGANICS ANALYSES

Project: _____ SDG No: _____

Laboratory: _____ Week Ending: _____

Sample I.D.	Dilution Required (Y/N)	Holding Time Met (Y/N)	Surrogate Recoveries		Matrix Spike Recoveries	
			Acceptable (Y/N)	<10% (Y/N)	Acceptable (Y/N)	<10% (Y/N)

FIGURE 9-1
VOLATILE ORGANIC ANALYSES
QUALITY CONTROL SUMMARY
QUALITY ASSURANCE PROJECT PLAN
LOVE CANAL IRM

ANALYTICAL LABORATORY WEEKLY QUALITY CONTROL SUMMARY
SEMIVOLATILE ORGANICS ANALYSES

Project: _____ SDG No: _____

Laboratory: _____ Week Ending: _____

Sample I.D.	Dilution Required (Y/N)	Holding Time Met (Y/N)	Surrogate Recoveries		Matrix Spike Recoveries	
			Acceptable (Y/N)	<10% (Y/N)	Acceptable (Y/N)	<10% (Y/N)

FIGURE 9-2
SEMIVOLATILE ORGANIC ANALYSES
QUALITY CONTROL SUMMARY
QUALITY ASSURANCE PROJECT PLAN
LOVE CANAL IRM

ANALYTICAL LABORATORY WEEKLY QUALITY CONTROL SUMMARY
INORGANICS ANALYSES

Project: _____ SDG No: _____

Laboratory: _____ Week Ending: _____

Sample I.D.	Holding Time Met (Y/N)	Surrogate Recoveries		Duplicate Results Acceptable (Y/N)	LCS Results Acceptable (Y/N)	ICP Serial Dilution Acceptable (Y/N)
		Acceptable (Y/N)	<10% (Y/N)			

FIGURE 9-3
INORGANIC ANALYSES
QUALITY CONTROL SUMMARY
QUALITY ASSURANCE PROJECT PLAN
LOVE CANAL IRM

ANALYTICAL LABORATORY WEEKLY QUALITY CONTROL SUMMARY
PESTICIDES/PCBs ANALYSES

Project: _____ SDG No: _____

Laboratory: _____ Week Ending: _____

Sample I.D.	Dilution Required (Y/N)	Holding Time Met (Y/N)	Surrogate Recoveries		Matrix Spike Recoveries	
			Acceptable (Y/N)	<10% (Y/N)	Acceptable (Y/N)	<10% (Y/N)

FIGURE 9-4
PESTICIDES/PCBs ANALYSES
QUALITY CONTROL SUMMARY
QUALITY ASSURANCE PROJECT PLAN
LOVE CANAL IRM

10.0 DATA REDUCTION, VALIDATION, AND REPORTING

10.1 REDUCTION

Data reduction is the process of converting measurement system outputs to an expression of the parameter which is consistent with the comparability objective. Calculations made during data reduction are described in the referenced analytical methods and in the participating laboratories' QA Program Documents.

Upon receipt, analytical data packages are turned over to the data management staff for reduction to standard data tabulations. This reduction may occur in one of three ways:

- the data is manually entered into data table templates
- the data is downloaded directly from the laboratory computer
- the data is loaded from magnetic media supplied with the data package by the laboratory

In all cases, the electronic version of the standard data tabulation is checked against the hardcopy data package.

Completed data tabulations are provided to the data validation staff along with the original data packages. The original data, tabulations, and magnetic media are stored in a secure and retrievable fashion.

10.2 VALIDATION

Validation of measurements is a systematic process of reviewing a body of data to provide assurance that the data are adequate for their intended use. Validation of laboratory data will be performed in accordance with "Laboratory Data Validation, Functional Guidelines for Evaluating Organics Analyses" (USEPA, February 1, 1988) and "Laboratory Data Validation, Functional Guidelines for Evaluating Inorganics Analyses" (USEPA, June 13, 1988), as well as the appropriate USEPA Region II revisions to these protocols. In addition the validation protocols will be modified to include laboratory requirements in the NYSDEC ASP. The process includes the following activities:

- auditing measurement system calibration and calibration verification
- auditing QC activities
- screening data sets for outliers
- reviewing data for technical credibility vs. the sample site setting
- auditing field sample data records and COC
- checking intermediate calculations
- certifying the above process

These guidelines provide criteria for data validation which evaluates the QC data deliverables accompanying the different analytical procedure outputs. Validation will be performed by NYSDEC.

Field data collection and interpretation will follow the process illustrated as Figure 10-1. Prior to data collection, determinations are made regarding the data to be gathered in the field and the methodology to be used. Once the data are obtained, they will be reviewed and assessed as to their adequacy. Data validation results are used to evaluate data utility. An example spreadsheet summarizing the validation results is presented in Figure 10-2.

- Trip blanks, field blanks, and method blanks will be evaluated for potential laboratory or field sampling contamination.

- Matrix spike duplicate recoveries will be used to evaluate analytical precision and accuracy.

- Field duplicates will be used to assess sampling precision and environmental matrix heterogeneity.

An example spreadsheet summarizing the validation results for each sample is included in Figure 10-2.

10.3 REPORTING

Three presentations of the analytical data will be prepared by Jordan's Environmental Chemistry group. The data tables will represent:

1. The raw data as received from the laboratory, tabulated by medium and analytical fraction.

2. The annotated data resulting from the validation process, tabulated in the same format (Figure 10-3).

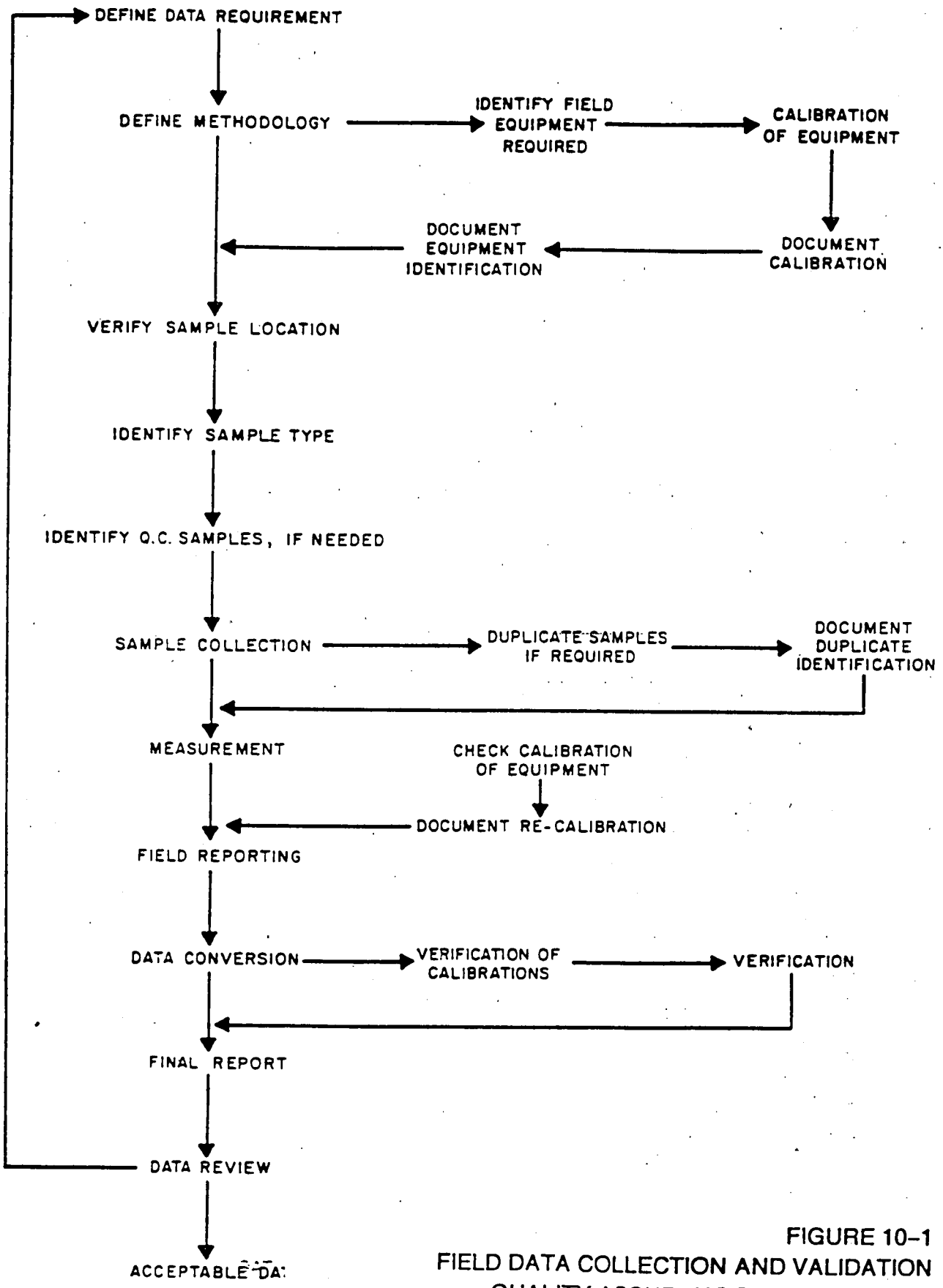


FIGURE 10-1
FIELD DATA COLLECTION AND VALIDATION
QUALITY ASSURANCE PROJECT PLAN

SDG No.	Sample ID	Matrix	VOA	BNA	Comments
SED-1	NLSDXX1XXX01XX	Soil	NO	NO	V - Calibration %RSD/%D > 25% estimate positive values; > 50% estimate ND. SV - Reject Benzoic Acid RF < 0.05. Calibration %RSD/%D > 25% estimate positive values; > 50% estimate ND.
SED-1	NLSDXX2XXX01XX	Soil	NO	OK	Calibration %RSD/%D > 25% estimate positive values; > 50% estimate ND. Reject 2-Butanone RF < 0.05. Low surrogate recovery, estimate all compounds (matrix interference).
SED-1	NLSDXX3XXX01XX	Soil	NO	OK	Calibration %RSD/%D > 25% estimate positive values; > 50% estimate ND. Reject 2-Butanone RF < 0.05. Low surrogate recoveries, estimate all compounds (matrix interference).
SED-1	NLSDXX3XXX01XXRE	Soil	NO	NR	Calibration %RSD/%D > 25% estimate positive values; > 50% estimate ND. Reject 2-Butanone RF < 0.05. Low surrogate recoveries, estimate all compounds (matrix interference).
SED-1	NLSDXX4XXX01XX	Soil	NO	OK	Reject 2-Butanone RF < 0.05. All internal standard areas non-compliant, estimate all compounds.
SED-1	NLSDXX4XXX01XXRE	Soil	NO	NR	All internal standard areas non-compliant, estimate all compounds. High surrogate recovery, estimate all positive compound results (matrix interference).
SED-1	NLSDXX5XXX01XX	Soil	NO	OK	All internal standard areas non-compliant, estimate all compounds. High surrogate recoveries, estimate positive compound results (matrix interference). Reject 2-Butanone RF < 0.05.
SED-1	NLSDXX5XXX01XXRE	Soil	NO	NR	All internal standard areas non-compliant, estimate all compounds. High surrogate recovery, estimate positive compound results (matrix interference).
SED-1	NLSDXX6XXX01XX	Soil	NO	OK	All internal standard areas non-compliant, estimate all compounds. High surrogate recoveries, estimate positive compound results (matrix interference). Reject 2-Butanone RF < 0.05.
SED-1	NLSDXX6XXX01XXRE	Soil	NO	NR	Internal standard areas non-compliant, estimate all compounds quantitated using Chlorobenzene-d5. Poor surrogate recoveries, estimate all compounds (matrix interference).
SED-1	NLSDXX7XXX01XX	Soil	NO	OK	
SED-1	NLSDXX7XXX01XXRE	Soil	NO	NR	

FIGURE 10-2
SAMPLE VALIDATION SPREADSHEET
QUALITY ASSURANCE PROJECT PLAN

PROJECT:

Figure 10-3

Volatile Organic Soil Analysis (ug/kg)

Table 2
Validation / Summary Table

11/21/90

SAMPLE LOCATION:	09PS907X0201XX	09PS907X0401XX	09PS907X0701XX	09PS909X0101XX	09PS909X0301XX	09PS909X0601XX	11PS11050101XX	11PS11050201XX
LAB NUMBER:	370450	370446	370448	370447	370449	370453	370426	370440
DATE SAMPLED:	09/19/90	09/19/90	09/19/90	09/19/90	09/19/90	09/19/90	09/18/90	09/18/90
DATE ANALYZED:	09/26/90	09/25/90	09/25/90	09/25/90	09/26/90	09/26/90	09/24/90	09/24/90

ANALYTE	CRQL								
Chloromethane	10	11 U	11 U	13 U	11 U	11 U	13 U	12 U	11 U
Bromomethane	10	11 U	11 U	13 U	11 U	11 U	13 U	12 U	11 U
Vinyl Chloride	10	11 U	11 U	13 U	11 U	11 U	13 U	12 U	11 U
Chloroethane	10	11 U	11 U	13 U	11 U	11 U	13 U	12 U	11 U
Methylene Chloride	5	20 U	23 U	45 U	15 U	19 U	20 U	62 U	48 U
Acetone	10	12 U	21 UJ	23 U	16 UJ	15 U	22 U	31 UJ	32 UJ
Carbon Disulfide	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
1,1-Dichloroethene	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
1,1-Dichloroethane	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
1,2-Dichloroethene (total)	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
Chloroform	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
1,2-Dichloroethane	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
2-Butanone	10	11 U	11 U	13 U	11 U	11 U	13 U	12 U	11 U
1,1,1-Trichloroethane	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
Carbon Tetrachloride	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
Vinyl Acetate	10	11 U	11 U	13 U	11 U	11 U	13 U	12 U	11 U
Bromodichloromethane	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
1,2-Dichloropropane	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
cis-1,3-Dichloropropene	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
Trichloroethene	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
Dibromochloromethane	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
1,1,2-Trichloroethane	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
Benzene	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
trans-1,3-Dichloropropene	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
Bromoform	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
4-Methyl-2-Pentanone	10	11 U	11 U	13 U	11 U	11 U	13 U	12 U	11 U
2-Hexanone	10	11 U	11 U	13 U	11 U	11 U	13 U	12 U	11 U
Tetrachloroethene	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
1,1,2,2-Tetrachloroethane	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
Toluene	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
Chlorobenzene	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
Ethylbenzene	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
Styrene	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
Total Xylenes	5	5 U	6 U	6 U	5 U	5 U	6 U	6 U	6 U
Dilution Factor:		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Percent Solids:		93	90	78	95	93	77	83	88
Associated Method Blank:		GH070851B12	GH070846B12	GH070851B12	GH070846B12	GH070851B12	GH070851B12	GH070846B12	GH070846B12
Associated Equipment Blank:		-	-	-	-	-	-	-	-
Associated Field Blank:		-	-	-	-	-	-	-	-
Associated Trip Blank:		-	-	-	-	-	-	-	-

Box Number: 4607-504

3. A summary table, presenting only that data which survives the validation process and is considered suitable for site interpretation.

The validated data table (number 2 above) is the formal presentation of analytical data and includes the following information in a format suitable for review:

- Sample Number
- Date Sampled
- Sample Numbers of Associated Analyses (Field, Trip, and Equipment Blanks)
- Analyte Name
- Reporting Units
- Detection Limit
- Analytical Results
- Validation Qualifiers
- Any Required Footnotes

11.0 INTERNAL QUALITY CONTROL

11.1 FIELD QUALITY CONTROL

Quality control procedures have been established for Jordan's field activities. Field QC activities include the use of calibration standards for PI measurements. Field QC samples to be submitted to the laboratory include:

- trip blanks
- field duplicates
- sampler blanks

These samples provide a quantitative basis for evaluating the data reported.

Trip Blanks

Trip blanks are required for assessing the potential for contaminating samples with VOCs during sample shipment. The trip blank consists of a VOC sample container which is shipped to the site with the other VOC sample containers and filled on-site with reagent water. A trip blank is included with each shipment of water samples scheduled for VOC analysis and will be analyzed with the other VOC samples.

Field Duplicates

One duplicate soil sample will be submitted for analysis of all parameters specified for the original samples.

This duplicate is intended to assess the homogeneity of the sampled media and the precision of the sampling protocol. True duplicates of soil samples are not possible because chemicals are typically not uniformly distributed in these

materials. One soil and one water sample for MS/MSD analyses will be collected to assess laboratory precision and accuracy.

Sampler Blanks

One soil and one water sampler blank will be collected during the Love Canal test pit program. VOC, SVOC, or pesticides/PCBs present within or on the sampling apparatus where intimate contact with the sample occurs, are assessed by rinsing the sampling apparatus with ASTM Type II water following decontamination. Rinsates are collected directly into the appropriate water container.

Completeness

Completeness of scheduled sample collection will be controlled in the field by comparing a computer generated label inventory with samples actually collected each day. Daily checking of field data sheets and comparison of transport and COC logs will provide further control of documentation and completeness.

11.2 QUALITY REVIEW OF STUDIES AND REPORT PREPARATION

The purpose of quality reviews through the course of studies, designs, and reports is to ensure that the service, designs, and documents produced by each department meet currently accepted professional standards. The level of effort for each assignment will vary depending on type of assignment, duration, and size. Review of small projects may entail periodic discussions between Technical Staff, the TLs and PM. Quality control on larger assignments may require that the review personnel be involved. Quality control reviews should be scheduled on a routine basis, but the option of holding a QC review at any time is always open. The time required to plan, schedule, and conduct QC reviews should be considered part of all other design, writing, and checking phases of a project.

Each assignment is normally divided into phases for internal QC reviews. At each phase, the review should include client goals, contractual commitments, technical merit, timing, budget, assignment of appropriate personnel, department coordination, project problem resolution, documentation, and consistency with company policy. Key elements to the success of any QC review are identification of problem areas, communication to implement solutions, and follow-up.

Quality control during the preparation of studies and reports relies on documentation of data utilized and peer review of conclusions drawn from the assembled data base. The comparability objective established for the project is of particular importance when data are derived from many sources (i.e., the data base is comprised of secondary measurements). Documentation of secondary data typically is accomplished via data verification/tracking checklists with accompanying written criteria describing "acceptable" data to insure consistency in data selection. This allows all data base components to be traced to the primary generator and forces a review of data quality as the data base is developed. All project personnel are responsible for utilization and monitoring of this process; compliance is audited by the QAM. Upon completion of the data base, data interpretation, evaluation, and report preparation commence. Interpretation may require consultation with Jordan's statistician and/or use of computerized statistical routines. Documentation is also prepared for statistical manipulation methodologies. Data evaluation incorporates peer review to provide broad-based insight to data correlations and interactions.

To enhance the professional quality of the company's studies and reports, discipline managers will also:

- require that reports refer to and are consistent in scope with the project proposal and contract

- require that report language and contents be chosen to foster client's understanding of risks and uncertainties by distinguishing fact from opinion and identifying risks and limitations in a clear and informative manner

Implementation of QC for reports involves the use of a technical review routing and sign-off forms. Figure 11-1 illustrates the Deliverable Review Tracking Form. The PM and Division Manager provide final review and release for all deliverables.

NSSC PROGRAM
DELIVERABLE REVIEW TRACKING FORM

PROJECT TITLE:	
PROJECT NO.:	
DELIVERABLE TITLE:	
AUTHOR(S):	
DATE TO BE SHIPPED:	
DATE DUE TO CLIENT:	
DRAFT	FINAL

REVIEWERS	REVIEWED BY:	DATE	SECOND REVIEW NEEDED (Y/N)
SITE MANAGER			
PROJECT TECHNICAL REVIEWER			
LEGAL			
PURCHASING			
PROGRAM MANAGER/ DEPUTY PROGRAM MANAGER			

DOCUMENT CAN BE RELEASED TO NYSDEC (Y/N)	
PROGRAM MANAGER	DATE

NOTES:

TRACKING FORM MUST ACCOMPANY DELIVERABLE TO PROJECT FILE

12.0 AUDITS

Quality assurance audits are performed to assure and document that QC measures are being utilized to provide data of acceptable quality and that subsequent calculations, interpretation and other project outputs are checked and validated. Both scheduled and unscheduled audits are provided for in the QA program.

The QRB may conduct project audits of calculations, interpretations and reports which are based on the measurement system outputs, and system and performance audits.

12.1 PROJECT SYSTEMS AUDIT

A project systems audit may be conducted on all components of measurement systems to determine proper selection and utilization of procedures and resources. The systems audit includes evaluation of both field and laboratory procedures.

Organization and Personnel. The project organization is reviewed for compliance with the proposed organization and for clarity of assigned responsibility. Personnel assigned to the project will be reviewed to determine that assigned responsibility, skill, and training of the personnel are properly matched. The Task Manager maintains firsthand knowledge of his team's capabilities and will discuss the organization's efficacy with the QRB. Assigned personnel may be interviewed by the QRB during an audit.

Facilities and Equipment. The audit will address whether field equipment and analytical instruments are selected and used to meet requirements specified by the project objectives stated in the QAPP. Equipment and facilities provided for personnel health and safety may also be evaluated. Calibration and documentation procedures for instruments used in the field also receive attention.

Analytical Methodology. A review of analytical methodology in regard to the data requirements for the project will be performed. An on-site observation of analyst technique, data reduction, and record keeping may be performed if determined necessary. Periodic review of precision and accuracy data is essential.

Sampling and Sample Handling Procedure. An audit of scheduled samples vs samples collected vs samples received for analysis may be performed. Field documentation may be reviewed. If deemed necessary, a site visit will be made to assure that designated control procedures are practiced during sampling activities.

Data Handling. During a system audit, the QRB will review data handling procedures with the TLs. Accuracy, consistency, documentation, and appropriate selection of methodologies will be discussed.

12.2 PROJECT REVIEW

Project reviews are scheduled and conducted by the department responsible for the project. The intent of project reviews are to assess scope compliance and overall technical quality of the contracted services. Senior technical staff, selected by the Department Manager, apply the accumulated experience of the company to a service during the conduct of the work. A project review is appropriate during, for example, work plan finalization, selection of design criteria, end of field program, determination of conclusions and recommendations, or the traditional stages of design completion. Documentation of the project review, especially identified action items and their follow-up, is essential to maximizing the utility of these reviews. Figure 12-1 provides an example project review record.

FIGURE 12-1

PROJECT REVIEW RECORD

Project Name: Date:

Project No.: Project Professional:

Site/Location:

Client:

Project Type: Department:

Objective of the Review:

Reviewers:

1.

2.

3.

Consensus Review Comments:

1.

FIGURE 12-1 (Continued)

PROJECT REVIEW RECORD

2.

3.

4.

5.

Follow-up Actions:

1.

2.

3.

4.

5.

FIGURE 12-1 (Continued)

PROJECT REVIEW RECORD

Date Follow-up Completed:

Project Professional:_____

Department Manager:_____

Distribute when completed to: VP-QA, Dept. Mgr., Project File, Reviewers

12.3 QUALITY ASSURANCE AUDIT REPORT

A written report of the QA project/system audit is prepared to include:

- an assessment of project team status in each of the major project areas
- clear statements of areas requiring improvement or problems to be corrected
- recommendations and assistance will be provided regarding proposed corrective actions or system improvements. If no action is required, the report will state that the QA audit was satisfactorily completed; and
- a timetable for any corrective action required.

Figure 12-2 provides an example QA Audit Report. Distribution of the report will include the QRB, QAM, CO, TLs, and PM.

FIGURE 12-2

QUALITY ASSURANCE AUDIT REPORT

Project: _____

Project No.: _____

Quality Assurance Coordinator: _____

Project Aspects Audited: _____

Laboratory/Technical Director: _____

Audit Conducted By: _____ for the period _____ to _____

Date of Audit: _____

Personnel Interviewed: _____

Purpose and Objectives of the Project Aspects Audited

Brief Description of the Sampling and Analytical Requirements

FIGURE 12-2 (Continued)

RESULTS OF THE QUALITY ASSURANCE AUDIT

Organization and Personnel

Facilities Utilized

Analytical Methodologies

FIGURE 12-2 (Continued)

RESULTS OF THE QUALITY ASSURANCE AUDIT

Sampling and Sample Handling

Quality Control Measures Utilized

Data Handling

FIGURE 12-2 (Continued)

RESULTS OF THE QUALITY ASSURANCE AUDIT

Quality Assurance Deficiencies

Recommended Corrective Actions and Schedule

_____

Signed Date

_____

Title

Distribution:

_____

Reviewed by Date

_____

Title

13.0 PREVENTIVE MAINTANANCE

13.1 ANALYTICAL INSTRUMENTATION

Preventive maintenance of analytical instrumentation is addressed by the participating laboratories' standard operating procedures to be presented in the Laboratory QA documents.

13.2 FIELD INSTRUMENTS

Preventive maintenance of field equipment is performed by analysts and staging area staff and routinely precedes each sampling event; more extensive maintenance is performed on the basis of hours in use. Sampling crews report on the performance of the equipment after each sampling event. Critical spare parts are kept in stock.

14.0 DATA ASSESSMENT

14.1 GENERAL

The purpose of data quality assessment is to assure that data generated under the program are accurate and consistent with project objectives. The quality of data will be assessed based on the precision, accuracy, consistency, and completeness of the data that are generated.

Data quality assessment will be conducted in three phases:

Phase 1

Prior to data collection, sampling and analysis procedures are evaluated in regard to their ability to generate the appropriate, technically acceptable information required to achieve project objectives. This QAPP meets this requirement by establishing project objectives defined in terms of parameters, analytical methods, and required sampling protocols.

Phase 2

During data collection, results will be assessed to assure that the selected procedures are efficient and effective and that the data generated provide sufficient information to achieve project objectives. The appropriateness of the precision and accuracy of selected measurement systems will also be evaluated. In general, evaluation of data will be based on performance audits, results of duplicate and spiked sample analyses, and review of completeness objectives.

Documentation may include:

- number and identity of duplicate samples collected

- number and identity of duplicate, spike, and field blank samples analyzed

- identification of statistical techniques, if used, to measure central tendency, dispersion, or testing for outliers

- use of historical data and its reference

- identification of analytical method

- data validation results

Phase 3

Following completion of data collection activities, an assessment of the adequacy of the data base generated in regard to completing project objectives will be undertaken by the QRB and PM. Recommendations for improved QC will be developed, if appropriate. In the event that data gaps are identified, the auditor may recommend the collection of additional raw data to fully support the project's findings and recommendations.

Each phase of the assessment will be conducted in conjunction with appropriate project staff.

14.2 PROCEDURES TO ASSESS PRECISION AND ACCURACY

Assessment of precision and accuracy of analytical data is accomplished via review of duplicate analyses (precision) and surrogate/matrix spike recovery (accuracy) both in reagent water and sample matrices. Precision is generally expressed as the coefficient of variation (CV). Accuracy of a reported value is reflected as percent recovery. Precision of methodologies must be assessed for

each matrix since distribution of contaminants may be non-homogeneous, especially in non-water matrices. Precision in samples must be reviewed with knowledge of the matrix and level of analyte present. Corrective action or documentation of substandard precision is a laboratory responsibility. Accuracy of methodologies must also recognize the impact of matrix interferences. Surrogate/matrix spike recoveries are generally specified by the analytical method under defined conditions. Each method which provides QC requirements and acceptance criteria also specifies the method of generating the data to be reviewed. Precision and accuracy of instrumental analyses is further addressed in the NYSDEC ASP. It is the laboratory's responsibility to attempt to identify the source of substandard recoveries and either take corrective action or document the cause as required by the NYSDEC ASP.

Calculations are presented below:

$$\%R = \frac{\text{observed value}}{\text{theoretical value}} \times 100$$

$$CV = (s/X) \times 100$$

where %R = percent recovery

CV = coefficient of variation

s = sample standard deviation

X = mean value of data set

Completeness is generally assessed as a percentage of data intended to be generated, and is most often utilized in Phase 3 of the data assessment process.

15.0 CORRECTIVE ACTION

Corrective or preventive action is required when potential or existing conditions are identified that may have an adverse impact on data quantity or quality. Corrective action can be immediate or long-term. In general any member of the program staff who identifies a condition adversely affecting quality can initiate corrective action by notifying in writing his or her supervisor, the QAM, and the QRB. The written communication will identify the condition and explain how it may affect data quality or quantity.

15.1 IMMEDIATE CORRECTIVE ACTION

Immediate corrective action is usually applied to spontaneous, non-recurring problems, such as an instrument malfunction. The individual who detects or suspects nonconformance to previously established criteria or protocol in equipment, instruments, data, methods, etc., will immediately notify his/her supervisor. The supervisor and the appropriate TL will then investigate the extent of the problem and take the necessary corrective steps. If a large quantity of data is affected, the TL must prepare a memorandum to the PM, QAM, and QRB. These individuals will collectively decide how to proceed. If the problem is limited in scope, the TL will decide on the corrective action measure, document the solution and notify the PM, QRB, and QAM in memorandum form.

15.2 LONG-TERM CORRECTIVE ACTION

Long-term corrective action procedures are devised and implemented to prevent the recurrence of a potentially serious problem. The QRB will be notified of the problem and will conduct an investigation to determine the severity and extent of the problem. They will then file a corrective action request with the PM and QAM.

In case of dispute between the QRB and the PM, the CO will make a final determination for the company.

Corrective actions may also be initiated as a result of other activities, including:

- performance audits
- system audits
- laboratory/field comparison studies
- QA project audits conducted by the QRB

The QAM will be responsible for documenting all notifications, recommendations, and final decisions. The PM and the QRB will be jointly responsible for notifying program staff and implementing the agreed-upon course of action. The QRB will be responsible for verifying the efficacy of the implemented actions. The development and implementation of preventive and corrective actions will be timed, to the extent possible, so as not to adversely impact either project schedules or subsequent data generation/processing activities. The QRB will also be responsible for developing or identifying and implementing routine program controls to minimize the need for corrective action.

16.0 REPORTS TO MANAGEMENT

Management personnel at all levels receive QA reports appropriate to their level of responsibility. The PM receives copies of all QA documentation. QC documentation is retained within the department which generated the product or service (e.g., field data documentation) except where this documentation is a deliverable for a specific contract. QC documentation is also submitted to the QAM for review and approval. Previous sections detailed the QA activities which are integral to Jordan's QA Program and the reports which they generate. A final audit report for each project may also be prepared. The reports would include:

- periodic assessment of measurement data accuracy, precision, and completeness
- results of performance audits and/or systems audits
- significant QA problems and recommended solutions for future projects
- status of solutions to any problems previously identified

Additionally, any incidents requiring corrective action will be fully documented. Procedurally, the PM will prepare the reports to management. These reports will be addressed to the TL, QAM, and the QRB. The summary of findings shall be factual, concise, and complete. Any required supporting information will be appended to the report.

GLOSSARY OF ACRONYMS

ARF	analytical request form
ASP	Analytical Services Protocol
ASTM	American Society for Testing and Materials
CLP	Contract Laboratory Program
CO	Corporate Officer
COC	chain-of-custody
CV	coefficient of variation
DI	deionized
DQO	data quality objective
EDA	Emergency Declaration Area
FS	Feasibility Study
GC	gas chromatography
GC/MS	gas chromatography/mass spectrometry
HASP	Health and Safety Plan
LSC	Laboratory Services Coordinator
MCL	Maximum Contaminant Level
NYSDEC	New York State Department of Environmental Conservation
PCB	polychlorinated biphenyls
PI	photoionization
PM	Project Manager
ppm	part per million
QA	Quality Assurance
QAM	Quality Assurance Manager
QAPP	Quality Assurance Project Plan
QC	Quality Control
QRB	Quality Review Board
RI	Remedial Investigation
SOP	Standard Operating Procedure
SVOC	semivolatile organic compound
TL	Task Leader
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

APPENDIX A

SUPERFUND-CLP ORGANICS
Superfund Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL)*

Volatiles	CAS Number	Quantitation Limits** Low Water µg/L	Low Soil/Sediment[a] µg/Kg
1. Chloromethane	74-87-3	10	10
2. Bromomethane	74-83-9	10	10
3. Vinyl chloride	75-01-4	10	10
4. Chloroethane	75-00-3	10	10
5. Methylene chloride	75-09-2	5	5
6. Acetone	67-64-1	10	10
7. Carbon Disulfide	75-15-0	5	5
8. 1,1-Dichloroethylene	75-35-4	5	5
9. 1,1-Dichloroethane	75-35-3	5	5
10. 1,2-Dichloroethylene(total)	540-59-0	5	5
11. Chloroform	67-66-3	5	5
12. 1,2-Dichloroethane	107-06-2	5	5
13. 2-Butanone	78-93-3	10	10
14. 1,1,1-Trichloroethane	71-55-6	5	5
15. Carbon tetrachloride	56-23-5	5	5
16. Vinyl acetate	108-05-4	10	10
17. Bromodichloromethane	75-27-4	5	5
18. 1,2-Dichloropropane	78-87-5	5	5
19. cis-1,3-Dichloropropene	10061-01-5	5	5
20. Trichloroethene	79-01-6	5	5
21. Dibromochloromethane	124-48-1	5	5
22. 1,1,2-Trichloroethane	79-00-5	5	5
23. Benzene	71-43-2	5	5
24. trans-1,3-Dichloropropene	10061-02-6	5	5
25. Bromoform	75-25-2	5	5
26. 4-Methyl-2-pentanone	108-10-1	10	10
27. 2-Hexanone	591-78-6	10	10
28. Tetrachloroethene	127-18-4	5	5
29. Toluene	108-88-3	5	5
30. 1,1,2,2-Tetrachloroethane	79-34-5	5	5

Superfund Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL)*

Volatiles (continued)	CAS Number	Quantitation Limits** Low Water µg/L	Low Soil/Sediment[a] µg/Kg
31. Chlorobenzene	108-90-7	5	5
32. Ethyl Benzene	100-41-4	5	5
33. Styrene	100-42-5	5	5
34. Total Xylenes	1330-20-7	5	5

[a] Medium Soil/Sediment Contract Required Quantitation Limits (CRQL) for Volatile TCL Compounds are 125 times the individual Low Soil/Sediment CRQL.

* Specific quantitation limits are highly matrix dependent. The quantitation limits listed herein are provided for guidance and may not always be achievable.

** Quantitation Limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis, as required by the protocol, will be higher.

Superfund Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL)*

Semivolatiles	CAS Number	Quantitation Limits** Low Water µg/L	Low Soil/Sediment[b] µg/Kg
35. Phenol	108-95-2	10	330
36. bis(2-Chloroethyl) ether	111-44-4	10	330
37. 2-Chlorophenol	95-57-8	10	330
38. 1,3-Dichlorobenzene	541-73-1	10	330
39. 1,4-Dichlorobenzene	106-46-7	10	330
40. Benzyl alcohol	100-51-6	10	330
41. 1,2-Dichlorobenzene	95-50-1	10	330
42. 2-Methylphenol	95-48-7	10	330
43. 2,2'-oxybis(1-Chloro-priopane	108-60-1	10	330
44. 4-Methylphenol	106-44-5	10	330
45. N-Nitroso-di-n-propylamine	621-64-7	10	330
46. Hexachloroethane	67-72-1	10	330
47. Nitrobenzene	98-95-3	10	330
48. Isophorone	78-59-1	10	330
49. 2-Nitrophenol	88-75-5	10	330
50. 2,4-Dimethylphenol	105-67-9	10	330
51. Benzoic acid	65-85-0	50	1600
52. bis(2-Chloroethoxy) methane	111-91-1	10	330
53. 2,4-Dichlorophenol	120-83-2	10	330
54. 1,2,4-Trichlorobenzene	120-82-1	10	330
55. Naphthalene	91-20-3	10	330
56. 4-Chloroaniline	106-47-8	10	330
57. Hexachlorobutadiene	87-68-3	10	330
58. 4-Chloro-3-methylphenol (p-chloro-m-cresol)	59-50-7	10	330
59. 2-Methylnaphthalene	91-57-6	10	330
60. Hexachlorocyclopentadiene	77-47-4	10	330
61. 2,4,6-Trichlorophenol	88-06-2	10	330
62. 2,4,5-Trichlorophenol	95-95-4	50	1600
63. 2-Chloronaphthalene	91-58-7	10	330

Superfund Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL)*

Semivolatiles (continued)	CAS Number	Quantitation Limits** Low Water µg/L	Low Soil/Sediment[b] µg/Kg
64. 2-Nitroaniline	88-74-4	50	1600
65. Dimethyl phthalate	131-11-3	10	330
66. Acenaphthylene	208-96-8	10	330
67. 2,6-Dinitrotoluene	606-20-2	10	330
68. 3-Nitroaniline	99-09-2	50	1600
69. Acenaphthene	83-32-9	10	330
70. 2,4-Dinitrophenol	51-28-5	50	1600
71. 4-Nitrophenol	100-02-7	50	1600
72. Dibenzofuran	132-64-9	10	330
73. 2,4-Dinitrotoluene	121-14-2	10	330
74. Diethylphthalate	84-66-2	10	330
75. 4-Chlorophenyl phenyl ether	7005-72-3	10	330
76. Fluorene	86-73-7	10	330
77. 4-Nitroaniline	100-01-6	50	1600
78. 4,6-Dinitro-2-methylphenol	534-52-1	50	1600
79. N-nitrosodiphenylamine	86-30-6	10	330
80. 4-Bromophenyl phenyl ether	101-55-3	10	330
81. Hexachlorobenzene	118-74-1	10	330
82. Pentachlorophenol	87-86-5	50	1600
83. Phenanthrene	85-01-8	10	330
84. Anthracene	120-12-7	10	330
85. Di-n-butyl phthalate	84-74-2	10	330
86. Fluoranthene	206-44-0	10	330
87. Pyrene	129-00-0	10	330
88. Butyl benzyl phthalate	85-68-7	10	330
89. 3,3'-Dichlorobenzidine	91-94-1	20	660
90. Benz(a)anthracene	56-55-3	10	330
91. Chrysene	218-01-9	10	330
92. bis(2-Ethylhexyl)phthalate	117-81-7	10	330
93. Di-n-octyl phthalate	117-84-0	10	330
94. Benzo(b)fluoranthene	205-99-2	10	330

Superfund Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL)*

Semivolatiles (continued)	CAS Number	Quantitation Limits** Low Water µg/L	Low Soil/Sediment[b] µg/Kg
95. Benzo(k)fluoranthene	207-08-9	10	330
96. Benzo(a)pyrene	50-32-8	10	330
97. Indeno(1,2,3-cd)pyrene	193-39-5	10	330
98. Dibenz(a,h)anthracene	53-70-3	10	330
99. Benzo(g,h,i)perylene	191-24-2	10	330

[b] Medium Soil/Sediment Contract Required Detection Limits (CRDL) for Semi-Volatile TCL Compounds are 60 times the individual Low Soil/Sediment CRDL.

* Specific quantitation limits are highly matrix dependent. The quantitation limits listed herein are provided for guidance and may not always be achievable.

** Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis as required by the contract, will be higher.

Superfund Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL)*

Pesticides/PCBs	CAS Number	Quantitation Limits** Low Water µg/L	Low Soil/Sediment[c] µg/Kg
100. alpha-BHC	319-84-6	0.05	8.0
101. beta-BHC	319-85-7	0.05	8.0
102. delta-BHC	319-86-8	0.05	8.0
103. gamma-BHC (Lindane)	58-89-9	0.05	8.0
104. Heptachlor	76-44-8	0.05	8.0
105. Aldrin	309-00-2	0.05	8.0
106. Heptachlor epoxide	1024-57-3	0.05	8.0
107. Endosulfan I	959-98-8	0.05	8.0
108. Dieldrin	60-57-1	0.10	16.
109. 4,4'-DDE	72-55-9	0.10	16.
110. Endrin	72-20-8	0.10	16.
111. Endosulfan II	33213-65-9	0.10	16.
112. 4,4'-DDD	72-54-8	0.10	16.
113. Endosulfan sulfate	1031-07-8	0.10	16.
114. 4,4'-DDT	50-29-3	0.10	16.
115. Endrin ketone	53494-70-5	0.10	16.
116. Methoxychlor	72-43-5	0.5	80.
117. alpha-Chlordane	5103-71-9	0.5	80.
118. gamma-Chlordane	5103-74-2	0.5	80.
119. Toxaphene	8001-35-2	1.0	160.
120. AROCLOR-1016	12674-11-2	0.5	80.
121. AROCLOR-1221	11104-28-2	0.5	80.
122. AROCLOR-1232	11141-16-5	0.5	80.
123. AROCLOR-1242	53469-21-9	0.5	80.
124. AROCLOR-1248	12672-29-6	0.5	80.
125. AROCLOR-1254	11097-69-1	1.0	160.
126. AROCLOR-1260	11096-82-5	1.0	160.

[c] Medium Soil/Sediment Contract Required Detection Limits (CRDL) for Pesticide TCL compounds are 15 times the individual Low Soil/Sediment CRDL.

* Specific quantitation limits are highly matrix dependent. The quantitation limits listed herein are provided for guidance and may not always be achievable.

** Quantitation Limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculate on dry weight basis, as required by the protocol, will be higher.

SECTION II

SUPERFUND-CLP INORGANICS

Superfund Target Compound List (TCL) and
Contract Required Quantitation Limit

Parameter	Contract Required Quantitation Level (µg/L)
1. Aluminum	200
2. Antimony	60
3. Arsenic	10
4. Barium	200
5. Beryllium	5
6. Cadmium	5
7. Calcium	5000
8. Chromium	10
9. Cobalt	50
10. Copper	25
11. Iron	100
12. Lead	5
13. Magnesium	5000
14. Manganese	15
15. Mercury	0.2
16. Nickel	40
17. Potassium	5000
18. Selenium	5
19. Silver	10
20. Sodium	5000
21. Thallium	10
22. Vanadium	50
23. Zinc	20
24. Cyanide	10

APPENDIX B

HEALTH AND SAFETY PLAN

E.C. JORDAN CO.
HEALTH AND SAFETY PLAN
(Level D or C PPE only)

SITE: Love Canal CONTACT: Philip G. Waite, NYDEC

LOCATION: Love Canal, Niagara County, Niagara Falls, NY

PREPARED BY: T. Arnold DATE: 12/6/90

APPROVED BY: Cindy Sundquist DATE: 12/14/90

PROPOSED DATE(S) OF INVESTIGATION: Mid February

PROPOSED ACTIVITY(S): Test pitting program to investigate storm sewer pipe bedding

OVERALL HAZARD: ___ Serious X Moderate ___ Low ___ Unknown

HEALTH HAZARDS:
- X Liquid
- ___ Gas
- X Volatile
- ___ Reactive
- X Solid
- ___ Corrosive
- X Toxic
- ___ Unknown
- ___ Sludge
- ___ Ignitable
- ___ Radioactive
- ___ None

CONTAMINANT LOCATION:
- X Soil
- ___ Tank
- ___ Other (list) ___
- X Ground Water
- ___ Surface
- ___ Sediment
- ___ Underground

MAJOR EXPOSURE ROUTE:
- ___ Dermal
- ___ Puncture
- X Ingestion
- X Respiratory

SAFETY HAZARDS:
- ___ Heights
- ___ Noise
- ___ Heat Stress
- ___ Near Water
- ___ Other (list) ___
- ___ Equipment
- ___ Eye
- ___ Cold Stress
- ___ Burns
- ___ Machinery
- X Confined Spaces
- ___ Uneven Terrain
- ___ Lifting

LEVEL OF PROTECTION: C in Exclusion Zone
B in confined space (anyone who enters test pit)

EQUIPMENT SELECTED:
- X Cartridge Respirator
- X Escape Respirator
- X Coated Tyveks
- X Chemical Resistant Safety Boots/Shoes
- X Disposable Boot Covers
- X Chemical Resistant Gloves
- X Hard Hat
- X Safety Glasses
- ___ Face Shield
- X Coveralls
- ___ Ear Protection
- X Other (list) SCBA for Level B work

MONITORING EQUIPMENT:
- X Combustible Gas/Oxygen Meter
- ___ Explosimeter
- ___ Hydrogen Sulfide Meter
- X PID (HNU/TIP/TE)
- ___ Detector Tubes (MSA/Draeger) (tube: ___)
- ___ Radiation Survey Meter
- X Dosimeter Badges
- X Other (list) Respirable Dust Monitor.

EMERGENCY EQUIPMENT:
- X First Aid Kit
- X Eye Wash
- X Fire Extinguisher
- ___ Other (list) ___

CONTAMINANT LEVELS FOR MODIFICATION OF PROTECTIVE EQUIPMENT: Immediate stoppage of work and backfilling of test pit will occur if any of the following levels are exceeded: PID ≥ 5 ppm above background, O_2 < 19.5%, or particulates ≥ 150 $\mu g/m^3$ above background.

DECONTAMINATION/DISPOSAL: All personnel and/or equipment leaving contaminated site areas are subject to decontamination. Under no circumstances (except emergency evacuation) will personnel be allowed to leave the site prior to decontamination.

EMERGENCY MEDICAL TREATMENT/FIRST AID: First aid will be rendered to any person injured on-site, as appropriate. The injured person will then be transported to a medical facility for further examination and/or treatment. An ambulance will be used to transport the injured person to the hospital unless one is not readily available or could result in excessive delay. In this case, other transport is authorized. Under no circumstances will injured persons transport themselves to a medical facility for emergency treatment.

EMERGENCY TELEPHONE NUMBERS:

Local Police Department - Niagara Falls	(716) 286 - 4547 or 911
Local Fire Department - Niagara Falls	(716) 286 - 4725 or 911
Local Rescue Service - Niagara Ambulance	(716) 278 - 4394
Primary Hospital: Niagara Falls Memorial Medical Center	(716) 278 - 4000
Secondary Hospital: Mount St. Mary's Hospital	(716) 297 - 4800
National Poison Control Center	(800) 492-2414
Chemical Mfg. Assoc.-Chemical Referral Center	(800) 262-8200
Regional HSS: ~~Cindy Sundquist~~ Meg Capasse	(207) 775 - 5401
CE Environmental Health & Safety Mgr.: ~~JA Reynolds~~ C. Sundquist	~~(201) 922-2323~~ 207 775 - 5401

AUTHORIZED PERSONNEL:

HSO: Jeff Pickett — A. Casavant

C. Horstman

T. Arnold *

* Current First Aid Training
\+ Current CPR Training

FIELD TEAM REVIEW: I have read and reviewed the HASP, understand the information contained, and agree to comply.

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

ROUTES TO EMERGENCY MEDICAL FACILITIES

PRIMARY SOURCE OF MEDICAL ASSISTANCE:

Facility Name: Niagara Falls Memorial Medical Center

Address: 621 10th Street

Telephone Number: Main number: (716) 278-4000 Emergency: (716) 278-4394

DIRECTIONS TO PRIMARY SOURCE OF MEDICAL ASSISTANCE: (attach map)

Go west on La Salle Expressway. Continue west on Niagara (Robert Moses) Parkway until it ends and becomes 8th Street. Continue north on 8th Street to Walnut Avenue. Turn right (east) on Walnut Av to 10th Street. Turn left (north) onto 10th Street to hospital at 621 10th Street.

ALTERNATE SOURCE OF MEDICAL ASSISTANCE:

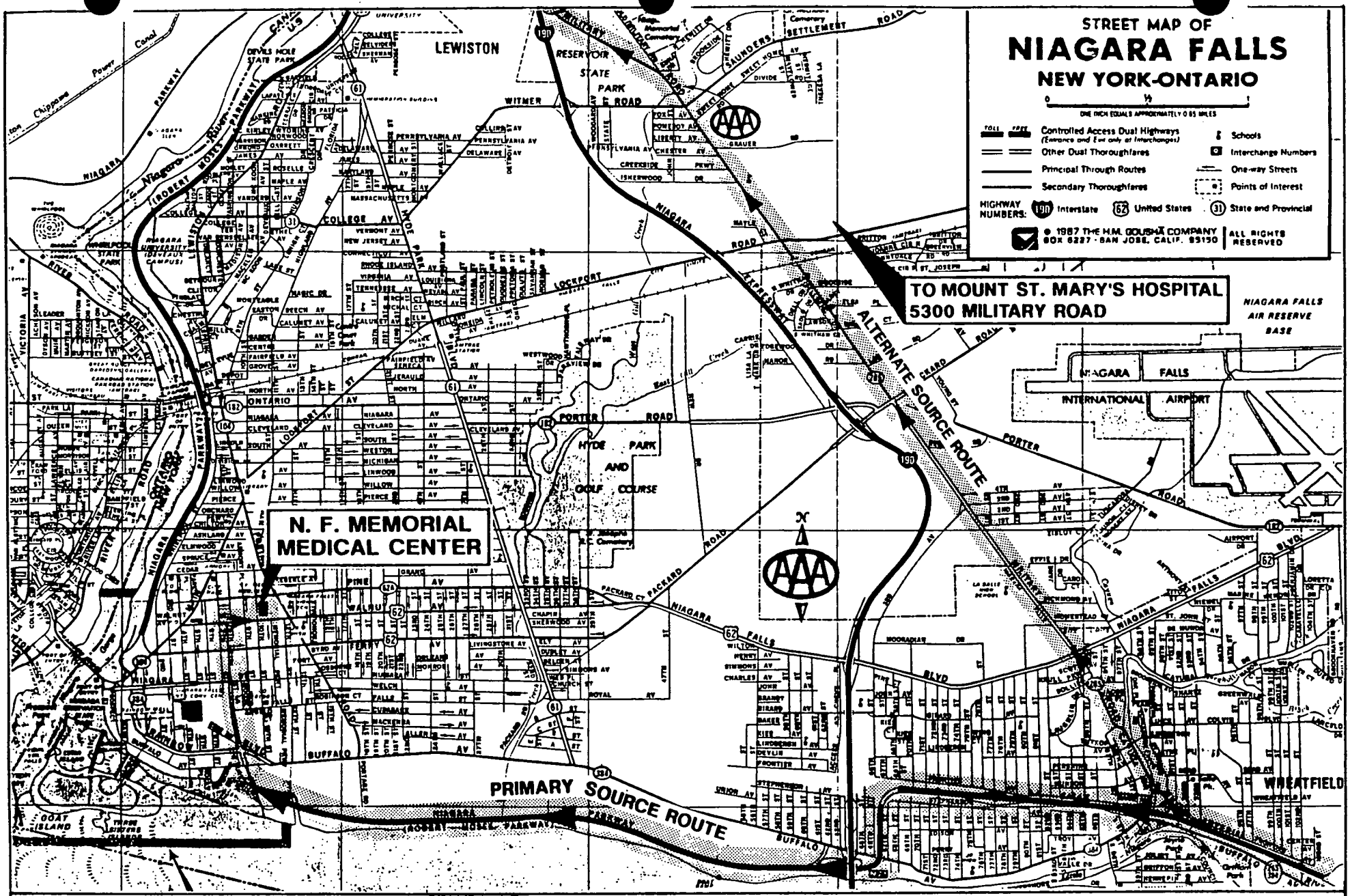
Facility Name: Mount St. Mary's Hospital

Address: 5300 Military Rd

Telephone Number: (716) 297-4800

DIRECTIONS TO ALTERNATE SOURCE OF MEDICAL ASSISTANCE: (attach map)

Go west on Frontier Avenue and bear north (right) onto S. Military Arterial. Continue on S. Military Arterial to Cayuga Drive. Turn right (north). Stay on Cayuga Drive, which turns into Military Road (Rt 265) for approximately 4.5 miles. Bear left at fork (Military Rd) to hospital at 5300 Military Rd.



SOURCE: MAP OF BUFFALO, NIAGARA AND ROCHESTER, NEW YORK,
AMERICAN AUTOMOBILE ASSOCIATION, THE H. M. GOUSHA COMPANY, 1987.

APPROXIMATE SCALE IN MILES

0 .65 1.30

TRANSPORTATION ROUTES TO HOSPITALS

EC JORDAN CO

6609-00

LOVE CANAL
TEST PIT EXCAVATION SERVICES CONTRACT

REQUEST FOR QUOTATION

PGW
1/4/91

Section	Title
I	Instructions to Bidders
II	Task Order Agreement (Sample Contract)
III	Task Order Memorandum (Scope of Work)

JHG/LUV-IRM/18

LOVE CANAL

TEST PIT EXCAVATION SERVICES

I. INSTRUCTIONS TO BIDDERS

JHG/LUV-IRM/18

INSTRUCTIONS TO BIDDERS

BIDS will be received by E.C. Jordan Co. (herein called "JORDAN").

SUBMITTALS

Each Bid must be submitted in a sealed envelope, addressed to:

Two Copies
John Hutchings
P.O. Box 7050 DTS
123 Free Street
Portland, Maine 04112

until 3:00 P.M. (TIME), Prevailing Local Time, 21 (DATE) December (MONTH) 1990 (YEAR).

Each sealed envelope containing a Bid shall be plainly marked on the outside as Bid for:

Love Canal IRM
Test Pit Excavation Services
Niagara Falls, New York

The envelope shall also bear on the outside the name of the Bidder and his address.

PREPARATION OF BIDS

All Bids shall be made on the required Bid Form entitled Test Pit Excavation Services Rate Schedule (Attachment D of Task Order Memorandum). All blank spaces for Bid prices shall be filled in, in ink, or typewritten, and the Bid Form shall be fully completed and executed when submitted.

MODIFICATION AND WITHDRAWAL

Jordan may waive any informalities or minor defects or reject any and all Bids. Any Bid may be withdrawn or modified prior to the above scheduled time for the opening of Bids or authorized postponement thereof. Such withdrawal or modification shall be by document executed and delivered in the same manner and place as the Bid must be executed and delivered. Any Bid received after the time and date specified shall not be considered. No Bidder may withdraw a Bid within 180 days after the actual date of the opening thereof.

Should there be reasons why the contract cannot be awarded within the specified period, the time may be extended by mutual written agreement between Jordan and the Bidder.

BASIS OF BID

Bidders shall satisfy themselves of the accuracy of the estimated number of units for each item of Work in the Bid by examination of the site and a review of the Drawings and Specifications including Addenda. After Bids have been submitted, the Bidder shall not assert that there was a misunderstanding concerning the quantities of Work, the nature of the Work to be done, or a misunderstanding concerning any provisions of the Task Order Agreement and the applicable provisions of the terms and conditions between New York State and Jordan.

QUESTIONS

The Contract Documents contain the provisions required for the services offered. Information obtained from an officer, agent, or employee of Jordan or any other person shall not affect the risks or obligations assumed by the Bidder or relieve him from fulfilling any of the conditions of the contract.

Bidders shall submit all technical questions about the scope of work to Charles Horstmann or Jeff Pickett. Commercial or contractual questions are to be directed to John Hutchings. All questions are to be submitted in writing. Replies will be issued to all prime bidders of record as Addenda to the Request for Quotation and will become part of the contract. Jordan and New York State will not be responsible for oral clarification. Questions received less than 24 hours before the bid opening will not be answered.

EXECUTION OF CONTRACT

Jordan, within ten calendar days of receipt of acceptable Insurance Certificate and Agreement properly signed by the Bidder to whom the Contract is to be awarded, will sign the Agreement and return to the Bidder executed duplicate of the Agreement. Should Jordan not execute the Agreement within such period, the Bidder may, by written notice withdraw his signed Agreement. Such notice of withdrawal shall be effective upon receipt of the notice by Jordan.

The Notice to Proceed will be issued within 4 days of the execution of the Agreement by Jordan. Should there be reasons why the Notice to Proceed cannot be issued within such period, the time may be extended by mutual agreement between Jordan and the Contractor. If the Notice to Proceed has not been issued within the 4-day period or within the period mutually agreed upon, the Contractor may terminate the Agreement without further liability on the part of either party.

EQUAL EMPLOYMENT OPPORTUNITIES FOR MINORITIES AND WOMEN

Bidders shall agree to and shall be bound to Appendix B, Section VII of the Task Order Agreement for the establishment and requirements of such laws and regulations pertaining to equal employment opportunities for minorities and women as further described in the above referenced section. The bidders shall make

good faith efforts to solicit meaningful participation by lower tier subcontractors and/or supply vendors appropriate to this work.

ACKNOWLEDGEMENT OF ADDENDA

Bidder will acknowledge all addenda of the request for proposal with his bid. Lack of acknowledgement may deem the bid nonresponsive.

BID EVALUATION

In evaluating Bids, Jordan shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and unit prices as requested in the Bid forms.

Jordan may make such investigations as deemed necessary to determine the ability of the Bidder to perform the Work and the Bidder shall furnish to Jordan all such information and data for this purpose as Jordan may request, including but not limited to financial data and previous experience. Jordan reserves the right to reject any Bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy Jordan that such Bidder is properly qualified to carry out the obligations of the Agreement and to complete the Work contemplated therein. Jordan also reserves the right to reject any nonresponsive bid or not responsible bidder.

Each Bidder shall submit with his bid a list of all litigation in which he has been a plaintiff or defendant involving any owner, architect, or engineer over the past five years. This list should be in sufficient detail to explain the positions of the various parties and the ultimate outcome as to the damages awarded (if any). This list shall be considered material as respects the final awarding of any contract connected with the bid.

A conditional or qualified Bid will not be accepted.

Award will be made as a whole to one Bidder.

GOVERNING LAWS AND REGULATIONS

All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over the activities of the Contractor shall apply to the contract throughout.

EXAMINATION

Before submitting a Bid, each Bidder must (a) examine the Contract Documents thoroughly, (b) familiarize himself with federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work; and (c) study and carefully correlate Bidder's observations with the Contract Documents.

The submission of a Bid will constitute an incontrovertible representation by the Bidder that he has complied with the foregoing provisions and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

SUBCONTRACTORS AND SUPPLIERS

Bidders shall submit with their bid, in the space provided in the bid form, the name and location of the place of business of each subcontractor who will perform any portion of the work in an amount in excess of one-half of one percent of the total amount of the bid, and the portions of the work which each is to perform.

PROPOSAL FORMAT

Proposals shall include the following information for evaluation purposes:

1. Methodology Plan

2. Statement of Qualifications

   a. Insurance Certificate(s)
   b. Legal Entity Identification

3. Health and Safety - Understanding and Intent to Comply

4. Completed and Signed Bid Form

STATEMENT OF QUALIFICATIONS

The Bidder will provide a statement of qualifications and experience related specifically to test pit services. Proposal will include a reference list of five test pit or similar ~~utility~~ excavation contracts the Bidder has performed successfully in the last five years.

a. Submittal of Insurance Certificate

   Bidders are required to include with their bid a current insurance certificate(s) evidencing the coverages described in Article 7 of the Task Order Agreement.

b. Bidders shall complete, sign and submit with their bid, Legal Entity Identification covering business size and business type.

SIGNED BID FORM

The Bidder will complete and sign the attached Bid Form Attachment D of Task Order Memorandum. Services will be quoted in general on a unit price basis.

TASK ORDER MEMORANDUM

TEST PIT EXCAVATION SERVICES

LOVE CANAL IRM, NIAGARA FALLS, NEW YORK

E.C. JORDAN CO.

AND

_____

TERMS AND CONDITIONS

The services to be provided under this Task Order Memorandum shall be governed by the Task Order Agreement dated _____ between _____ and E.C. Jordan Co. (JORDAN).

PROJECT DESCRIPTION

E.C. Jordan Co. (JORDAN), under contract to the New York State Department of Environmental Conservation (NYSDEC), Work Assignment No. D002472-7, is conducting a Test Pit Excavation investigation at the Love Canal Emergency Declaration Area (EDA), Niagara Falls, New York. Access to the site is from Frontier Avenue a site map is provided in Attachment C as Figure 1.

The Love Canal Site, located within the City of Niagara Falls, Niagara County, is an inactive hazardous waste landfill site. Within the EDA there have been numerous operable units created to address the various remedial activities required. This work assignment relates to one specific operable unit which is described as follows:

Operable Unit No. 5 - Frontier Avenue Storm Sewer

Frontier Avenue is located at the south boundary of the Love Canal Site. Past investigation of the storm sewer located in Frontier Avenue, west of 100th Street, had discovered contaminated storm sewer pipe bedding. The contamination is assumed to have come from migration of contaminant from the Love Canal Site prior to remediation. Previous work to address this migration has included installation of pipe bedding and trench cutoff walls to isolate the contaminants and stop further migration. Until recently, it had not been proven that contaminants in the pipe bedding had migrated up to manhole 412 located at the intersection of 100th Street and Frontier Avenue. However, during the installation of an additional cutoff wall at the upstream (west)side of manhole 412, additional contamination was discovered in the storm sewer pipe bedding. Based on that discovery, four test pits were excavated downstream (east) of manhole 412 to manhole 406 (located between 100th and 101st Streets) to provide a limited indication of the extent of migration. Additional contamination was discovered in the pipe bedding in three of the four test pit excavations including the pit on the downstream (south) side of manhole 406. The only test pit not discovering evidence of contaminated pipe bedding was the pit directly east of manhole 412. The storm sewer in this pit was encased in concrete which was assumed to be part of the "poured-in-place" concrete base of the manhole. Locations and data from the NYSDEC investigation are presented as additional data. (Attachment G)

As a result of the discovery of additional migration of contaminants in the Frontier Avenue storm sewer pipe bedding, the NYSDEC is requesting JORDAN to perform a test pit investigation of the storm sewer pipe bedding located in the southern drainage basin of the Love Canal EDA.

The goals of the test pit investigation are to:

1. Determine the upstream extent of contaminated pipe bedding in the southern drainage basin of the Love Canal EDA of which, at a minimum, the western boundary will be 100th Street and the eastern boundary will be 102nd Street. These boundaries may change depending on the extent of migration discovered. In this case, the southern drainage basin of the EDA is defined as those storm sewers and drainage paths draining south and discharging into the Niagara River.

2. Determine if contamination has migrated in the pipe bedding under the LaSalle Expressway by performing test pits on the south side of the LaSalle Expressway in Neighborhood Area No. 1 of the Love Canal EDA. The southern boundary of this portion of the investigation will be the northern boundary of the 102nd Street Landfill Site NYSDEC Site No. 9-32-031.

3. Gather sufficient field information during the test pit investigation to assist in the development of remedial alternatives and implementation of the remediation of the storm sewer.

Visual inspections will be performed at each test pit to determine the extent of contamination, including the exploration of non-obvious migration paths, if any. Environmental sampling from selected test pits of the pipe bedding and groundwater in the pit will be collected for analysis. Environmental sampling will be performed by JORDAN.

The actual number of excavations will be determined in the field, but for bidding purposes can be estimated at 15 test pits approximately 8' - 12' deep.

Drawings showing the approximate locations of utilities in the proposed test pit areas are listed in Attachment C Figures and Drawings are enclosed with this Request for Quotation. The accuracy of this data is unknown and is provided for the subcontractors information only. This data has not been field checked or certified accurate.

SCOPE OF SERVICES

The Subcontractor shall provide all necessary personnel, equipment and materials (not provided by JORDAN) to perform the following services and shall submit its bid for the following Scope of Services on the Test Pit Services Rate Schedule provided as Attachment D.

EXPLORATION PROGRAM

Because site conditions require excavation test pits near storm sewers located in streets and on-site decontamination of excavation equipment the excavation methodology must be carefully described. All measures to contain and control excavation soils, decontamination fluids, and traffic shall be thoroughly explained.

The Subcontractor shall perform the following services:

1. Mobilize a tire-mounted backhoe with a capability to excavate test pits to a depth of 15 feet, backhoe operator, high-pressure steam cleaner, excavation foreman, all necessary equipment, and support personnel to complete the test pit program. A rubber tired backhoe will be the preferred excavation machine; however, a track mounted machine equipped with street pads or light grounders will be acceptable. If a tracked machine is utilized then the subcontractor shall take all necessary

precautions to prevent injury to existing pavement.

2. Provide utility clearances in the proposed and actual test pit areas by working with the appropriate local utilities and city agencies.

3. Excavate and backfill approximately 15 test pits at various locations on Frontier Avenue, 100th Street, 101st Street, 102nd Street, LaSalle Expressway and Buffalo Avenue as designated by JORDAN. Test pits may extend to a maximum of 15 feet in depth and be long by 4-feet wide enough to allow for manned observation and sampling at the bottom and shall be excavated parallel to the storm sewer. These test pits shall require Level C protection for workers in the exclusion zone and not in the test pits. Upgrade to Level B shall be available on-site if air monitoring so indicates. For work in the test pits, Level B protection shall be required. Each test pit shall be excavated according to the following:

Excavation of Test Pits

A. Excavation of material down to the top of the storm sewer to be performed by backhoe.

B. Asphalt and concrete base shall be clearly cut to facilitate subgrade excavation.

C. All broken asphalt and concrete subbase must be segregated out and disposed of by Contractor as construction debris

D. Excavation of overlying material above pipe by backhoe is to be temporarily placed on suitable plastic sheeting and not directly on ground. Plastic sheeting is also to be placed over the piles and secured with sandbags or other suitable material.

E. Excavation of pipe bedding is to be performed by backhoe and must be placed on appropriate plastic sheeting in separate pile from the overlying backfill. Plastic sheeting is also to be placed over the piles and secured with sandbags or other suitable material.

F. Material removed from the excavation will be placed back into the pit as backfill in the sequence it was removed with the exception of the broken concrete subbase and asphalt. Compaction efforts will be necessary during placement of pipe bedding and trench backfill. Any remaining lift of backfill needed to reach street grade must be suitable roadbase material imported for this work and meeting City of Niagara Falls Specifications.

G. All excavations must be repaired and patched to match existing street conditions including concrete subbase and asphalt finish course.

Three individual types of test pits shall be excavated. Each is categorized as follows and each type has different specific requirements.

- Contaminated Test Pits - This type of test pit shall be excavated on one side of the sewer into the bedding material and if the bedding material is observed to be contaminated, the test pit will be backfilled and another test pit excavated at a location designated by JORDAN.

- Double Wide Test Pits. This type of test pit shall be excavated to the bottom of the bedding material. If the bedding material is observed to show no evidence of contamination and JORDAN determines the test pit to be identified as the upstream limit of contaminant

the test pit to be identified as the upstream limit of contaminant migration the test pit shall be enlarged to include both sides of the storm sewer. After enlargement, a trench box shall be placed in the excavation and JORDAN sampling personnel will enter the pit to perform environmental sampling and close inspection of the pipe bedding. After sampling by JORDAN the Subcontractor shall excavate at least 36" wide section of bedding material beneath the storm sewer pipe. This excavated section shall extend from the pipe down to undisturbed natural soil. The subcontractor shall then remove the trench box, backfill the upstream and downstream ends of the test pit with excavation material as described above, leaving the excavated 36" section under the pipe exposed. The subcontractor shall then fill the test pit with concrete up to the spring line of the storm sewer. The twin test pits shall then be backfilled as described previously.

- Confirmation Test Pits. If the twin test pit is declared clean, the Subcontractor shall excavate a confirmation test pit on one side of the storm sewer approximately 50 feet upstream of the twin test pit to the bottom of the bedding material to verify that the pipe bedding is indeed clean. A trench box shall be placed in the excavation and JORDAN sampling personnel will enter the pit to perform environmental sampling and close inspection of the pipe bedding. The test pit shall be backfilled as described previously.

4. Decontaminate all excavation tools and equipment with a high-pressure steam cleaner at a designated decontamination location, upon arrival at the site. In addition, a high-pressure steam cleaner shall be used to decontaminate the backhoe bucket between each excavation. The following high pressure steam cleaning procedures shall be used to reduce the amount of water entering the test pit and to reduce the potential for cross-contamination between test pits.

   After the excavation of each test pit, the backhoe bucket shall be decontaminated over the excavated test pit utilizing the following methods/procedures:

   A. The bucket shall be decontaminated using a steam cleaning device such as a Steam Jenny to reduce the amount of water entering the excavation.

   B. The bucket shall be surrounded by a plastic or rubber, disposable shield to contain any spray that misses the bucket and shall be constructed and placed to deflect water and spray into the excavation. The shield can be used from excavation to excavation, if not grossly contaminated, with ultimate disposal in a 55-gallon drum to be stored at the Love Canal Site.

   C. Steam cleaning shall occur after the pipe bedding has been exposed, inspected and placed back into the excavation. Steam Cleaning shall occur before the "clean" trench backfill is placed back into the excavation. Under no circumstances will steam cleaning be allowed to take place once the excavation is completely backfilled unless measures are taken to fully contain the procedure and collect the water.

   Decontamination and cleaning of the backhoe and other equipment will be performed at the decontamination pad located on the east side of the Love Canal Treatment Facility at the end of each work day. The backhoe's tires or tracks shall be cleaned and scraped of any excess soil before traveling between test pits or over local streets within the EDA.

5. Provide supervision, labor, materials, and equipment necessary to mobilize, complete excavations, cover excavations (with borrow material, if required by JORDAN), decontaminate tools and equipment, and

6. Provide labor and materials to temporarily fence off each work area. Fencing shall be orange snow fence or approved equivalent. Fencing shall also be used to designate exclusion, support and clean zones within each fenced work area.

7. Provide 55-gallon DOT Spec. 174 drums to containerize contaminated materials. Subcontractor shall move these drums to a staging area near the Love Canal leachate treatment plant, approximately 3,000 feet from the test pit area. Used protective clothing and plastic sheeting shall be placed in large plastic bags supplied by NYSDEC. Hard stock such as contaminated sampling equipment shall be placed in drums. The Subcontractor shall handle, label, and stage the filled drums according to the procedural described in Attachment H.

8. Provide all necessary traffic control measures to divert traffic around each work site. This includes but is not limited to the use of signs, barricades, emergency lights, caution lights, flag persons, watch persons. Traffic control barricades shall be placed at appropriate street intersections to provide for a "traffic free" work area. The Subcontractor shall contact the appropriate City of Niagara Falls Department, obtain any necessary permits and pay all fees to control work area traffic. Any test pits not backfilled over night shall be protected by the subcontractor to prevent personal vehicular entry into the exclusion zone.

9. Mobilize, setup, and demobilize a site office/equipment storage trailer. The trailer shall be equipped with showers, toilets, and a centralized heater system all in good working order. The shower trailer shall be provided with potable water electrical service, and telephone service for the duration of the test pit excavation and backfilling. The office/shower trailer shall be of sufficient size as to accommodate the Subcontractor and JORDAN's personnel.

   The Subcontractor shall provide all necessary utility connections and all personnel to maintain the office/shower trailer cleanliness and order.

   The shower/office trailer shall be set up on the east side of Love Canal with in the fenced area near the intersection of Wheatfield Avenue and 100th Street.

10. Provide all necessary support, equipment and personnel and work with local utilities or the City to repair all inadvertently broken utilities or under ground services. These services shall be provided on a time and material basis at the Subcontractors standard hourly rates for equipment and personnel, standard rates shall be attached to the test pit bid sheet. The Subcontractor shall exercise extreme caution to avoid damage to existing utilities.

UNDERSTANDINGS

1. The methods, procedures and techniques to be used by the Subcontractor are the responsibility of the Subcontractor, and shall be designed to meet the intent of the specifications, Attachment B, appended here to and incorporated by reference into this Task Order Memorandum for Test Pit Excavation Services. Should the technical specifications conflict in any manner with the Scope of Services, the provision of the Scope of Services shall govern.

2. JORDAN will provide the following services:

   a. Locate the Test Pit Explorations.

   b. Authorize the depths to which each Test Pit shall be advanced.

   c. Observe the Subcontractor's activities at each location.

   d. Periodically monitor the volatile organic concentrations in the working area during excavation of each test pit by the Subcontractor with a photoionization detector (PID). The basis of payment for excavations at various protection levels shall be evaluated by JORDAN. The minimum level of protection required by JORDAN will be contingent on the observed PID meter reading and on the nature of organic vapor constituents detected. In addition, downwind air monitoring for particulates will be conducted by JORDAN. The subcontractor shall conduct its work to minimize particulate emissions.

   e. Consider written requests on the part of the Subcontractor to charge standby time for delays resulting from actions of JORDAN or NYSDEC and severe weather conditions. JORDAN and NYSDEC will determine the merits of such requests, and when warranted approve standby time in writing.

3. All field work of a general nature (i.e. associated with area, set ups and mobilizations) will be conducted at a minimum U.S. Environmental Protection Agency (USEPA) Level D personal protective equipment (PPE) with ability to upgrade to Level C PPE if warranted. Before field work begins, the Subcontractor must submit certification to JORDAN that each of its employees working on the site is enrolled in a Medial Monitoring Program and has completed the appropriate training and field experience in compliance with OSHA regulation 29 CFR Part 1910.120. JORDAN will provide the Subcontractor with a written Health and Safety Plan which field personnel will be required to read and abide by. In addition, the JORDAN Health and Safety Officer (HSO) will provide, a site-specific health and safety briefing to the Subcontractor's field personnel. The Subcontractor's field personnel will be expected to sign the Health and Safety Plan, and will comply with health and safety measures indicated by JORDAN's HSO.

SCHEDULE

Proposals must include a completed Test Pit Exploration Services Rate Schedule (Attachment D), the proposed methodologies, and an estimate of the time required for completion of 15 test pits assuming one backhoe will be used.

For the exploration program the Subcontractor shall assume 8-hour days and a schedule of three 5-day work shifts with 2 days off between shifts.

The completion schedule is dependent on the efficiency of the excavation methods chosen to make the test pits. JORDAN reserves the right to reduce or increase the number and/or depths of the test pits in this program. Any reduction or increase will either be deducted or paid for in accordance with the unit bid prices to be specified by the Subcontractor on the Test Pit Excavation Services Rate Schedule (Attachment D). The Subcontractor will provide sufficient equipment and manpower to limit all unnecessary delays.

MEASUREMENT AND PAYMENT

At the end of each work shift day, the Subcontractor's designated on-site representative and the JORDAN representative will complete duplicate summary sheets (provided by JORDAN) detailing the day's activities, including hourly charges etc. Both parties will sign the sheets indicating approval. In the event of disagreement, both parties will forward a copy of the summary sheet to the JORDAN Field Operations Leader and Subcontractor's project representative for resolution. Disagreements shall be fully explained on each summary sheet.

The payment items shall be those presented in the Test Pit Excavation Services Rate Schedule, (Attachment D). Payment for incurred hourly charges shall be rounded to the nearest 0.25 hour.

Payment for mobilizations and demobilization of all equipment and required site facilities shall be one-half the total on the first invoice and one-half the total on the final invoice. Retainage will be released at the end of JORDAN's Work Assignment, which is scheduled to end on December 31, 1991.

Payment for extra work to be provided under a change order shall be compensated for in accordance with JORDAN and NYSDEC approved unit rates and durations. Prevailing wage rates will apply to all aspects of the Subcontractor's work.

PERFORMANCE AND PAYMENT BONDS

Performance and payment bonds shall be provided by Subcontractor in accordance with Attachment A.

TEST PIT EXPLORATION SERVICES RATE SCHEDULE FORM

The Subcontractor will submit the bid in direct accordance with the Test Pit Exploration Services Rate Schedule Form (Attachment D) provided, and should be in accordance with all other requirements described in this specification. Quoted prices will be valid for a period of 180 days from bid date. In calculating a total cost for the project, assume that all set up and mobilization work will be performed at Level D PPE, excavation work will be performed at Level C PPE with full face respiratory protection; and all in pit work will be performed with Level B PPE.

Suppliers of

In accordance with Government regulations and prime contract requirements, we are required periodically to verify business size of our supplier and subcontractors and validate their compatibility with existing Government statutes dealing with equal opportunity, small business and surplus labor practices.

Please cooperate by responding to the questions and return to the sender within 30 days. Your prompt responsibleness will avoid unnecessary delays in furture business transactions.

ABB Environmental Services, Inc.
Supplier Code: _____

Legal Entity Identification			Telephone
Street Address	City	State	Zip Code
Pay to:	Address	City	State / Zip Code

This Firm is:

☐ A Division	☐ A Subsidiary	☐ An Affiliate of	
Name of Parent Company and Address:			
Identify State in which Product is Manufactured:			
Business Size	☐ Small	☐ Large	
Disadvantaged Owned and Controlled		☐ Yes	☐ No
Women Owned and Controlled		☐ Yes	☐ No
Foreign Owned	☐ Yes	☐ No	
☐ Consultant	☐ Manufacturer	☐ Distributor	
Number of Employees	☐ 1 - 49	☐ 50 - 199	☐ 200 - 499 ☐ (500 - 1,000 Certified Small)

Number of Employees:

The above block requesting the number of employees should include the total of all employees located in all divisions, affiliates, subsidaries and the parent company. Business Size: Generally speaking a company employing fewer than 500 persons is considered small. However, refer to DAR 1-70, NASA PR 1.701 or consult your region Small Business Administration for exceptions.

Disadvantaged Owned:

At least 51% of the concern is owned and daily managed and controlled by socially and economically disadvantaged individuals; or in the case of a publicly owned business, at least 51% of the stock is owned by socially and economically disadvantaged individuals and one or more such individuals manage and control the daily operations of the business. Disadvantaged persons Indians, Eskimos, Aleuts and Native Hawaiians and other minorities, or any other individuals found to be disadvantaged by the Small Business Administration.

Women Owned:

At least 51% of the concern is owned and daily managed and controlled by women; or in the case of a publicly owned business, at least 51% of the stock is owned by women and one or more such individuals manage and control the daily operations of the business.

Foreign Owned:

Any concern whose principal base of operations is located outside the 50 United States, its territories and possessions.

Flysheet LS. Socio-Economic Program Requirements:

The enclosed flysheet LS contains certifications of non segregated facilities, equal opportunity requirements, and other socio-economic policies that must be included in each purchase order of $10,000 or more placed with any facility or division of a company. Please review these provisions and answer the questions below by checking the appropriate spaces and signing as indicated. The questions apply to the company locations where the work will be performed and must be completed before orders may be placed with that facility.

1. Seller ☐ has ☐ has not developed a written affirmative action program.
2. Seller ☐ has ☐ has not filed the annual equal employment opportunity information report EEQ - 1 and all other required reports (see 41 CER 50-1.7)
3. Seller ☐ will ☐ will not file equal employment opportunity information report EEO - T when required.
4. The equal employment opportunity program of this firm ☐ has ☐ has not been subject to a government equal opportunity compliance review. If so, when?
5. Seller ☐ has ☐ has not developed a written affirmative action program.
6. Seller ☐ agrees and certifies, ☐ does not agree and certify, that all facilities maintained by seller are nonsegregated.
7. The seller hereby, understands the Governments equal opportunity requirements and certifies to the accuracy of response to the statements above.

Company _____
Authorized Signature _____
Title _____
Date _____ ***Please mail completed and signed form to:*** ABB Environmental Services, Inc.

LOVE CANAL

TEST PIT EXCAVATION SERVICES CONTRACT

II. TASK ORDER AGREEMENT
(SAMPLE CONTRACT)

ATTACHMENT A

APPENDIX A

APPENDIX B

TASK ORDER AGREEMENT BETWEEN

E.C. JORDAN CO.
AND
[SUBCONTRACTOR'S NAME]

FOR
SUBCONTRACT SERVICES

THE AGREEMENT

BY THIS AGREEMENT made this ____ day of _____ in the year Nineteen Hundred and Ninety by and between E.C. Jordan Co. of Portland, Maine, hereinafter called JORDAN, and [Subcontractor's Name, of City, State], hereinafter called SUBCONTRACTOR, and

WHEREAS JORDAN intends to engage SUBCONTRACTOR to perform certain technical services on an As-Requested Basis, pursuant to JORDAN's Prime Agreement dated January 11, 1990 with the State of New York Department of Environmental Conservation hereinafter called the Project,

WHEREAS SUBCONTRACTOR has represented to JORDAN that it is qualified and willing to provide said services,

NOW, THEREFORE, JORDAN and SUBCONTRACTOR for considerations hereinafter set forth do hereby agree as follows:

ARTICLE 1
DEFINITIONS

a.	Project	All the work and services to be performed by SUBCONTRACTOR included in this Agreement and in the Task Order Memoranda.
b.	Work Site	The work sites as described in the Task Order Memoranda.
c.	Project Personnel	All SUBCONTRACTOR's personnel employed to perform the services described in a Task Order Memorandum or provide support, supervision, etc. as part of this Agreement.
d.	Project Client	New York State Department of Environmental Conservation (DEPARTMENT)

e.	State	The State of New York
f.	USEPA	The United States Environmental Protection Agency

ARTICLE 2
SCOPE OF SERVICES

SUBCONTRACTOR shall provide services for the Project as authorized by a written Task Order Memorandum or Purchase Order in accordance with the terms and conditions of this Agreement, applicable provisions of the agreement between JORDAN and its Project Client which is incorporated herein as Attachment A. Actual work tasks are to be limited to those activities requested by JORDAN and agreed upon by SUBCONTRACTOR by means of a Task Order Memorandum or Purchase Order.

JORDAN shall prepare a Task Order Memorandum or Purchase Order describing the scope of services to be provided, budgets and anticipated schedule for execution by the parties.

ARTICLE 3
CHANGES TO PROJECT ASSIGNMENTS

3.1 No delegation -- For purposes of this subsection, no person is authorized to act on behalf of JORDAN regarding changes in a Task Order Memorandum.

3.2 Changes may be made to Task Order Memorandum through issuance of an amendment to a Task Order Memorandum. Such amended Task Order Memorandum must specify the reason for the change and, as appropriate, include any modified budgets, schedules, scope of work, etc. Such amended Task Order Memorandum will become part of this Agreement upon signing by JORDAN and SUBCONTRACTOR.

The provisions of this Agreement and the Task Order Memoranda, with appropriate changes in SUBCONTRACTOR's Compensation and Project Schedule, shall apply to all additions and omissions.

Changes to Task Order Memorandum will not be allowed when such changes would be attributable to SUBCONTRACTOR error or delays.

3.3 Notice -- The primary purpose of this subsection is to obtain prompt reporting by SUBCONTRACTOR of any activity which SUBCONTRACTOR considers to constitute a change to the Task Order Memoranda under this Agreement. SUBCONTRACTOR shall notify JORDAN promptly in writing, and in any event, within ten (10) calendar days from the date SUBCONTRACTOR so identifies any activity (including actions, inactions, and written or oral communications that SUBCONTRACTOR regards as a change to the terms and conditions of the Task Order Memoranda). The notice shall state, on the

basis of the most accurate information available to SUBCONTRACTOR, the following:

a. The date, nature, circumstance, and cause of the activity regarded as a change;

b. The name, function, and activity of each government and JORDAN official or employee or other individual, involved in or knowledgeable of such activity;

c. The identification of any document(s) and the substance of any oral communication involved in such action; and

d. The particular elements of project performance for which SUBCONTRACTOR may seek an equitable adjustment under this clause, including:

1. Those portions of the Task Order Memoranda which SUBCONTRACTOR believes will be affected by the alleged change; and

2. The estimated adjustment to the Task Order Memoranda with respect to estimated cost and/or fixed fee; delivery of performance schedule; and other provisions affected by the alleged change.

3.4 JORDAN's Response -- JORDAN shall promptly respond to the notice required by 3.3 above confirming or denying a request for changes. Changes to the compensation to be received by SUBCONTRACTOR under a Task Order Memorandum may only be approved in writing by Amendment to the Task Order Memorandum.

ARTICLE 4
PROJECT SCHEDULE

Schedules for the initiation and completion of services authorized under Task Order Memorandum will be stated in the Task Order Memorandum.

ARTICLE 5
COMPENSATION

5.1 For the services as authorized by written Task Order Memoranda, SUBCONTRACTOR shall be compensated for time and expenses in accordance with SUBCONTRACTOR's rates agreed upon in the Task Order Memorandum for the services to be provided under the Task Order Memorandum.

For budgetary purposes, JORDAN shall submit with each Task Order Memorandum, an estimate of the cost of the services to be rendered under the order. Such estimate shall be considered a not-to-exceed figure without prior authorization of JORDAN.

ARTICLE 6
PAYMENT

Payment for services rendered by SUBCONTRACTOR shall be in accordance with the following:

6.1 Invoices will be submitted by SUBCONTRACTOR in duplicate, addressed to E.C. Jordan Co., Attn: Accounts Payable Dept., P.O. Box 7050, Portland, Maine 04112, with a copy to JORDAN's Project Manager.

6.2 Invoices will be submitted by SUBCONTRACTOR monthly and will indicate the time and expenses during the period reflecting actual work performed, or percent complete of lump sum items as of the date of the invoice, including all necessary backup as required in Attachment A.

6.3 SUBCONTRACTOR's invoices will be submitted to the Project Client by JORDAN at the end of JORDAN's current invoicing period.

6.4 Payment shall be made by JORDAN within ten (10) working days of JORDAN's receipt of payment from the Project Client, less 5% retainage. Upon release of retainer by the Project Client, JORDAN shall release retainage to SUBCONTRACTOR.

Failure to comply with the above requirements will result in delays in processing and payment of SUBCONTRACTOR's invoices. JORDAN's payment obligation to SUBCONTRACTOR is contingent upon JORDAN's receipt of payment from the Project Client.

ARTICLE 7
LIABILITY INSURANCE

7.1 SUBCONTRACTOR shall purchase and maintain such insurance as will protect it from claims set forth below which may arise out of or result from SUBCONTRACTOR's operations under this Agreement and each Task Order Memorandum, whether such operations be by it or by any sub-subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

a. Claims under worker's compensation, disability benefit and other similar employee benefit acts, including "Other States" endorsement and Employee's Liability, in the minimum amount of $1,000,000.

b. Claims for damages because of bodily injury, occupational sickness or disease, or death of its employees.

c. Comprehensive General Liability (CGL) Insurance endorsed for premises/operations, X, C, & U coverages, products/completed operations, broad form contractual, independent contractors, broad form property damage and personal injury coverages in the minimum amount of $1,000,000 per occurrence and in the aggregate for bodily injury and property damage.

d. Comprehensive Automobile Liability Insurance including owned, non-owned and hired automobiles, in the minimum amount of $1,000,000 per occurrence and in the aggregate for bodily injury and property damage.

e. Excess Umbrella Liability Insurance applicable to the coverages described in paragraphs a, b, c, and d above, in the minimum amount of $1,000,000 per occurrence and in the aggregate where applicable.

f. All required insurances and records for work performed on water including, but not limited to, requirements of the Longshoreman's and Harbor Worker's Act.

g. If this Agreement is for performance of professional services, Professional Liability (E&O) Insurance or self insurance reserves in the minimum amount of $1,000,000 per occurrence and in the aggregate.

h. Any additional insurance required by Government Agencies, property owners or utility companies including, but not limited to railroad protective policies.

7.2 The insurance shall be written for not less than any limits of liability herein specified or required by law, whichever is greater, and the General Comprehensive Liability Insurance shall include completed operations, contractual liability insurance as applicable to SUBCONTRACTOR's obligations under the Indemnification clause of this Agreement and coverage for explosion, collapse and underground hazards (X, C & U).

7.3 Before starting work under a Task Order Memorandum, SUBCONTRACTOR must furnish to JORDAN certificate(s) of insurance verifying liability coverage. The title of the Project must be shown on the Certificate of Insurance. These Certificates shall contain a provision that coverages afforded under the policies will not be cancelled or terminated until at least fifteen (15) days prior written notice has been given to the Project Manager. The Certificates shall also indicate that NY State, its employees and agents, and JORDAN has been named as an additional insured on SUBCONTRACTOR's Comprehensive General Liability Insurance Policy (CGL). SUBCONTRACTOR waives all rights of subrogation.

ARTICLE 8
TERMINATION AND SUSPENSION

This Agreement or any Task Order Memorandum may be terminated or suspended by JORDAN upon seven (7) days written notice to SUBCONTRACTOR; or upon one (1) day notice to SUBCONTRACTOR of the Project Client's suspension or termination of JORDAN's services.

ARTICLE 9
DELEGATION OF DUTIES

SUBCONTRACTOR shall not delegate its duties in this Agreement or under the Task Order Memoranda without the written consent of JORDAN.

ARTICLE 10
EXTENT OF AGREEMENT

This Agreement, together with the executed Task Order Memoranda and the applicable provisions from the agreement between JORDAN and its Project Client, which is incorporated herein as Attachment A, represent the entire and integrated agreement between JORDAN and SUBCONTRACTOR and supersedes all prior negotiations, representations or agreements, either written or oral, for this Project.

In the event of conflict between provisions of this Agreement, the conflict shall be resolved by giving precedence as follows: (a) the Project Client's terms and conditions; (b) the Agreement; (c) the Task Order Memorandum; and (d) SUBCONTRACTOR's technical proposal if incorporated in this Agreement by reference.

Any claim or controversy arising under this Agreement or under a Task Order Memoranda which is not disposed by agreement of the parties, may be consolidated or joined by JORDAN with any other dispute, including arbitration, arising out of the services it is providing under its agreement with its Project Client and which involve services rendered under this Agreement.

ARTICLE 11
GENERAL CONSIDERATIONS

SUBCONTRACTOR shall collaborate with JORDAN in connection with the Project. All of SUBCONTRACTOR's communications with the Project Client or JORDAN's other consultants will be through or with the knowledge of JORDAN. Except as set forth herein and in the Task Order Memoranda, SUBCONTRACTOR will not have any duties or responsibilities for any other part of JORDAN's services. SUBCONTRACTOR shall perform services in character, sequence and timing so that it will be coordinated with that of JORDAN and other consultants for the Project. When applicable, SUBCONTRACTOR agrees to a mutual exchange of information, data and specifications with JORDAN and other consultants.

Further, SUBCONTRACTOR will:

11.1 Give prompt written notice to JORDAN whenever SUBCONTRACTOR observes or otherwise becomes aware of any development, including labor disputes, that may affect the scope or timing of the Project or any defects in the Project.

11.2 Designate in writing a person to act as SUBCONTRACTOR's representative with respect to the services to be rendered under this Agreement and

under a Task Order Memorandum. Such person will have complete authority to transmit instructions, receive information and interpret and define SUBCONTRACTOR's policies, specifications and reports.

11.3 Examine all pertinent studies, reports, sketches, specifications, drawings, proposals, and other documents provided by JORDAN, and promptly notify JORDAN in writing of noted defects, ambiguities or inconsistencies contained in or related to such documents.

11.4 Perform its services and prepare its reports or other deliverables in a timely manner and in accordance with the schedule contained in the Task Order Memoranda, unless delayed by others not within its control.

11.5 Will not disclose, or permit disclosure of any information designated by JORDAN or the Project Client as confidential, except to its employees and other consultants who need such information in order to properly execute the services of this Agreement and the Task Order Memoranda.

11.6 Advise JORDAN as to the necessity of providing or obtaining from others, services or data of the types required for the Project and cooperate with JORDAN in connection with any such services.

ARTICLE 12
RECORD KEEPING AND ACCESS

SUBCONTRACTOR shall prepare and maintain an adequate system of financial management and audit, shall maintain complete, accurate and detailed records of all expenditures pertaining to the performance of this Agreement in accordance with generally accepted accounting principles, and, for at least three (3) years after termination of this Agreement, will maintain, preserve and make such records available for inspection and audit by JORDAN, its Project Client or their designated representatives. Such inspection and audit may be made at reasonable times, and upon reasonable notice. For the purposes of this paragraph, the term "records" shall mean books, records and other compilations of SUBCONTRACTOR.

ARTICLE 13
COVENANTS

SUBCONTRACTOR makes the following covenants:

13.1 That it is competent, qualified and trained to perform the services required by this Agreement and the Task Order Memoranda, and that in the performance of said services it will bring a high degree of initiative and ability to deal effectively with personnel of JORDAN, the Project Client, other consultants and subcontractors, and members of agencies of government and the public as may be required.

13.2 That to the extent applicable, it has and will file all certificates and reports required to secure and maintain registration as a corporation,

as required by the laws of the state of incorporation and the State of New York.

13.3 That in connection with the performance of services required by this Agreement and the Task Order Memoranda, it shall not discriminate against or exclude any person from participation herein on grounds of race, religion, color, sex, age, or national origin, and that it shall take affirmative actions to insure that applicants are employed, and that employees are treated during their employment, without regard to race, religion, color, sex, age or national origin.

13.4 That, based on information provided by JORDAN, no officer, director, or employee has, nor shall acquire, any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required in this Agreement and in the Task Order Memoranda.

13.5 That it shall not participate in or cooperate with an international boycott or engage in any conduct declared to be unlawful by the laws of the State of New York.

13.6 SUBCONTRACTOR shall comply with Federal, State, and local tax laws, Social Security laws, and Unemployment Compensation laws, Worker's Compensation Laws and New York State Labor Laws, including without limitation, prevailing wage requirements insofar as applicable to the performance of this Subcontract.

13.7 SUBCONTRACTOR shall perform its work as an independent contractor to JORDAN and be responsible for withholding of all taxes, social security, and insurance payments for its employees.

13.8 In all of its activities, SUBCONTRACTOR shall take all measures necessary for the protection of its employees and preservation of the public health, safety and the environment.

13.9 SUBCONTRACTOR shall perform its services in accordance with high professional and workmanlike standards and good and accepted practices customary for these services, SUBCONTRACTOR shall be responsible for the adequate management and supervision of its employees, agents and subcontractors, the means, methods and techniques of performing its services and the technical accuracy and adequacy reports, plans, specifications or other deliverables to be provided to JORDAN. Further, SUBCONTRACTOR shall perform its services in accordance with and comply with all applicable Federal, state and local laws, ordinances and regulations, including, but not limited to, all applicable provisions of the Federal Occupational Health and Safety Act of 1970 (OSHA), as amended, OSHA Regulations at 29CFR §1910, USEPA Executive Order 1440.2 and 1440.3.

13.10 SUBCONTRACTOR shall indemnify and hold NY State, its employees and agents, and JORDAN and its employees harmless from all claims, suits, judgments, damages, costs, or expenses, including attorney's fees arising out of the (1) negligent act, error, or omission of

SUBCONTRACTOR, its employees or agents or (2) failure to comply with the obligations of Article 13.9 during performance under this Agreement and whether caused in part by a party indemnified hereunder, except for damages caused by the sole negligence of JORDAN. This obligation shall extend to suits or claims by SUBCONTRACTOR's employees and shall not be limited by any limitation on the type or amount of damages paid by or for SUBCONTRACTOR under any Worker's Compensation statute or other statutory employee benefit act or disability provision.

13.11 SUBCONTRACTOR agrees that in the event of any labor dispute involving SUBCONTRACTOR or employees of SUBCONTRACTOR, or failure to comply with applicable statutes, JORDAN at its option may terminate this Agreement or any Task Order Memorandum upon two (2) days notice in writing, by mail, telegram, telex or telecopier, in which case SUBCONTRACTOR will be entitled to payment only for that portion of work already performed on the basis of the unit rates established in the Agreement.

In the event that JORDAN incurs out-of-pocket expenses including attorneys fees, or other costs, which result from delays, as a result of any labor dispute or failure to comply with applicable statutes involving SUBCONTRACTOR or employees of SUBCONTRACTOR, SUBCONTRACTOR will reimburse JORDAN for such costs and indemnify and hold harmless JORDAN with regard to claims made by others because of such delays, whether such claims are based on contract, tort, including negligence, strict liability or otherwise.

ARTICLE 14
GOVERNING LAW

The terms of this Agreement and the Task Order Memoranda shall be construed and interpreted under, and all respective rights and duties of the parties shall be governed by, the laws of the State of New York.

IN WITNESS WHEREOF the parties hereto have made and executed this Agreement as of the day and year first written above.

[SUBCONTRACTOR NAME]:	E.C. JORDAN CO.:
_____	_____
BY: _____	BY: _____
TITLE: _____	TITLE: _____
(PLEASE INDICATE DATE ON PAGE ONE)	DATE: _____

ATTACHMENT A

EXHIBIT 1

Additional terms and conditions from the Agreement between New York State Department of Environmental Conservation and E. C. Jordan Co. entered into as of January 11, 1990 are attached hereto and incorporated herein. Where necessary to give effect to the contract language, the term "Department" shall mean JORDAN and the term "Engineer" shall mean SUBCONTRACTOR.

THIS CONTRACT by and between the New York State Department of Environmental Conservation (hereinafter referred to as the "Department"), having offices at 50 Wolf Road, Albany, New York, 12233 and C.C. Jordan Company (hereinafter referred to as the "Engineer"), having offices at 261 Commercial Street; P.O. Box 7050; Portland, ME 04112.

WITNESSETH:

WHEREAS, the Department is authorized by Environmental Conservation Law, Section 3-0309 to obtain technical and professional services on a standby basis for certain purposes; the performance of these services is essential to the Department; and the Department, after fully examining all of its internal capabilities and thoroughly investigating all possible alternative approaches, has determined that certain tasks can best be accomplished through a contract; and

WHEREAS, the Engineer hereby represents that it is professionally capable of providing the technical and professional services which are the subject matter of this Contract, and is licensed and authorized to practice engineering in the State of New York;

NOW, THEREFORE, in consideration of the mutual promises contained herein, the parties hereto agree as follows:

ARTICLE 1 DEFINITIONS

In addition to the definitions of "Department" and "Engineer" given above, the terms listed below shall have the following meanings for the purposes of this Contract:

(a) STATE - The State of New York.

(b) DEPARTMENT'S AUTHORIZED REPRESENTATIVE - The person authorized by the Commissioner to act for the Department in all matters related to this Contract and identified in Article 8 herein.

(c) USEPA - The United States Environmental Protection Agency.

(d) PROJECT - The services which are described generally in Schedule 1, "Scope of Engineering Services", and described specifically in a work assignment.

(e) FIXED FEE - The profit of the Engineer which is applicable to a particular work assignment under this Contract. The fixed fee may be increased only through a written amendment to a work assignment providing for an increase in scope of services under such work assignment.

(f) WORK ASSIGNMENT COSTS- The sum of accurately and properly documented and allowable direct and indirect costs which have been incurred within budgeted amounts estimated for work assignment tasks, less any allocable credits.

(b) The dollar amount of the fixed fee for each work assignment shall not be increased or decreased unless there is a change in scope to the work assignment. A change in scope is defined as a new task added to, or an existing task deleted from, a work assignment. Increasing or decreasing the level of effort of a work assignment is not considered a change in scope unless the change in level of effort of the work assignment is greater than 20 percent.

(c) Payment for the work assignment fixed fee shall be in accordance with Section 2.8 of Schedule 2.

ARTICLE 6 PAYMENT; TOTAL CONTRACT PRICE

(a) The total price of this Contract shall not exceed [redacted], unless amended in accordance with Article 14 of this Contract.

(b) The total price of this Contract represents a ceiling on the sum of the costs and the fixed fee, and in no way guarantees a level of work to be assigned under the Contract.

(c) Payment shall be made only for allowable costs which are (1) accurately and properly documented in accordance with requirements set forth in Schedule 2 of this Contract, and (2) which are within budgeted line items for the tasks under a work assignment. Also, payment shall only be made when the milestone dates for completion of services have been met and the tasks required by each milestone have been completed, as set forth in the Progress Schedule required by Article 10(b) of this Contract.

(d) Budgeted line items for each task of any work assignment may only be varied with the prior written approval of the Department.

(e) Upon satisfactory completion of work assignment services performed under this Contract, as a precondition for final payment under the work assignment, or as a condition of a termination settlement under this Contract, the Engineer shall execute and deliver to the Department a release of all claims against the Department arising under, or by virtue of, a work assignment or this Contract, as the case may be, except claims which are specifically exempted by the Engineer and set forth in the release. Unless otherwise provided in this Contract, by State law, or otherwise expressly agreed to by the parties to this Contract, final payment under this Contract or settlement upon termination of this Contract shall not constitute a waiver of the Department's claims against the Engineer or its sureties under this Contract or under applicable performance and payment bonds.

(f) If the State or USEPA determines that any work assignment budget, or any price, including the fixed fee, negotiated in connection with this Contract, or any cost reimbursable under this Contract, was increased by any significant sums because the Engineer or any subcontractor furnished incomplete or inaccurate cost or pricing

data, then such budget, price, cost, or fixed fee shall be reduced accordingly and the amount payable under any work plan budget shall be modified in writing to reflect such reduction.

~~ARTICLE 7 TIME OF COMPLETION~~

(a) The effective date of this Contract shall be the date of approval by the State Comptroller.

(b) The term of this Contract shall be seven (7) years; provided, that the Department shall make no new task assignments after three years from the effective date of this Contract, until the New York State Division of the Budget shall have issued a new budget approval for this Contract; after such approval, the Department may make new task assignments, provided that the work under such assignments shall be completed within the contract term, or any extension thereof. The time of completion for individual work assignments will be specified in the work assignments.

(c) The Engineer is immediately authorized to perform the services described in Schedule 1 upon receipt of a written notice to proceed with a work assignment from the Department. All services required by this Contract including the delivery to the Department of any reports, plans, data, etc., shall be completed within the term of the contract, unless this Contract is amended or extended as provided herein.

(d) The term of this Contract may be extended by contract amendment for up to one year.

(e) Nothing in this Article or Contract shall be interpreted or construed as a commitment by the Department to extend the term of this Contract beyond the term defined herein.

ARTICLE 8 AUTHORIZED REPRESENTATIVES; ADDRESS FOR NOTICES

(a) It is understood and agreed between the parties that the Department's and Engineer's Authorized Representative for this Contract, for any notices, approvals or direction called for therein, shall be, respectively

Michael J. O'Toole, Jr., P.E.
Director
Division of Hazardous Waste Remediation

or his designee, for the Department, and

Donald Cote
President
E.C. Jordan Company

~~or his designee, for the Engineer.~~

(e) ~~The Engineer's Work/Quality Project Plan must be approved by the~~ Department prior to initiation of any sampling.

(f) All laboratory analyses shall be performed in accordance with the most current NYSDEC Contract Laboratory Protocols or as otherwise directed by the Department. The engineer must submit complete QA/QC documentation as required by the Contract Laboratory ~~Protocols~~.

ARTICLE 13 REMOVAL OF PERSONNEL

All personnel assigned to the Project by the Engineer shall be subject to the approval of the Department and be recuired to cooperate with the personnel assigned to the Project by the Department. In the event the Engineer's personnel fail to cooperate or to perform their assigned tasks in a reasonable manner as determined by the Department, the Department may require the Engineer to replace such personnel.

ARTICLE 14 MODIFICATIONS TO SERVICES; AMENDMENTS TO CONTRACT

(a) Unless otherwise provided, this Contract may be amended or modified only by a written amendment signed by both the Engineer and the Department and approved by the State Attorney General and the State Comptroller.

(b) If in the opinion of the Engineer, a change in budgeted cost, time or scope of services is required to perform any services which the Engineer has been directed to perform, or which the Engineer is required to perform under a work assignment, the Engineer shall notify the Department in writing of its opinion concerning such change. Such notification shall be made within ten days of the event giving rise to such opinion, and prior to proceeding with the services for which such change is claimed. The Engineer shall provide documentation acceptable to the Department substantiating the amount and extent of any change in the budgeted cost, time or scope of services within 20 calendar days of providing notice of such change. The Engineer waives any right to additional compensation if notice of such change, and supporting documentation therefor, are not provided to the Department within the above times. These times may be extended with the written approval of the Department. During the time required for submission of the above notice and supporting documentation and consideration by the Department, the Engineer will proceed with the services in question according to the written direction of the Department.

The Department shall be the sole judge of whether such alleged change in cost, time, or services is in fact beyond the scope of services and schedules of the work assignment or of this Contract. In the event that the Department determines that it is so beyond, then the Department will make an appropriate change in the work assignment and the work assignment budget. Otherwise, the Engineer will not perform services or expend funds beyond the provisions of this Contract.

(c) The Department reserves the unilateral right to remove all or any part of a task from a work assignment at any time upon its determination that such removal is in the best interests of the Department. The work assignment fixed fee will be adjusted in accordance with Article 5(b) for task removals that result in a decrease in the scope of work. The Engineer is due no compensation for any task or part of a task so removed before the Engineer begins work on it. If the task is removed after Engineer begins work in it, the Engineer will be compensated in accordance with Article 15. Any funds not expended due to the removal of a task may be reallocated to other tasks upon written Department approval or deducted from the Total Contract Price at the option of the Department.

(d) If any claims are made or any legal actions are brought in connection with the Project which require work not specified in Schedule 1 or a work assignment, the Engineer agrees to render to the Department all assistance required by the Department. Compensation for work performed and costs incurred in connection with such requirement shall be made based on cost rate schedules contained in Schedule 2 of this Contract.

ARTICLE 15 POSTPONEMENT, SUSPENSION AND TERMINATION

(a) The Department shall have the right to postpone, suspend or terminate this Contract or any work assignment in whole or in part for the convenience of the Department, and such actions shall in no event be deemed a breach of contract. In any of these events, the Department shall fix the value of the work performed by the Engineer prior to such postponement, suspension or termination of the Contract on an equitable basis. In determining the value of the work performed, the Department shall consider the following:

(1) The ratio of the amount of satisfactory work performed by the Engineer prior to the termination of the Contract or work assignment to the total amount of work contemplated by this Contract or work assignment.

(2) The expenses of the Engineer in performing satisfactory work prior to the termination, in proportion to the expenses which the Engineer would have incurred if it had completed the total work contemplated by the work assignment (work assignment costs as defined in Article 1(f)).

(3) The actual cost of satisfactory work incurred by the Engineer as verified by audit acceptable to the Department plus a portion of the fixed fee equal to the percentage which the satisfactory work completed bears to the total amount of work contemplated in Schedule 1 or the applicable work assignment.

(4) The Department shall not be liable for extra costs

associated with delays in the Project which are directly attributed to the Engineer, or the Engineer's suppliers, or any other party with whom the Engineer has a contract.

(5) In determining the value of the work performed by the Engineer prior to termination, no consideration will be given to the fixed fee which the Engineer might have made on the uncompleted portion of the work.

(b) The Department shall have the right to postpone, suspend, abandon or terminate this Contract or a work assignment for cause, and such actions shall in no event be deemed a breach of Contract. In such case, the value of the work performed by the Engineer prior to the termination shall be fixed solely by the cost of satisfactory work as determined by the Department, reduced by the amount of damages incurred by the Department, plus the portion of the Fixed Fee associated with the satisfactorily completed work.

(c) Upon receipt of a termination notice, the Engineer shall (1) promptly discontinue all affected work (unless the notice directs otherwise), and (2) deliver or otherwise make available to the Department all data, drawings, specifications, reports, estimates, summaries and such other information and materials as may have been accumulated by the Engineer in performing this Contract or work assignment, whether completed or in progress, pursuant to Article 17. No payment for satisfactory work will be made until the Department receives all such materials.

(d) Upon termination, the Department may complete the work and/or may make an agreement with another party to complete the work under this Contract or work assignment.

(e) If, after termination for failure of the Engineer to fulfill contractual obligations, it is determined that the Engineer had not failed to fulfill contractual obligations, the termination shall be deemed to have been for the convenience of the Department. In such event, adjustment of the contract price shall be made as provided for in paragraph (a) of this Article.

~~ARTICLE 18 SUBCONTRACTS~~

(a) ~~All~~ services to be performed under this Contract shall be performed with the Engineer's own employees, unless the Department's Authorized Representative agrees in writing that the Engineer may subcontract such services. Copies of all proposed agreements between the Engineer and subcontractors shall be submitted to the Department along with a statement of the subcontractor's qualifications. Such agreements must be approved by the Department in writing prior to initiation of work.

(b) The reasonableness of proposed subcontracting costs must be demonstrated by the consultant through the use of price quotes and/or auditing and accounting data as required by the ~~Department. If cost reasonableness is determined by quotes the~~

~~lowest responsive/responsible quote will determine the maximum~~ subcontracting cost reimburseable under this contract. If cost reasonableness is determined by auditing and accounting data, the supporting documentation will be evaluated on a case-by-case basis by the Department. Subcontracting costs which the consultant cannot document as being reasonable will not be reimbursed under this contract.

(c) A minimum of 50% of the consultant's engineering services level of effort must be performed by the consultant's own staff, or, if the consultant qualified as a member of a "short list" team, by the staff of the team members, unless the Department agrees otherwise in writing.

(d) All subcontracts under this Contract are subject to all applicable provisions of this Contract, including all Schedules and Appendices, unless otherwise directed in writing by the Department.

(e) The Engineer is responsible for the completion of all services under this Contract in an acceptable and timely manner, including any services performed by a subcontractor, supplier or other ~~party with whom the Engineer has a contract~~.

ARTICLE 17 DISPOSITION OF DOCUMENTS AND DATA

(a) The Engineer shall deliver to the Department copies of all preliminary and final reports, plans, drawings, and specifications which are required by Schedule 1 and the work assignment, and by the Progress Schedule developed pursuant to Article 10 of this Contract. All documents delivered which are not in final form shall contain a statement on the title page setting forth the percentage of work which has been accomplished and the percentage of work which remains to be completed before the document will be in final form.

(b) At the time of completion of work assignment services, the Engineer shall deliver to the Department the original copies, two reproducible copies, plus additional copies, of all final plans, drawings, specifications, computations, designs, construction data, reports, record drawings, and all other documents and data pertaining to the work which is the subject of this Contract to the extent that the information has not already been furnished.

(c) Project documents and data shall at all times be the property of the Department. In the event that this Contract or a work assignment is terminated for any reason, the documents and data pertaining to the work on the project shall be delivered to the Department within ten calendar days after the receipt by the Engineer of notice of such termination.

(d) All engineering reports, plans and specifications submitted to the Department shall bear thereon the signature and stamp of the Engineer, registered as a New York State Professional Engineer.

All maps submitted to the Department shall bear the signature and stamp of the Engineer or of a land surveyor currently authorized and licensed to practice land surveying in New York. All engineering data submitted to the Department shall be certified by the Engineer.

(e) If an individual engineer signs and stamps reports, maps, plans and specifications, and/or certifies engineering documentation and data, such engineer must be a Professional Engineer currently licensed and authorized to practice engineering in New York State.

(f) Failure by the Engineer to provide the Department with any documents, stamped documents, data or certifications required by this Contract, shall be cause for withholding all further payments due under this Contract. If the Department terminates this Contract or a work assignment because the Engineer withheld any of the above, the provisions of this Contract relating to compensation shall not apply. Any additional costs incurred by the Department as a result of a delay will be deducted from any payment due to the Engineer.

(g) The Engineer shall be permitted to retain for record purposes copies of all material given to the Department.

ARTICLE 18 DEPARTMENT APPROVAL AND INSPECTION

(a) All services performed by the Engineer shall be subject to the approval of the Department. The Department reserves the right to refuse partial or full payment for services, including but not limited to reports, data and documents, which are not submitted in a form approvable by the Department.

(b) The duly authorized representatives of the Department and, if federally funded, the USEPA shall have the right at all times to inspect the work of the Engineer.

(c) The Department's determinations upon inspection shall be conclusive as to whether the material, workmanship and services inspected conform to the requirements of this Contract.

(d) Inspections shall not in any way affect any legal right of the Department to reject the completed work or portions thereof.

(e) If the Engineer does not promptly correct rejected work and promptly repair any damages caused by these corrective measures, the Department may (1) have others correct such work and charge the cost thereof to the Engineer, including without being limited to, offsetting such costs against payments due under this Contract; or (2) terminate the Contract or work assignment in accordance with Article 15.

(f) Should the Department decide, at any time before acceptance of

any services, to inspect or examine work already completed and accepted by removing or uncovering same, the Engineer shall on request promptly furnish all necessary equipment, labor and materials to conduct such inspection or examination. If such work is found to be defective or non-conforming in any respect, the Engineer shall pay for all the expenses of such inspection or examination and shall correct the work determined to be defective and non-conforming in a manner acceptable to the Department without additional compensation, and shall restore any affected areas, structures, or facilities to their former state. If the work is found to meet the requirements of the Contract and work assignment, the Department shall compensate the Engineer for the additional services involved in such inspection or examination and reconstruction and replacement of work, and if completion of the work has been delayed thereby, the Department, in addition, shall grant the Engineer a suitable extension of time.

(g) No previous inspection or examination or payment shall relieve the Engineer from the obligation to perform the work in accordance with this Contract and any work assignment thereunder. Final payment shall not relieve the Engineer of the responsibility to comply with this Contract, and any work assignment thereunder, and it shall remedy all defects, paying the cost of any damage to other work resulting therefrom, which shall appear within a period of one year from the date of final payment. However, the obligation of the Engineer to remedy will be limited to faulty performance of the Engineer and its subcontractors under the scope of services specified in this Contract and any work assignment. The Engineer shall not be obligated to correct conditions which arise due to vandalism, use by others, and acts of God. However, the Engineer shall be responsible for providing their own security at project sites.

(h) The review and approval of drawings, designs, specifications, reports and incidental work or materials furnished hereunder by the Department or, in the event of federal funding, the USEPA shall not in any way relieve the Engineer of responsibility for the technical adequacy of its work. Such review, approval, or payment for any of the services covered by this Contract shall not be construed as a waiver by the Department of any rights under this Contract.

~~ARTICLE 19 DEATH OR DISABILITY~~

(a) In case of death or disability of one or more but not all persons herein referred to as Engineer, the rights and duties of the Engineer shall be transferred to the survivor(s), who shall be obligated to perform the services required under this Contract, and the Department shall make all payments due to the survivor(s).

(b) In the case of death or disability of all the persons herein referred to as Engineer, all data and records pertaining to the ~~Project shall be delivered within sixty days to the Department.~~

~~Authorized Representative. If the Engineer's successors or~~ personal representatives fail to make such delivery on demand, the representatives of the Engineer shall be liable to the Department for any damage it may sustain by reason thereof. Upon the delivery of all such data to the Department, the Department will pay to the representatives of the Engineer all amounts due to the Engineer, including those to the date of the death of the ~~last partner~~.

ARTICLE 20 AUDITS, ACCESS TO RECORDS

The Engineer shall maintain all books, records, documents, accounts, and other evidence directly pertinent to the performance of work under this Contract and any work assignment made thereunder in accordance with the terms of Appendix A, paragraph 10, generally acceptable accounting principles and practices consistently applied, and 40 CFR Part 30 in effect during the term of this Contract. In addition to the officials set forth in paragraph 10, Appendix A, the following officials shall also have access to the above records: the State Department of Labor, and in the event of federal funding, the USEPA, the Comptroller General of the United States, the United States Department of Labor, or any of their authorized representatives.

ARTICLE 21 APPLICABLE LAW; JURISDICTION; SERVICE OF LEGAL PROCESS

The Engineer agrees:

(a) That this Contract is subject to and governed by all applicable federal, State and local laws.

(b) To procure all necessary licenses and permits required to complete the work assignment.

(c) To submit voluntarily and irrevocably to the jurisdiction of a court of competent jurisdiction in New York State, to resolve any dispute or controversy arising out of this Contract.

(d) That the venue of any action at law or in equity commenced by the Engineer against the Department arising out of a Project in one of the Department's Regions, shall be in the county in that Region where the Department's Regional headquarters is located, or in the Federal District Court having geographic jurisdiction over the area where such project or the Department's Regional headquarters is located.

(e) That the service of legal process or any notices in connection with a dispute or controversy arising out of this Contract, by United States registered mail, postage prepaid, addressed to the Engineer at the address stated in Article 8 of this Contract, shall constitute good and valid service of process upon the Engineer.

(f) To waive any defense based on or alleging lack of jurisdiction,

improper venue, or invalid service, if the provisions of paragraphs (c), (d), (e) in this Article are complied with.

(g) That this Contract may be presented in court as conclusive evidence of the foregoing..

ARTICLE 22 SUPERSESSION

The Department and the Engineer agree that the provisions of 40 CFR Part 33, including both regulations and model contract clauses, apply to the work to be performed under this Contract which is funded pursuant to a Cooperative Agreement or any other agreement between the Department and the USEPA; and further agree that these regulations and clauses supersede any conflicting provisions of this Contract.

~~ARTICLE 23 PRIVITY OF CONTRACT~~

If this Contract is funded with funds from the USEPA, neither the United States nor ~~any~~ of its departments, agencies or employees is or will be a party to this Contract. Further, if federal funds are available, all applicable federal regulations and contract clauses ~~will be deemed to be a part of this Contract~~.

ARTICLE 24 PROPRIETARY RIGHTS

The Engineer agrees that if patentable discoveries or inventions should result from work described herein, such inventions or discoveries shall be disclosed promptly to the Department, and to the USEPA in accordance with federal regulations, if the contract is funded pursuant to a federal grant or cooperative agreement or other federal funding arrangement. The Engineer agrees that if it is authorized to patent such inventions or discoveries, it will and does hereby grant to the United States Government and the State a nonexclusive, nontransferable, paid-up license to make, use, and sell each subject invention throughout the world.

ARTICLE 25 EMPLOYMENT OF DEPARTMENT PERSONNEL

This Contract may be cancelled or terminated by the Department, and all monies due, or to become due hereunder may be forfeited, if the Engineer shall knowingly employ either directly or indirectly, in any capacity, any person who at the time of such employment is also an employee of the Department.

ARTICLE 26 GRATUITIES

If the Department finds after notice and hearing that the Engineer or any of the Engineer's agents or representatives offered or gave gratuities (in the form of entertainment, gifts or otherwise) to any official, employee or agent of the Department or, in the event of federal funding, the USEPA, in an attempt to secure a contract or favorable treatment in awarding or making any determinations related to the performance of this Contract, such action shall be deemed a

breach of the Contract. In the case of such a breach, the Department may, by written notice to the Engineer, terminate this Contract and may also pursue other rights and remedies that the law or this Contract provides.

ARTICLE 27 COVENANT AGAINST CONTINGENT FEES

The Engineer warrants that it has not employed or retained any company or person, other than a bona fide employee working for the Engineer, to solicit or secure this Contract, and that it has not paid or agreed to pay any company or person, other than a bona fide employee, any fee, commission, percentage, brokerage fee, gift, or any other consideration, contingent upon or resulting from the award or making of this Contract. For breach or violation of this warranty, the Department shall have the right to annul this Contract without liability, or, at its discretion, to deduct from payments under this Contract or otherwise recover the full amount of such fee, commission, percentage, brokerage fee, gift, or contingent fee.

~~ARTICLE 28 WORKERS' COMPENSATION AND LIABILITY INSURANCE~~

(a) The Engineer agrees to procure and maintain, until final acceptance by the Department of the services covered by this Contract, insurance of the kinds and in the amounts hereafter provided, by insurance companies acceptable to the Department and authorized to do business in the State of New York, covering all operations under this Contract whether performed by it or its subcontractors unless otherwise approved in writing by the Department. Upon signing this Contract, the Engineer shall furnish to the Department a certificate or certificates, in a form satisfactory to the Department, showing that it has complied with this Article. The certificate or certificates shall provide that the policies shall not be changed or cancelled until thirty (30) days after written notice of such change or cancellation has been given to the Department. The parties agree that the cost of insurance shall be a component of its overhead costs. The Engineer further agrees to furnish the insurance policies required by this Contract to the Department, upon request, for examination.

(b) The Department may suspend or terminate this Contract unless the Engineer maintains in full force and effect, the types and amounts of insurance listed below:

(1) A policy covering the obligations of the Engineer in accordance with the provisions of the Worker's Compensation Law for any employees rendering services within the State of New York. This Contract shall be void and of no effect unless the Engineer procures such policy and maintains it in effect until acceptance of the work.

(2) Professional liability or errors and omissions insurance in ~~the amount of $1,000,000 for the duration of the project.~~

~~(b) Bodily injury and property damage liability insurance as~~ follows:

(i) Bodily injury liability insurance for all damages arising out of bodily injury, including death at any time resulting therefrom; sustained by one person - not less than $500,000; and sustained by two or more persons in any one accident - not less than $1,000,000.

(ii) Property damage liability insurance for all damages arising out of injury to or destruction of property; in any one accident - not less than $500,000; during the entire policy period - not less than $1,000,000.

(iii) The aggregate amount of liability insurance required under (i) and (ii) shall be $2,000,000. This aggregate may be met, in part, with excess coverage.

(c) The liability insurance of the Engineer shall also cover the liability of the Engineer with respect to all work performed under this Contract for the Engineer by each of the Engineer's subcontractors.

(d) The Department shall be named as "additional insured" on all insurance policies, except workers' compensation policies.

(e) The Engineer shall give prompt written notice of an accident or claim to the Department as well as to its insurer. Such notice must be given within the period established by the policy for giving such notice.

(f) In the event that insurance coverage specified in this article is not obtained by the Engineer, the Engineer shall attempt to obtain such coverage from at least three carriers on a periodic basis at least every 6 months, and provide documentation to the ~~Department of its attempts.~~

ARTICLE 29 CONFIDENTIALITY

The Engineer agrees that any and all data, analyses, materials or other information, oral or written, made available to the Engineer with respect to this Contract, and any and all data, analyses, materials, reports or other information, oral or written, prepared by the Engineer with respect to this Contract shall, except for information which has been or is publicly available, be treated as confidential; and shall not be utilized, released, published or disclosed by the Engineer at any time for any purpose whatsoever other than to provide consultation or other services to the New York State Department of Environmental Conservation, the New York State Department of Law, USEPA, or such other persons or agencies as shall be designated by the Department.

The foregoing shall not prevent Engineer from disclosing information in response to any Federal, state or local governmental administrative or judicial order, but in the event Engineer receives or is threatened with such an order or has actual knowledge that such an order may be brought or be forthcoming, Engineer shall immediately notify the Department and assist the Department in its undertaking such lawful measures as it may desire to resist the issuance, enforcement, and effect of such order. Engineer's obligation to resist such an order and assist the Department is contingent upon Engineer receiving further compensation for such assistance at the rate specified in Schedule 2 for all labor of Engineer's personnel plus all costs and expenses, including without limitation, reasonable attorney's fees incurred by Engineer in assisting the Department provided that the Department determine upon its review of such labor costs, other costs and expenses, and attorneys fee, that each was reasonable and necessarily incurred.

APPENDIX A
STANDARD CLAUSES FOR ALL NEW YORK STATE CONTRACTS

The parties to the attached contract, license, lease, amendment or other agreement of any kind (hereinafter, "the contract" or "this contract") agree to be bound by the following clauses which are hereby made a part of the contract (the word "Contractor" herein references to any party other than the State, whether a contractor, licensor, licensee, lessor, lessee or any other party):

1. EXECUTORY CLAUSE. In accordance with Section 41 of the State Finance Law, the State shall have no liability under this contract to the Contractor or to anyone else beyond funds appropriate and available for this contract.

2. NON-ASSIGNMENT CLAUSE. In accordance with Section 138 of the State Finance Law, this contract may not be assigned by the Contractor or its right, title or interest therein assigned, transferred, conveyed, sublet or otherwise disposed of without the previous consent, in writing, of the State and any attempts to assign the contract without the State's written consent are null and void. The Contractor may, however, assign its right to receive payment without the State's prior written consent unless this contract concerns Certificates of Participation pursuant to Article 5-A of the State Finance Law.

3. COMPTROLLER'S APPROVAL. In accordance with Section 112 of the State Finance Law (or, if this contract is with the State University or City University of New York, Section 355 of Section 6218 of the Education Law), if this contract exceeds $5,000 ($20,000 for certain S.U.N.Y. and C.U.N.Y. contracts), or if this is an amendment for any amount to a contract which, as so amended, exceeds said statutory amount, or if, by this contract, the State agrees to give something other than money, it shall not be valid, effective or binding upon the State until it has been approved by the State Comptroller and filed in his office.

4. WORKERS' COMPENSATION BENEFITS. In accordance with Section 142 of the State Finance Law, this contract shall be void and of no force and effect unless the Contractor shall provide and maintain coverage during the life of this contract for the benefit of such employees as are required to be covered by the provisions of the Workers' Compensation Law.

5. NON-DISCRIMINATION REQUIREMENTS. In accordance with Article 15 of the Executive Law (also known as the Human Rights Law) and all other State and Federal statutory and constitutional non-discrimination provisions, the Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, sex, national origin, age disability or marital status. Furthermore, in accordance with Section 220-e of the Labor Law, if this is a contract for the construction, alteration or repair of any public building or public work or for the manufacture, sale or distribution of materials, equipment or supplies, an to the extent that this contract shall be performed within the State of New York, Contractor agrees that neither it nor its

subcontractors shall, by reason of race, creed, color, disability, sex or national origin: (a) discriminate in hiring against or intimidate any employee hired for the performance of work under this contract. If this is a building service contract as defined in Section 230 of the Labor Law, then, in accordance with Section 239 thereof, Contractor agrees that neither it nor its subcontractors shall, by reason of race, creed, color, national origin, age, sex or disability: (a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this contract. Contractor is subject to fines of $50.00 per person per day for any violation of Section 220-e or Section 239 as well as possible termination of this contract and forfeiture of all moneys due hereunder for a second or subsequent violation.

6. WAGE AND HOURS PROVISIONS. If this is a public work contract covered by Article 8 of the Labor Law or a building service contract covered by Article 9 thereof, subcontractors may be required or permitted to work more than the number of hours or days stated in said statutes, except as otherwise provided in the Labor Law and as set forth in prevailing wage and supplement schedules issued by the State Labor Department. Furthermore, Contractor and its subcontractors must pay at least the prevailing wage rate and pay or provide the prevailing supplements, including the premium rates for overtime pay, as determined by the State Labor Department in accordance with the Labor Law.

7. NON-COLLUSIVE BIDDING REQUIREMENT. In accordance with Section 139-d of the State Finance Law, if this contract was awarded based upon the submission of bids, Contractor warrants, under penalty of perjury, that its bid was arrived at independently and without collusion aimed at restricting competition. Contractor further warrants that, at the time Contractor submitted its bid, an authorized and responsible person executed and delivered to the State a non-collusive bidding certification on Contractor's behalf.

8. INTERNATIONAL BOYCOTT PROHIBITION. In accordance with Section 220-f of the Labor Law and Section 139-h of the State Finance Law, if this contract exceeds $5,000, the Contractor agrees, as a material condition of the contract, that neither the Contractor nor any substantially owned or affiliated person, is participating, or shall participate in an international boycott in violation of the federal Export Administration Act of 1979 (50 USC App. Section 2401 et seq.) or regulations thereunder. If such Contractor, or any of the aforesaid affiliates of Contractor, is convicted or is otherwise found to have violated said laws or regulations upon the final determination of the United States Commerce Department or any other appropriate agency of the United States subsequent to the contract's execution, such contract, amendment or modification thereto shall be rendered forfeit and void. The Contractor shall so notify the State Comptroller within five (5) business days of such conviction, determination or disposition of appeal (2 NYCRR 105.4)

9. SET-OFF RIGHTS. The State shall have all of its common law, equitable and statutory rights of set-off. These rights shall include, but not be limited to, the State's option to withhold for the purposes of set-off any moneys due to the Contractor under this contract up to any amounts due and owing tot he State with regard to this contract, any other contract with any State department or agency, including any contract for a term commencing prior to the term of this contract, plus any amounts due and owing to the State for any other reason including, without limitation, tax delinquencies, fee delinquencies or monetary penalties relative thereto. The State shall exercise its set-off rights in accordance with normal State practices including, in cases of set-off pursuant to an audit, the finalization of such audit by the State agency, its representatives, or the State Comptroller.

10. RECORDS. The Contractor shall establish and maintain complete and accurate books, records, documents, accounts and other evidence directly pertinent to performance under this contract (hereinafter, collectively, "the Records"). The Records must be kept for the balance of the calendar year in which they were made and for six (6) additional years thereafter. The State Comptroller, the Attorney General and any other person or entity authorized to conduct an examination, as well as the agency or agencies involved in this contract, shall have access to the Records during normal business hours at an office of the Contractor within the State of New York or, if no such office is available, at a mutually agreeable and reasonable venue within the State, for the term specified above for the purposes of inspection, auditing and copying. The State shall take reasonable steps to protect from public disclosure any of the Records which are exempt from disclosure under Section 87 of the Public Officers Law (the "Statute") provided that: (i) the Contractor shall timely inform an appropriate State official, in writing, that said records should not be disclosed; and (ii) said records shall be sufficiently identified; and (iii) designation of said records as exempt under the Statute is reasonable. Nothing contained herein shall diminish, or in any way adversely affect, the State's right to discovery in any pending or future litigation.

11. IDENTIFYING INFORMATION AND PRIVACY NOTIFICATION:

(a) FEDERAL EMPLOYER IDENTIFICATION NUMBER and/or FEDERAL SOCIAL SECURITY NUMBER.

All invoices or New York State standard vouchers submitted for payment for the sale of goods or services or the lease of real or personal property to a New York State agency must include the payee's identification number, i.e., the seller's or lessor's identification number. The number is either the payee's Federal employee identification number or Federal social security number, or both such numbers when the payee has both such numbers. Failure to include this number or numbers may delay payment. Where the payee does not have such number or numbers, the payee, on his invoice or New York State standard voucher, must give the reason or reasons why the payee does not have such number or numbers.

(b) PRIVACY NOTIFICATION.

(1) The authority to request the above personal information from a seller of goods or services or a lessor of real or personal property, and the authority to maintain such information, is found in Section 5 of the State Tax Law. Disclosure of this information by the seller or lessor to the State is mandatory. The principal purpose for which the information is collected is to enable the State to identify individuals, businesses and other who have been delinquent in filing tax returns or may have understated their tax liabilities and to generally identify persons affected by the taxes administered by the Commissioner of Taxation and Finance. The information will be used for tax administration purposes and for any other purpose authorized by law.

(2) The personal information is requested by the purchasing unit of the agency contracting to purchase the goods or services or lease the real or personal property covered by this contract or lease. The information is maintained in New York State's Central Accounting System by the Director of State Accounts, Office of the State Comptroller, AESOB, Albany, New York 12236.

12. EQUAL EMPLOYMENT OPPORTUNITIES FOR MINORITIES AND WOMEN. In accordance with Section 312 of the Executive Law, if this contract is (i) a written agreement or purchase order instrument, providing for a total expenditure in excess of $25,000.00, whereby a contracting agency is committed to expend or does expend funds in return for labor, services, supplies, equipment, materials or any combination of the foregoing, to be performed for, or rendered or furnished to the contracting agency; or (ii) a written agreement in excess of $100,000.00 whereby a contracting agency is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon; or (iii) a written agreement in excess of $100,000.00 whereby the owner of a State assisted housing project is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon for such project, then:

> (a) The contractor will not discriminate against employees or applicants for employment because of race, creed, color, national origin, sex, age, disability or marital status, and will undertake or continue existing programs of affirmative action to ensure that minority group members and women are afforded equal employment opportunities without discrimination. Affirmative action shall mean recruitment, employment, job assignment, promotion, upgradings, demotion, transfer, layoff, or termination and rates of pay or other forms of compensation;

(b) at the request of the contracting agency, the Contractor shall request each employment agency, labor union, or authorized representative of workers with which it has a collective bargaining or other agreement or understanding, to furnish a written statement that such employment agency, labor union or representative will not discriminate on the basis of race, creed, color, national origin, sex, age, disability or marital status and that such union or representative will affirmatively cooperate in the implementation of the contractor's obligations herein; and

(c) the Contractor shall state, in all solicitations or advertisements for employees, that, in the performance of the State contract, all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability or marital status.

Contractor will include the provisions of "a", "b" and "c", above, in every subcontract over $25,000.00 for the construction, demolition, replacement, major repair, renovation, planning or design of real property and improvements thereon (the "Work") except where the Work is for the beneficial use of the Contractor, Section 312 does not apply to: (i) work, goods or services unrelated to this contract; or (ii) employment outside New York State; or (iii) banking services, insurance policies or the sale of securities. The State shall consider compliance by a contractor or subcontractor with the requirements of any federal law concerning equal employment opportunity which effectuates the purpose of his section. The contracting agency shall determine whether the imposition of the requirements of the provisions hereof duplicate or conflict with any such federal law and if such duplication or conflict exists, the contracting agency shall waive the applicability of Section 312 to the extent of such duplication or conflict. Contractor will comply with all duly promulgated and lawful rules and regulations of the Governor's Office of Minority and Women's Business Development pertaining hereto.

13. CONFLICTING TERMS. IN the event of a conflict between the terms of the contract (including any and all attachments thereto and amendments thereof) and the terms of this Appendix A, the terms of this Appendix A shall control.

14. GOVERNING LAW. This contract shall be governed by the laws of the State of New York except where the Federals supremacy clause requires otherwise.

15. LATE PAYMENT. Timeliness of payment and any interest to be paid to Contractor for late payment shall be governed by Article XI-A of the State Finance Law to the extent required by law.

16. NO ARBITRATION. Disputes involving this contract, including the breach or alleged breach thereof, may not be submitted to binding arbitration (except where statutory authorized) but must, instead, be heard in a court of competent jurisdiction of the State of New York.

17. SERVICE OF PROCESS. In addition to the methods of service allowed by the State Civil Practice Law & Rules ("CPLR"), Contractor hereby consents to service of process upon it by registered or certified mail, return receipt requested. Service hereunder shall be complete Contractor's actual receipt of process or upon the State's receipt of the return thereof by the United States Postal Service as refused or undeliverable. Contractor must promptly notify the State, in writing, of each and every change of address to which service of process can be made. Service by the State tot he last known address shall be sufficient. Contractor will have thirty (30) calendar days after service hereunder is complete in which to respond.

August 1989

APPENDIX B

Standard Clauses for All New York State Department of Environmental Conservation Contracts

The parties to the attached contract, license, lease, amendment or other agreement of any kind (hereinafter "the contract" or "this contract") agree to be bound by the following clauses which are hereby made a part of the contract. The word "Contractor" herein refers to any party to the contract, other than the New York State Department of Environmental Conservation (hereinafter "Department").

I. The Department shall have the right to postpone, suspend, abandon or terminate this contract, and such actions shall in no event be deemed a breach of contract. In the event of any termination, postponement, delay, suspension or abandonment, the Contractor shall deliver to the Department all data, reports, plans, or other documentation related to the performance of this contract, including but not limited to guarantees, warranties, as-built plans and shop drawings. In any of these events, the Department shall make settlement with the Contractor upon an equitable basis as determined by the Department which shall fix the value of the work which was performed by the Contractor prior to the postponement, suspension, abandonment or termination of this contract. This clause shall not apply to this contract if the contract contains other provisions applicable to postponement, suspension or termination of the contract.

II. The Contractor agrees that it will indemnify and save harmless the Department and the State of New York from and against all losses from claims, demands, payments, suits, actions, recoveries and judgments of every nature and description brought or recovered against it by reason of any omission or act of the Contractor, its agents, employees, or subcontractors in the performance of this contract.

III. (a) The Contractor warrants that to the best of the Contractor's knowledge and belief, there are no relevant facts or circumstances which could give rise to an organizational conflict of interest, as herein defined, or that the Contractor has disclosed all such relevant information to the Department.

(b) An organizational conflict of interest exists when the nature of the work to be performed under this contract may, without some restriction on future activities, either result in an unfair competitive advantage to the Contractor or impair the Contractor's objectivity in performing the work for the Department.

(c) The Contractor agrees that if an actual or potential organizational conflict of interest is discovered after award, the Contractor will make a full disclosure in writing to the Department. This disclosure shall include a description of actions which the Contractor has taken or proposes to take, after consultation with the Department, to avoid, mitigate, or minimize the actual or potential conflict.

(d) Remedies - The Department may terminate this contract in whole or in part, if it deems such termination necessary to avoid an organizational conflict of interest. If the Contractor was aware of a potential organizational conflict of interest prior to award, or discovered an actual or potential conflict after award and did not disclose or misrepresented relevant information to the Department, the Department may terminate the contract, or pursue such other remedies as may be permitted by the terms of Clause I of this Appendix or other applicable provisions of this contract regarding termination.

(e) The Contractor further agrees to insert in any subcontract hereunder, provisions which shall conform to the language of this clause.

IV. All requests for payment by the Contractor must be submitted on forms supplied and approved by the Department. Each payment request must contain such items of information and supporting documentation as are required by the Department, and shall be all-inclusive for the period of time covered by the payment request.

V. To the extent that federal funds are provided to the Contractor or used in paying the contractor under this contract, the Contractor agrees that it will comply with all applicable federal laws and regulations, including but not limited to those laws and regulations under which the Federal funds were authorized.

The Contractor further agrees to insert in any subcontract hereunder, provisions which shall conform substantially to the language of this clause, including this paragraph.

VI. The Contractor shall have the status of an independent contractor. Accordingly, the contractor agrees that it will conduct itself in a manner consistent with such status, and that it will neither hold itself out as, nor claim to be, an officer or employee of the Department by reason of this contract. It further agrees that it will not make against the Department any claim, demand or application to or for any right or privilege applicable to an officer or employee of the Department, including but not limited to worker's compensation coverage, unemployment insurance benefits, social security coverage, or retirement membership or credit.

VII. The terms contained in this clause shall have the definitions given in, and shall be construed according to Article 15-A of the Executive Law, 9 NYCRR Part 540, et seq., Article 52 of the Environmental Conservation Law and 6 NYCRR Part 615, et seq., as applicable, and any goals established by this clause are subject to the requirements of such laws and regulations.

(a) If the maximum contract price herein equals or exceeds $25,000, and this contract is for labor, services, supplies, equipment, or materials; or

If the maximum contract price herein equals or exceeds $100,000 and this contract is for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon;

the affirmative action provisions and equal employment opportunity provisions contained in this paragraph and paragraphs b-f of this clause shall be applicable within the limitations established by Executive Law §§312 and 313.

(1) The Contractor agrees to make good faith efforts to subcontract at least 15 percent of the dollar value of this contract to Minority Owned Business Enterprises (MBEs) and at least 5 percent of such value to Women Owned Business Enterprises (WBEs).

(2) The Contractor agrees to make good faith efforts to employ or contractually require any subcontractor with whom it contracts to make good faith efforts to employ minority group members for at least 10 percent of, and women for at least 10 percent of, the workforce hours required to perform the work under this contract.

(b) The Contractor agrees to be bound by the provisions of Executive Law Section 316.

The Contractor shall make good faith efforts to solicit meaningful participation by enterprises identified in the Directory of Certified Businesses provided by the Governor's Office of Minority and Women's Business Development.

(c) The Contractor agrees to include the requirements set forth in paragraph (b) above and paragraphs (a), (b), and (c) of clause 12 of Appendix A in every subcontract in such a manner that the provisions will be binding upon each subcontractor as to work in connection with such contract. For the purpose of this paragraph, a "subcontract" shall mean an agreement providing for a total expenditure in excess of $25,000 for the construction , demolition, replacement, major repair, renovation, planning or design of real property and improvements thereon in which a portion of the Contractor's obligation under a State contract is undertaken or assumed.

(d) The Contractor shall make good faith efforts to utilize the MBE/WBEs identified in the utilization plan to the extent indicated in such plan, and otherwise to

implement it according to its terms. The Contractor shall report on such implementation periodically as required by the contract, or annually, whichever is more frequent. The Contractor also agrees to incorporate into any contract with subcontractors, contractual provisions applicable to recordkeeping, reporting, notice requirements and actions determined to be necessary by the Department to implement the requirements of the utilization plan, and of Executive Law Article 15-A, regulations promulgated thereunder, and other applicable law and regulations.

(e) Failure to make good faith efforts to comply with an approved utilization plan or to comply with Article 15-A of the Executive Law, or Article 52 of the Environmental Conservation Law, as applicable, or regulations promulgated under such statutes, shall be grounds for imposition of sanctions. Such sanctions shall include those available under 6 NYCRR Part 615, if applicable, and under other applicable laws and regulations, including but not limited to the reduction of the contract price, postponement, suspension, and/or termination of the contract.

(f) The Contractor hereby agrees to comply with all applicable provisions of Executive Law Article 15-A and the regulations promulgated thereunder. Executive Law sections 312, 313 and 316 are hereby incorporated by reference. The Contractor agrees that the prevailing party in any disputes resolved pursuant to §316 of Executive Law shall not be liable for any costs of the proceeding.

(g) No request for payment on a contract to which this clause applies, shall be deemed complete until the Contractor submits adequate records enhancing its good faith efforts to comply with an approved utilization plan. This requirement is in addition to any and/or all additional documentation required to be submitted with a payment request.

VIII. In the event of a conflict between the terms of this Appendix B and the terms of the Contract (including any and all attachments thereto and amendments thereof, but not including Appendix A), the terms of this Appendix B shall control. In the event of a conflict between the terms of this Appendix B and Appendix A, the terms of Appendix A shall control.

Rider to
Appendix B

Standard Clauses for All
New York State Department of
Environmental Conservation
Contracts

The parties to this contract hereby agree that clause II of this Appendix B is hereby revised to read as follows:

II The Contractor agrees that it will indemnify and save harmless the Department and the State of New York from and against all losses from claims, demands, payments, suits, actions, recoveries and judgments, of every nature and description brought or recovered against it by reason of any acts or omissions of the Contractor, its agents, employees, or subcontractors in the performance of this contract which are shown to have been the result of negligence, gross negligence or reckless, wanton or intentional misconduct.

Department of Environmental Conservation

Dated:

By: _____
Director of Fiscal Management

E. C. Jordan Co.
(Contractor)

Dated: November 20, 1989

By: _____

LOVE CANAL IRM

TEST PIT EXCAVATION SERVICES CONTRACT

III. TASK ORDER MEMORANDUM

ATTACHMENT A PERFORMANCE AND PAYMENT BOND

ATTACHMENT B SPECIFICATION FOR SUBSURFACE EXCAVATIONS

ATTACHMENT C FIGURES AND DRAWINGS

ATTACHMENT D TEST PIT EXCAVATION SERVICES RATE SCHEDULE (BID FORM)

ATTACHMENT E PREVAILING WAGE SCHEDULE

ATTACHMENT F HEALTH AND SAFETY PLAN

ATTACHMENT G ADDITIONAL DATA

ATTACHMENT H NYSDEC LOVE CANAL HAZARDOUS WASTE DRUM HANDLING PROCEDURES

ATTACHMENT A

PERFORMANCE AND PAYMENT BOND

ATTACHMENT A

100% PERFORMANCE AND PAYMENT BOND SHALL BE PROVIDED BY THE SUCCESSFUL BIDDER FOR THE FULL AMOUNT OF THE BID PRICE

JHG/LUV-IRM/18

ATTACHMENT B

SPECIFICATIONS FOR SUBSURFACE EXCAVATIONS

ATTACHMENT B

STANDARD SPECIFICATIONS FOR SUBSURFACE EXCAVATIONS

GENERAL CONDITIONS

Article 1. Employees and Hours of Labor

a. The SUBCONTRACTOR shall at all times enforce strict discipline and good order among its employees, and shall not employ on the work any person not skilled in the work assigned to them or otherwise unfit to perform his or her duties. Whenever JORDAN shall notify the SUBCONTRACTOR, in writing, that any person on the work is, in its opinion, incompetent, unfaithful, disorderly or otherwise unsatisfactory, such a person shall be discharged from the work and shall not again be employed on it, except with the consent of JORDAN.

b. Actual excavation and backfilling work shall be done during 10-hour day shifts unless special prior arrangements are made with JORDAN.

Article 2. EXCAVATION FOREMAN

a. The SUBCONTRACTOR shall keep at the site of the work, during its progress, a competent excavation foreman and any necessary assistants, all satisfactory to JORDAN. The excavation foreman shall not be changed except with the consent of JORDAN, unless the excavation foreman proves to be unsatisfactory to the SUBCONTRACTOR and ceases to be in its employ. The excavation foreman shall represent the SUBCONTRACTOR in its absence and all directions given to him or her shall be as binding as if given to the SUBCONTRACTOR itself. Verbal directions shall be confirmed in writing on request in any case.

b. The SUBCONTRACTOR shall give personal supervision to the work, using its best skill and attention.

Article 3. INSPECTION OF WORK

JORDAN shall at all times have access to the work, and the SUBCONTRACTOR shall provide proper facilities for such access and for inspection. A qualified representative of the SUBCONTRACTOR should be present at all times during the progress of work. The excavation of test pits shall be in accordance with the requirements of these specifications and the authorization of JORDAN and will be inspected by JORDAN at its discretion.

Article 4. PERMITS AND REGULATIONS

Permits and licenses necessary for completion of the SUBCONTRACTOR's work shall be secured and paid for by the SUBCONTRACTOR. The SUBCONTRACTOR shall give all

notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified.

Article 5. PROTECTION OF WORK, PUBLIC AND PROPERTY

The SUBCONTRACTOR shall continuously protect its work from damage, and protect adjacent property as provided by law. The SUBCONTRACTOR shall maintain lights and other safety devices as required by public authority or local conditions. The SUBCONTRACTOR shall promptly repair all damages caused by its operations under this Agreement.

The SUBCONTRACTOR may occupy during its operations only those portions of streets and public places at the excavation locations for which the required permits have been obtained by the SUBCONTRACTOR. If the SUBCONTRACTOR desires to use additional areas outside of those required for the excavations, he shall arrange for such areas at its own expense.

The SUBCONTRACTOR shall take every precaution against injuring paving, utilities, or private properties and shall promptly repair at its own expense any damage to such paving, utilities, or private property to the satisfaction of JORDAN. This requirement includes the filling of all excavations. Any abutting property which is damaged as the result of the SUBCONTRACTOR's operations shall be repaired at the SUBCONTRACTOR's expense to the satisfaction of JORDAN.

The location of all stationary and mobile equipment shall be subject to the approval of JORDAN, and upon the completion of the SUBCONTRACTOR's operations at each site, the SUBCONTRACTOR shall remove its equipment therefrom, shall clear the area of all debris and restore the area to the condition existing before the start of its operations.

Article 6. STORAGE

JORDAN and NYSDEC will designate an area at the site for storage of the SUBCONTRACTOR's excavation equipment. It is likely this area will be on the east side of the Love Canal near the office/shower trailer. The SUBCONTRACTOR shall be responsible for security of excavation equipment while stored at the site.

Article 7. DISPOSITION OF SOIL SAMPLES

All reference soil samples will be collected and stored on-site by JORDAN.

Article 8. NUMBER AND LOCATIONS OF EXCAVATIONS

a. The number and exact locations of excavations will be designated by JORDAN.

b. JORDAN makes no representations as to the character of the subsoil through which the excavations are to be advanced, or that any excavation location given will be found free from obstructions.

Article 9. ABANDONMENT AND COMPLETION OF EXCAVATIONS

a. Excavations shall not be abandoned before reaching the final depth authorized by JORDAN except on the approval of JORDAN. No payment will be made for excavations abandoned by reason of an accident or negligence attributable to the SUBCONTRACTOR.

Excavations abandoned before reading required depth, due to an obstruction or other reasonable cause not permitting completion of the excavation by standard procedures, shall be replaced by a supplementary excavation adjacent to the original and carried to the required depth. Penetration to the completed depth of the original excavation may be made by any means selected by the SUBCONTRACTOR and approved by JORDAN.

Article 10. SAFETY

The JORDAN health and Safety Plan (HASP) will be observed for all work performed under this Agreement. The Safety Plan, which will be provided to the SUBCONTRACTOR, is consistent with the following requirement.

Requirements of the Occupational Safety and Health Act (OSHA) 29CFR provide the basic safety requirements for this project. Special safety requirements are in addition to OSHA regulations. The EPA and NYSDEC may require procedures in addition to those required by OSHA or those contained in the Safety Plan. The responsibility for the implementation of a Safety Plan lies with the SUBCONTRACTOR.

Article 11. DISPOSAL OF EXCAVATED SOILS

Soils excavated from the test pits shall generally be placed back into the excavations. However, if any potentially contaminated material can not be placed back into an excavation, it shall be disposed of at the site in a manner and at a location deemed appropriate by JORDAN. If authorized by JORDAN, test pit wastes shall be placed in drums and stored on hardwood pallets by SUBCONTRACTOR at a location in the Love Canal contaminant area to be specified by NYSDEC. Further responsibility for these materials will be assumed by NYSDEC.

TECHNICAL SPECIFICATIONS

Article 13. EQUIPMENT AND MATERIALS

The SUBCONTRACTOR will be required to provide all equipment and materials necessary for mobilization and all necessary health and safety protection equipment and clothing. The SUBCONTRACTOR shall also provide for the decontamination of equipment and the back filling of excavations test pits.

Article 14. EXCAVATION REQUIREMENTS

a. The SUBCONTRACTOR will excavate each test pit to a specified depth for the purposes of sample collection and photodocumentation by JORDAN personnel. Excavated materials shall be segregated into topsoil and subsurface materials. At the completion of the

excavation, subsurface materials will be used first as backfill, then covered by the topsoil. If specified by JORDAN, common borrow (fill) shall be used to complete the backfilling and regrading of the pits.

b. Test pit locations shall be reclaimed by backfilling and regrading with excavated materials, or fill, to approximate original contours. The JORDAN representative will inspect and approve the final condition of each test pit location.

c. Excavation equipment and materials should be delivered to the site in a clean, contaminant free condition. Excavation equipment, and materials brought onto the site (other than those brought for emergency purposes) decontaminated as specified by JORDAN. Decontamination of the backhoe bucket is required between each test pit. All equipment and materials will be decontaminated prior to final departure from the site.

d. Decontamination will consist of steam cleaning and potable water as specified by JORDAN. Decontamination activities will be conducted in an area designated by JORDAN.

ATTACHMENT C

FIGURES AND DRAWINGS

DRAWING LIST

JOB NO.: 6609-00
CLIENT: NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
PROJECT: LOVE CANAL IRM

TITLE	DRAWING NO.	REV. NO.	REV. DATE
CITY OF NIAGARA FALLS, NY: PAVING CONTRACTS:			
Wheatfield Ave. from 97th St. to 102nd St.	PC944 1 of 2		9/30/60
101st St. from Frontier Ave. to Colvin Blvd.	PC950 1 of 4		5/22/63
101st St. from Frontier Ave. to Colvin Blvd.	PC950 2 of 4		5/22/63
101st St. from Frontier Ave. to Colvin Blvd.	PC950 3 of 4		5/22/63
101st St. from Frontier Ave. to Colvin Blvd.	PC950 4 of 4		5/22/63
100th St. from Frontier Ave. to Colvin Blvd.	PC951 1 of 4		6/11/63
100th St. from Frontier Ave. to Colvin Blvd.	PC951 2 of 4		6/11/63
100th St. from Frontier Ave. to Colvin Blvd.	PC951 3 of 4		6/11/63
100th St. from Frontier Ave. to Colvin Blvd.	PC951 4 of 4		6/11/63
TOWN OF WHEATFIELD, NIAGARA COUNTY			
Paving & Drainage: Plan & Profile	PC1045 1 of 5		1/19/74
Paving & Drainage: Plan & Profile	PC1045 2 of 5		1/19/74
Paving & Drainage: Plan & Profile	PC1045 3 of 5		1/19/74
Paving & Drainage: Plan & Profile	PC1045 4 of 5		1/19/74
FIGURE 1: GENERAL LOCATION OF AREA FOR TEST PITS			
STAS. 396+50 TO 403+00 FRONTIER AVE. EXTENSION	P-19		4/15/90

These drawings are provided for bidder information only to provide an idea of the type and location of underground utilities and above-ground features. Contractor must confirm all field utility and other critical feature locations.

ATTACHMENT D

TEST PIT EXPLORATION SERVICES RATE SCHEDULE

TEST PIT EXCAVATION SERVICES
RATE SCHEDULE

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	LEVEL D UNIT PRICE	LEVEL C UNIT PRICE	LEVEL B UNIT PRICE	TOTAL COST AT LEVEL D	TOTAL COST AT LEVEL C	TOTAL COST AT LEVEL B
1.	Mobilization and Demobilization of Backhoe and all necessary personnel and equipment to complete the Test Pit Investigations	1	_____	NA	NA	_____	_____	_____
2.	Excavation of "Contaminated" Test Pits	7	NA ea	_____ ea	_____ ea	_____	_____	_____
3.	Excavation of double-wide Test Pits with installation of concrete cut off wall in the excavated test pit.	4	NA ea	_____ ea	_____ ea	_____	_____	_____
4.	Excavation of Confirmation Test Pits	4	NA ea	_____ ea	_____ ea	_____	_____	_____
5.	Decontamination of Equipment Between Test Pits	15	NA ea	_____ ea	_____ ea	_____	_____	_____
6.	Supply Transport and Stage Spec. 17 DOT 55 gallon drums	20	_____ ea	NA ea	NA ea	_____	_____	_____
7.	Mobilize, setup, provide, and maintain an office/equipment storage/shower trailer.	1	_____ ea	NA ea	NA ea	_____	_____	_____
8.	Standby Time (maximum 8 hrs/day)		_____ hr	_____	_____ hr			
					TOTAL COST	_____	_____	_____

NOTE: Subcontractor shall attach Standard Hourly Rates for equipmnet and personnel.

DATE:_____

BY:_____

FIRM:_____

ATTACHMENT E

PREVAILING WAGE SCHEDULE

GENERAL WAGE DECISION NO. NY90-12

Supersedes General Wage Decision No. NY89-12

State: NEW YORK

County(ies): NIAGARA

Construction Type: Heavy & Highway

Construction Description: Heavy (except water well drilling) & Highway Construction Projects.

Modification Record:

No.	Publication Date	Page No.(s)
1	May 4, 1990	851-859
2	June 1, 1990	855-856
3	June 29, 1990	852
4	Sept. 21, 1990	853-854
5	Nov. 9, 1990	852-854

	Basic Hourly Rates	Fringe Benefits
ASBESTOS WORKERS	18.10	4.36
BOILERMAKERS	18.50	6.20
BRICKLAYERS:		
North Tonawanda:		
Bricklayers and stone masons	18.11	7.47
Terrazzo workers & tile setters	17.18	7.47
Marble setters	17.275	7.47
Remainder of County:		
Bricklayers and stone masons	20.23	4.87
Marble masons, terrazzo workers and tile setters	19.98	4.87
CARPENTERS:		
North Tonawanda:		
Carpenters, millwrights, piledrivermen and soft floor layers	17.78	7.75
Remainder of County:		
Carpenters & piledrivermen	17.39	8.675
CEMENT MASONS	17.76	7.30
ELECTRICIANS:		
Electricians	18.98	5.80+ 3%
Cable splicers	20.88	5.80+ 3%
ELECTRICIANS (Lighting and Traffic Signal System:		
Lineman and Technician	18.00	4.5+1.5% +e
Groundman Digging Machine Operator and Dynamite Man	16.20	4.5+1.5% +e
Mobile Equipment Operator	14.40	4.5+1.5% +e
Chief Mechanic	15.30	4.5+1.5% +e
Groundman Truck Driver (Tractor Trailer unit)	15.30	4.5+1.5% +e
Groundman Truck Driver	14.40	4.5+1.5% +e
Flagman	8.10	4.5+1.5% +e
ELEVATOR CONSTRUCTORS:		
Elevator constructors	18.78	3.87+ b+c
Helpers	13.15	3.87+ b+c
Probationary Helpers	9.39	
GLAZIERS	16.88	4.81
*IRONWORKERS:		
Jobs on which the total project coast is $3 million or less	17.94	6.13
Jobs on which the total project coast is over $3 million	21.10	6.13
Sheeter	23.21	6.13
Pre-engineered buildings	8.87	6.13
LABORERS:		
City of North Tonawanda:		
Free air tunnel:		
Class 1	12.845	5.29
Class 2	13.095	5.29
Class 3	13.595	5.29
Class 4	13.695	5.29
Class 5	14.095	5.29
Class 6	14.345	5.29
Heavy & Highway:		
Class 1	12.345	5.29

Class 2	12.545	5.29
Class 3	12.745	5.29
Class 4	12.945	5.29
LABORERS (Except the City of North Tonawanda):		
Heavy & Highway Construction:		
Group 1	16.00	8.61
Group 2	17.50	8.61
Group 3	16.50	8.61
Group 4	16.20	8.61
Group 5	17.25	8.61
Rock Tunnel Free Air Construction:		
Group 1	16.29	8.46
Group 2	16.50	8.46
Group 3	18.63	7.30
LINE CONSTRUCTION:		
Substation and switching structures; Pipetype cable installation and maintenance jobs or projects; Railroad catenary installation and maintenance; Bonding of rails:		
Lineman; technician	23.69	4.50+ 6.25% +e
Cable splicer	26.06	4.50+ 6.25% +e
groundman digging machine operator; dynamite man	21.32	4.50+ 6.25% +e
Groundman truck driver (tractor trailer unit)	20.14	4.50+ 6.25% +e
Mobile equipment operator; groundman truck drivers; mechanic	18.95	4.50+ 6.25% +e
Flagger	10.66	4.50+ 6.25% +e
Overhead transmission line work (where no other work is or has been involved); Overhead & underground distribution work:		
Lineman; technician	22.56	4.50+ 6.25% +e
Groundman digging machine operator; groundman dynamite man	20.30	4.50+ 6.25% +e
Groundman truck driver (tractor trailer unit)	19.18	4.50+ 6.25% +e
Groundman mobile equipment operator; groundman truck driver; mechanic	18.05	4.50+ 6.25% +e
Flagger	10.15	4.50+ 6.25% +e
Overhead transmission line work (where other work is or has been involved):		
Lineman; technican	25.80	4.50+ 6.25% +e
Groundman digging machine operator; dynamite man	23.22	4.50+ 6.25% +e
Groundman truck driver (tractor trailer unit)	21.93	4.50+ 6.25% +e
Mobile equipment operator; groundman truck driver; mechanic	20.64	4.50+ 6.25% +e
Flagger	11.61	4.50+ 6.25% +e
Telephone & CATV:		
Telephone lineman; installer repairman	14.56	1.50+ 3% +e
Groundman digging machine operator	14.56	1.50+ 3% +e
Groundman truck driver	10.17	1.50+ 3% +e
Groundman	8.44	1.50+ 3% +e
Cable Splicer	15.33	1.50+ 3% +e
PAINTERS:		
Twps. of Somerset, Hartland, Royal-		

ton, New Fane, Lockport, Pendleton and the eastern half of Cambria, Wilson and N. Tonowanda:		
Brush	15.95	4.78
Cranes, steel, tanks, towers, stacks, bridges, flag poles, radio & TV towers	16.70	4.78
Sandblasting, swing stages, scaffold, epoxy, spray, bosun chair	16.20	4.78
Bridges 35 ft. high or in depth of 35 ft. from road level	17.865	4.78
Remainder of County:		
Repaint (except bridges and tanks)	13.94	4.96
Brush & roll	16.00	5.21
Tapers	16.25	5.21
Spray; spraying mastic; vinyl or paperhangers; sandblasting and waterblasting; swinging scaffold or boatswain chair; stage or chair on building over 25 ft. from ground level; steeplejack used painting steel tanks, smokestacks and church steeples; steel painting	17.00	5.21
Domeshaper tanks on legs or stilts over 50 ft. from ground	18.00	5.21
Bridges	18.00	5.21
PLASTERERS	16.29	5.60
PLUMBERS & STEAMFITTERS	21.03	5.70
POWER EQUIPMENT OPERATORS:		
Group 1	18.05	5.85+f
Group 2	16.75	5.85+f
Group 3	11.38	5.85+f
Group 4	18.55	5.85+f
Group 5	19.05	5.85+f
Group 6	18.55	5.85+f
Tunnel and Shaft:		
Class 1	18.50	5.85+f
Class 2	18.18	5.85+f
Class 3	13.18	5.85+f
Class 4	20.00	5.85+f
Class 5	20.50	5.85+f
Class 6	21.00	5.85+f
Utility:		
Class 1	18.48	5.85+f
Class 2	17.16	5.85+f
Class 3	11.81	5.85+f
Class 4	18.48	5.85+f
Class 5	18.98	5.85+f
Class 6	19.98	5.85+f
ROOFERS:		
Composition, damp waterproofers, sprayers, asphalt mastic, wood block floor workers, steep roofers and siders	16.99	3.18
Slate, tile asbestos & precast tile	17.14	3.18
SHEET METAL WORKERS	18.00	5.48
SPRINKLER FITTERS	18.05	5.92

WELDERS - Rate for craft to which welding is incidental.

FOOTNOTES:

PAID HOLIDAYS: A-New Year's Day; B-Memorial Day; C-Independence Day; D-Labor Day; E-Thanksgiving Day; F-Christmas Day.

a. Paid Holidays: B & D.

b. Paid Holidays: A through F.

c. Employer contributes 8% of the basic hourly rate for 5 years or more of service and 6% of the basic hourly rate for 6 months to 5 years of service as vacation pay credit.

d. Paid Holidays: A through F, provided the employee works the scheduled working day before and the scheduled working day after the holiday.

e. Paid Holidays: A through F, Washington's Birthday, Good Friday, and Election Day for the President of the United States and Election Day for the Governor of New York State, provided the employee works the day before or the day after the holiday.

f. Paid Holidays A through F, provided employee works the day before and the day after the holiday.

CLASSIFICATION DESCRIPTIONS

*LABORERS (The City of North Tonawanda)

Free Air Tunnel

Class 1: Laborers; mole nippers; top laborers.

Class 2: Top bell.

Class 3: Side or roofbolt driller; conveyor men; block layers; caulkers; track men; nippers; burners; derail men; electrical cablemen; hosemen; groutmen; gravelmen; bottom bell; form workers; movers; shaft men.

Class 4: Powder monkey.

Class 5: Blasters; cement finishers; ironmen; miners.

Class 6: Steel erectors; piledrivers; riggers.

Heavy & Highway Construction

Class 1: Laborers; drill helpers; flaggers; outboard and hand boats.

Class 2: Bull float; chain saw; concrete aggregate bin; concrete bootman; gin buggy; hand or machine vibrator; jackhammer; mason tender mortar mixer; pavement breaker; handlers of all steel mesh; small generators for laborers' tools; installation of bridge drainage pipe; pipelayers; vibrator type rollers; tamper; drill

doctor; tail or screw operator on asphalt paver; water pump (1-1/2" and single diaphram); nozzle (asphalt, gunnite, seeding and sandblasting); laborers on chain link fence erection; rock splitter and power unit; pusher type concrete saw and all other gas, electric,
oil and air tool operators; wrecking laborers.

Class 3: All rock or drill machine operators (except quarry master and similar type); acetylene torch operator; asphalt raker; powderman.

Class 4: Blasters; form setters; stone or granite curb setters.

*LABORERS (All of Niagara County Except the City of North Tonawanda)
Heavy & Highway Construction

GROUP 1: Laborers.

GROUP 2: Blasters.

GROUP 3: Form setter; wagon drill operators; road finishers; gunnite nozzlemen; sandblaster; burning torch; concrete saw operators.

GROUP 4: Potman; pipelayers; pavement breakers or busters; jackhammer operators; barco rammers; chain saw; powder monkey; black top rakers; scalers; drill tenders; mortar mixers; men working from swinging scaffold bosum chair; suspended cage or bucket; work in caissons below 8 feet; concrete motor buggy; all other operators of mechanical tools, including vibrators regardless of type of power.

Group 5: The removal of asbestos from roofs, ceilings, pipes, walls, boilers, columns and all other non-mechanical structures and surfaces.

Free Air Tunnel Construction

Group 1: Laborers

Group 2: Blasters, welders, steel erectors, piledrivers, riggers, cement finishers and iron workers

Group 3: Tunnel worker, miners, drill runners, maintenance men, conveyor men, safety miners, blocklayers, rodmen, caulkers, powder carriers, trackmen, nippers, burners, brakemen, derailmen, cablemen, horsemen, gravelmen, bottom bell, top bell, signal men, form workers, movers, concrete workers, shaft men, tunnel laborers, caulkers.

POWER EQUIPMENT OPERATORS
HEAVY & HIGHWAY CONSTRUCTION

GROUP 1: Finish blacktop rollers, crane work, shovels, derricks, steel erection, overhead or bridge cranes and clam buckets, all excavating machines, backfillers, cableways, draglines, backhoes, piledriving rigs, tunnel mucking machines, all tractors used in

connection with scraper wagon, snowloader, wagons, snowloader, all repair work or maintenance work under the supervision of a master mechanic, lubrication engineers, bulldozers, graders, blacktop spreaders, front and back loaders (except small types), power driver stone spreaders, portable stone crushers, crawler or rubber tire tractor with blade or bucket and crane boom or hoe boom or shovel boom attached (except farm type crawler or rubber-tire tractor unless used with hydraulic backhoe), compressor with paving breaker attached, graders with bulldozer blades, multiple drum hoist with air compressor when used simultaneously for more than one purpose and single drum hoist when used to hoist steel, portable concrete batching machine, automatic batch plant operator, concrete spreader operator, finishing machine operator, form puller, self-propelled rollers if on blacktop, scraper, (either double or single bowl), CMI grading machine, truck mounted concrete pump, self-propelled riding vibrators, Kolman loaders, mechanic, welder, euclid type belt loader, mechanical and hydraulic pipe pushing machine, scoopmobiles, forklifts and hoist which lift higher than 25 feet.

GROUP 2: Elevators, material hoist, road rollers except finish blacktop roller, tractors, pavement busters, pumps over 4 inches, concrete blowers, compressors when used in banks of 2 and not over 3 (within a 50-foot radius if such is possible, but at least within 50 foot radius), gunite machines, locomotives, scoop-mobiles (when used as a stationary hoist or one which does not lift over twenty-five feet, concrete pumps, conveyors, gas or diesel driven temporary lighting and power systems of 25 kilowatt capacity or over), stone crushers and winch hoist mounted on trucks, all earth drills, Letourneau turnatrailers, highlift hoist which does not lift over 25 feet, gasoline heaters used in banks of 2 and not over 3 within an area of 100 foot radius, and for 2 but not over 3 gasoline or diesel driven welding machines, trenchers on the back of a jeep, truck mounted post drivers, snow-go, small front and back loaders, small type crawler or rubber tire tractor with blade or bucket not to exceed 1/2 yd. capacity, single drum hoist for hoisting materials other than steel, pug machine, self propelled rollers not on finish blacktop and under 7 tons, bobcat loader or forklift which does not lift over twenty five feet, trenchers, winch tractors, trenchers excavating up top 6 feet in depth, air compressors over 165 cu. ft.

GROUP 3: Steam boilers.

GROUP 4: Cranes carrying over 100 feet of main boom.

GROUP 5: Cranes carrying over 200 feet of main boom.

GROUP 6: Cranes carrying over 300 feet of main boom.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5 (a)(1)(ii)).

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U.S. Department of Labor

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ASBESTOS WORKER

WAGES(per hour) 6/01/89-5/31/90

Asbestos Worker	$ 18.05

OVERTIME PAY: See (B, Q) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (1) on HOLIDAY PAGE attached.

ALLOWABLE RATIO: Apprentice(s) to Journeymen (1 - 4)
APPRENTICES: (1) year terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th
40%	60%	70%	80%

SUPPLEMENTAL BENEFITS: (per hour worked)

Health/welfare	$ 2.37*2.37
Pension	2.30*2.20
Apprentice Training	.06*.06
Annuity	.50*.50

Listed supplements apply to ALL classifications ( )Yes (x)No.
(*) Apprentice Rates Appear in Second Column. 3-4

BOILERMAKER

WAGES(per hour)	6/01/90-5/31/91	6/01/91-5/31/92	6/01/92-5/31/93
Boilermaker	$ 19.00	Additional	Additional

OVERTIME PAY: See (B,E,Q) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (1) on HOLIDAY PAGE attached.

ALLOWABLE RATIO: Apprentice(s) to Journeymen (1 - 5) (1 - 10)
APPRENTICES (1/2) year terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th
60%	65%	70%	75%	80%	85%	90%	95%

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/welfare	$ 2.10	.85 per	.85 per
Pension	3.00	hour	hour
Apprentice Training	.19		
Annuity	2.20*Note		

*Note-Annuity payment for overtime hours at premium rate.
Listed supplements apply to ALL classifications (x)Yes ( )No. 3-7

ELEVATOR CONSTRUCTOR

WAGES(per hour) 8/01/89-7/31/90

Elevator Constructor	$ 19.105
Helper	13.37

OVERTIME PAY: See (D,Q) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (5,6,16) on HOLIDAY PAGE attached.

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/welfare	$ 2.795
Pension	1.89
Education Fund	.085
Vacation	6 %

Listed supplements apply to ALL classifications (X)Yes ( )No. 3-14

OCCUPATIONS APPLICABLE TO BUILDING SCHEDULES

CARPENTER-Building

City of North Tonawanda

WAGES(per hour)	6/01/90-5/31/91	6/01/91-5/31/92	6/01/92-5/31/93
Building:			
Carpenter.....$	18.87	Additional	Additional
Floorlayer.....	18.87	1.33	1.33
Millwright, Piledriver..	18.87	per	per
Heavy/Highway:			
Carpenter.....$	18.87	hour	hour
Millwright.....	18.87		

OVERTIME PAY: See (B,E,Q) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (1) on HOLIDAY PAGE attached.

SUPPLEMENTAL BENEFITS:(per hour worked)
Health/Welfare.....$ 3.85
Pension..... 4.15

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-BDC

Remainder of County.

WAGES(per hour)	7/01/90-5/31/91
Building:	
Carpenter.....$	17.84
Floor/Carpet Layer...	17.84
Dry-Wall Applicator..	17.84
Lather.....	17.84
Millwright.....	17.84

OVERTIME PAY: See (B, E, Q, V) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (1) on HOLIDAY PAGE attached..

ALLOWABLE RATIO: Apprentice(s) to Journeymen (1 - 5)
APPRENTICES: (1) year terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th
45%	50%	65%	75%

SUPPLEMENTAL BENEFITS:(per hour paid)
Health/welfare.....$ 5.18*note
Pension..... 4.32*note

Listed supplements apply to ALL classifications ( )Yes (X)No.
*Note-Appr Suppl.: H/W 1st. & 2nd. yrs. 50%; 3rd. & 4th. yrs. 100%
Pen. 1st. & 2nd. yrs. 0%; 3rd. & 4th. yrs. 100%
3-280/322b

OCCUPATIONS APPLICABLE TO BUILDING SCHEDULES

GLAZIER

WAGES(per hour) 6/01/90-5/31/91

Glazier..... $ 17.28

OVERTIME PAY: See (B, F) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (1) on HOLIDAY PAGE attached.

ALLOWABLE RATIO: Apprentice(s) to Journeymen (1 - 5)
APPRENTICES: (1/2) year terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th
40%	45%	50%	55%	60%	65%	70%	80%

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/welfare.....$	1.75	*1.75
Pension.....	1.66	*--
Suppl.Unemploy.Benefit	1.10	*--
Apprentice Training...	.40	* .40

Listed supplements apply to ALL classifications ( )Yes (x)No.
(*)2nd column applies to 1st year Apprentice only, all other Apprentices receive the journeymans supps. 3-660

OCCUPATIONS APPLICABLE TO BUILDING SCHEDULES

LABORER-Building
Niagara County except City of North Tonawanda.

Building Laborer:
GROUP A: Basic
GROUP B: Formsetter, Road Finishers, Gunite Nozzleman, Sand Blasters, Burning Torch, Operator of Concrete Saw.
GROUP C: Potman, Pipelayers, Pavment Breakers, Jack Hammer Operators, Barco Rammers, Chain Saw, Powder Monkey, Black Top Rakers, Scalers, Drill Helpers, Motor Mixers, Men Working from Swing Scaffold, Bosun Chair, or suspended cage or bucket, Work in Caissons below 8 feet, Concrete Motor Buggy, Operators of Mechanical Tools
GROUP D: Blasters
GROUP E: Men Working with hazardous waste or toxic material
GROUP F: Wagon drill, Air Track, Laser Beam Oper.
GROUP G: Vidio Machine.
GROUP H: Supplied Air Respirators.

WAGES(per hour)	7/01/90-5/31/91
Laborer (Building):	
Group A.....$	16.00
Group B.....	16.50
Groups C & G.....	16.20
Group D.....	17.60
Group E.....	17.25
Group F.....	16.75
Group H.....	20.00

OVERTIME PAY: See (B, E, P, T, V) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (3, 20) on HOLIDAY PAGE attached.

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/Welfare.....$	6.05
Pension.....	3.25
Education/Training....	.43

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-91

OCCUPATIONS APPLICABLE TO BUILDING SCHEDULES

LABORER-BUILDING(cont)

City of North Tonawanda

CLASS A- Basic, Boat Safety Man, Flagman, Security & Safety Man, Tool Room Man, Nurseryman, Demolition Worker, Top Man, Wrecker, IBC Barriers Except on Structures, and Guard Rail
CLASS B - Asphalt Shovelers.
CLASS C - Foundation Laborer over 8' in Depth, Hod Carriers, Plaster Tender, Plaster Scaffold Builder, Pneumatic Gas, Electric Tool oper. including all forms of Busters, Jackhammers & Chipping Guns over 8' in depth.
CLASS D - Mortar Mixer.
CLASS E - Asphalt Smoothers.
CLASS F - Pneumatic Gas Electric Tool Oper. including all forms of Busters Jackhammers, & Chipping Guns over 8' in depth.
CLASS G - Worker on any Swing Scaffold, Blaster, Plumbing Laborer, Wagon Drill Oper. Bottomman (caisson or cofferdam), Laser Setter.
CLASS H - Asphalt Rakers, Asphalt Screed Man.
CLASS I - Stone Cutter.
CLASS J - Curb Setter and Flag Layer
CLASS K - Asbestos Removal, Deleader.
CLASS L - Hazardous Waste Worker.

WAGES(per hour)	6/01/90-11/30/90	12/01/90-5/31/91
Laborer(Bldg):		
* CLASS A.....$	13.80	14.10
* CLASS B.....	13.88	14.18
* CLASS C.....	13.90	14.20
* CLASS D.....	13.95	14.25
* CLASS E.....	13.97	14.27
* CLASS F.....	14.00	14.30
* CLASS G.....	14.05	14.35
* CLASS H.....	14.08	14.38
* CLASS I.....	14.40	14.70
* CLASS J.....	14.73	15.03
* CLASS K.....	14.80	15.10
* CLASS L.....	15.80	16.10

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (1) on HOLIDAY PAGE attached.

SUPPLEMENTAL BENEFITS:(per hour worked)		
Health/Welfare.....$	2.60	2.90
Pension.....	2.46	2.46
Suppl.Unemploy.Benefit	.65	.65
Education/Training....	.38	.38
Education.....	.05	.05

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-210

OCCUPATIONS APPLICABLE TO BUILDING SCHEDULES

LATHER

Lather	See BUILDING CARPENTER	3-51

MASON-Building

WAGES(per hour)	7/01/90-3/31/91
Bricklayer	$ 22.11
Stone Mason, Cleaners.	22.11
Caulkers	22.11
Pointer/Cement Mason	22.11
Tile,Terrazzo Marble, Mosaic Worker.	21.86

OVERTIME PAY: See (B, O) on OVERTIME PAGE attached.
PAID HOLIDAY: See (1) on HOLIDAY PAGE attached.

ALLOWABLE RATIO: Apprentice(s) to Journeymen (1 - 3)
APPRENTICES: (1/2) year terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th
55%	60%	65%	70%	75%	80%	85%	95%

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/Welfare	$ 1.50
Pension	2.80
Supp.Unempl.Benefit	.45
Appr. Trng	.24

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-2/15

WAGES(per hour)	6/03/88-5/31/89	6/01/89-5/31/90	6/01/90-5/31/91
Building:			
Plasterer	17.04	17.49	17.81
* Machine Operator	17.79	18.24	18.56
* Swing Scaffold	18.04	18.49	18.81
* Scaffold over 42ft.	17.79	18.24	18.56
Taper	16.26	16.71	17.03

OVERTIME PAY: See (D,O,V) on OVERTIME PAGE attached.
PAID HOLIDAY: See (1) on HOLIDAY PAGE attached.

ALLOWABLE RATIO: Apprentice(s) to Journeymen ( )
APPRENTICES: (1/2) year terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th	6th
60%	65%	70%	75%	80%	95%

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/Welfare	$ -.--	-.--	-.--
Pension	-.--	-.--	-.--
Security	7.30	8.00	8.80

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-130p/173

WAGES(per hour)	6/01/90-5/31/91	6/01/91-5/31/92	6/01/92-5/31/93
Tile Helper	$ 15.89	16.39	16.89
Terrazzo Helper	15.99	16.49	16.99
Improver-1st. 1000 hrs.	7.90	8.40	8.90
Improver-2nd. 1000 hrs.	9.90	10.40	10.90

After 2000 hrs. helper rates applies.
Helper to Improver minimum ratio(2:1)

OVERTIME PAY: See (B, E, O) on OVERTIME PAGE attached.
PAID HOLIDAY: See (1) on HOLIDAY PAGE attached.

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/Welfare	$ 1.75	1.75	1.75
Pension	1.87	1.87	1.87
Supp.Unemploy.Benefit.	1.85	1.85	1.85

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-45terr/h

ROOFER

WAGES(per hour)	6/1/90-5/31/91	6/01/91-5/31/92	6/01/92-5/31/93
Roofer/Conc Plk & Gyp.	$ 17.85	18.29	18.60
Slate, Tile, Asbestos.	17.85	18.29	18.60
Watrproofer/Composition	17.70	18.14	18.45

OVERTIME PAY: See (B, O) on OVERTIME PAGE attached.
PAID HOLIDAY: See (1) on HOLIDAY PAGE attached.

ALLOWABLE RATIO: Apprentice(s) to Journeymen (1 - 3)
APPRENTICES: (see note) year terms at the following percentage of Journeyman's wage.
Note 1st & 2nd Terms - 6mos. thereafter 12mos. Terms

1st	2nd	3rd	4th	5th	6th	7th
27%	33%	40%	50%	65%	75%	85%

SUPPLEMENTAL BENEFITS:(per hour worked)			
Health/Welfare.....$	1.98	2.19	2.43
Pension.....	1.90	2.10	2.30
Apprentice Training...	.02	.02	.02

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-74

SHEETMETAL WORKER

WAGES(per hour)	6/01/90-12/31/90	1/01/91-5/31/91
Sheetmetal Worker.....	$ 18.47	Additional

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE attached.
PAID HOLIDAY: See (1) on HOLIDAY PAGE attached.
ALLOWABLE RATIO: Apprentice(s) to Journeymen (1 - 2) (1 - 4)
APPRENTICES: (1/2) year terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th
40%	45%	50%	55%	60%	65%	70%	75%

SUPPLEMENTAL BENEFITS:(per hour worked)		
Health/Welfare.....$	1.20	.15
Pension.....	2.31*	per
Security Fund.....	1.50*	hour
Apprentice Training...	.20	
Benefit Fund.....	3%of hourly + H/W, PEN. & Security Fund	

(*)Indicates per hour paid and also at premium rate for premium hours.
Listed supplements apply to ALL classifications (x)Yes ( )No. 3-71

SPRINKLER FITTER

WAGES(per hour)	6/01/90-12/31/90	1/01/91-5/31/91	6/01/91-5/31/92
Sprinkler Fitter.....	$ 18.55	18.55	19.05

OVERTIME PAY: See (B*,E1,Q) on OVERTIME PAGE attached.
*After 10 hrs. weekday - double time.
PAID HOLIDAY: See (1) on HOLIDAY PAGE attached.

ALLOWABLE RATIO: Apprentice(s) to Journeymen ( )
APPRENTICES: (1/2) year terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
40%	40%	45%	50%	55%	60%	65%	70%	75%	80%

SUPPLEMENTAL BENEFITS:(per hour worked)			
Health/Welfare.....$	2.40	2.65	2.65
Pension.....	3.75	4.00	4.00
Apprentice Training...	.14	.14	.15

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-703

OCCUPATIONS APPLICABLE TO BUILDING SCHEDULES

TEAMSTER-Building

Truck Driver (Building):
GROUP 1: Warehousemen, Yardmen, Truck Helpers, Pickups, Panel Trucks, Flatboy Material Trucks(straight jobs), Single Axel Dump Trucks, Dumpsters, Material Checkers and Receivers, Greasers, Truck Tiremen, Mechanics Helpers and Parts Chasers.
GROUP 2: Tandems and Batch Trucks, Mechanics, Dispatcher.
GROUP 3: Semi-Trailers, Low-boy Trucks, Asphalt Distribitor Trucks, and Agitator, Mixer Trucks and dumpcrete type vehicles, Truck Mechanic, Fuel Trucks.
GROUP 4: Specialized Earth Moving Equipment, Euclid type, or similar off-highway,where not self-loading, Straddle (Ross) Carrier, and self-contained concrete mobile truck.
GROUP 5: Off-highway Tandem Back-Dump, Twin Engin Equipment and Double-Hitched Equipment where not self-loading.

WAGES(per hour)	7/01/90-6/30/91	7/01/91-6/30/92	7/01/92-6/30/93
Building:			
Group #1	18.145	19.245	20.645
Group #2	18.145	19.245	20.645
Group #3	18.145	19.245	20.645
Group #4	18.145	19.245	20.645
Group #5	18.145	19.245	20.645

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE attached.
PAID HOLIDAY: See (5, 6) on HOLIDAY PAGE attached.

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/Welfare...$	1.25	1.25	1.25
Pension	1.625	1.725	1.725

Listed supplements apply to ALL classifications (x)Yes ( )No 3-449

SURVEY-BUILDING

SURVEY CLASSIFICATIONS:
Party Chief- One who directs a survey party.
Instrumentman- One who runs the instrument and assists the Party Chief.
Rodman- One who holds the rods and in general, assists the survey party.

WAGES:(per hour)	6/01/90-5/31/91
Survey Rates-Building:	
Party Chief	17.30
B Party Chief	16.44
Instrumentman	14.71
Rodperson	12.98

In Allegany, Chemung, Erie, Eastern part of Genesee, Livingston, Monroe, Ontario, Schuyler, Steuben, Wayne & Yates Counties an additional 2.50 per hour for work in hazardous waste area. In all other locations an added 2.00 per hr for this work.

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE attached.
PAID HOLIDAY: See (5, 6) on HOLIDAY PAGE attached.
ALLOWABLE RATIO: Apprentice(s) to Journeymen (1 - 10)
APPRENTICES: (1) year terms at a percentage of Class "A" Tech. Engineer.

1st	2nd
10.38	11.68

SUPPLEMENTAL BENEFITS: (per hour worked)

Health/Welfare...$	2.80
Local Pension	2.15
Central Pension	.75
Suppl.Unemploy.Benefit	.60
Apprentice Training	.25

Listed supplements apply to ALL classifications (x)Yes ( )No. 6-545D-b/west

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OCCUPATIONS APPLICABLE TO BUILDING SCHEDULES

POWER EQUIPMENT OPERATOR-Building

Building / Heavy/Highway / Sewer & Water Classifications:
CLASS A:Finish blacktop roller,crane work,shovels,derricks,steel erection,overhead or bridge cranes and clam buckets,all excavating machines, backfillers, cableways, draglines, backhoes, pile driving rigs, tunnel mucking machines, all tractors used in connection with scraperwagons, snowloader, all repair work or maintenance work under the supervision of Master Mechanic, lubrication engineers, bulldozers, graders, blacktop spreaders, front and back loaders(except small types), power driven stone spreaders, portable stone crushers, and the following combination machines: Crawler or rubber tire tractor with blade or bucketand crane boom or hoe boom or shovel boom attached(except farm type crawler or rubber tire tractor unless used with hydraulic back hoe), compressor with paving breaker attached, graders with bulldozer blades, multiple drum hoists with air compressor when used simultaneously for more than one purpose and single drum hoist when used to hoist steel, any make of Portable Concrete Batching Machine, automatic batch plant operator, concrete spreader operator and finishing machine operator, form puller, self-propelled rollers if on blacktop, scraper(either double or single bowl), CMI grading machine, truck mounted concrete pump, self-propelled riding vibrators, Kolman loaders, mechanic, welder, Euclid Type Belt Loaders, mechanical and hydraulic pipe pushing machine, and all scoopmobiles,forklift/hoist which lift higher than twenty-five (25) feet,Rotomill.

CLASS B:All elevators, material hoist, all road rollers(except the finish blacktop roller), tractors, pavement busters, Jeep trenches, pumps over four(4) inches, concrete blowers, Compressors: when used in banks of two(2) and not over three(3) (within a fifty(50)foot radius,if possible, but within a one hundred(100)foot radius, and if fuel is stored it will be stored within the same radius); Gunite machines, Locomotives, Scoopmobiles(when used as a stationary hoist, or one which does not lift over twenty-five(25)feet, concrete pumps, conveyors, gas or diesel driven temporary lighting and power systems of twenty-five(25) kilowatt capacity or over, stone crushers and winch hoists mountedon trucks, all earth drills, LeTourneau Turnatrailers, Highlift hoist which does not lift over twenty-five(25)feet, for two(2)but not over three(3) gasoline or diesel driven welding machines,trenchers, trenchers on the back of a Jeep, small trenchers which excavate to a depth of not more than four(4)feet, post drivers, snow-go,small front or back loaders, small farm-type crawler or rubber tire tractor with blade or bucket not to exceed one-half (1/2)yard capacity, and single drum hoist for hoisting materials other than steel, pug machine, self-propelled rollers not on blacktop and under seven(7)tons, bobcat loader or forklift which does not lift over twenty-five(25)feet, concrete mixers(one(1)yard and over), winch tractors, air hoist commonly known as air tugger when hoisting materials provided one(1)engineer operates both machines and also provided the compressor and the tugger are not separated by more than one hundred (100)feet, power driven generator and compressor when used simultaneously,hydraulic concrete joint jammer, concrete planer. When a parts room is manned it shall be by an engineer and he shall be paid the rate provided by this sub-paragraph.

CLASS C:A Truck Crane Apprentice will be provided on rubberized equipment, when there is a separate cab to the house.

CLASS D:Sub-apprentice Engineer shall be employed on all shovels,cranes,draglines, backhoes (cable crawler over 3/4 cu.yds.), backhoes(hydraulic crawler over 1-1/2 cu.yds.), dredges, derrick boats, concrete pavers (excluding stationary set-up), pile drivers, quarry master(or its equivalent), hydrocranes, automated batch plants (wet or dry mix plants), compressors up to and including four(4)inches, gasoline heaters and generators used in banks of two and not over three.

WAGES(per hour) Building:	7/01/90- 5/31/91
Master Mechanic.....	21.03
Ass't.Master Mechanic..	20.26
CLASS A.....	19.63
CLASS B.....	18.25
CLASS C.....	14.99
CLASS D.....	13.29
Fireman.....	12.93
Long Boom Rate(includes jib):	
* over 100ft.....	20.13
* over 200ft.....	20.63
* over 300ft.....	21.13

For HAZARDOUS WASTE - add $ 1.25 to each classification.
OVERTIME PAY: See (B,E,Q,V)on OVERTIME PAGE attached.
PAID HOLIDAY: See (5, 6) on HOLIDAY PAGE attached.
SUPPLEMENTAL BENEFITS:(per hour worked)

Health/Welfare.....$	2.80
Local Pension Fund....	3.55
Suppl.Unemploy.Benefit	1.15
Apprentice Training...	.30

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-463b

OCCUPATIONS APPLICABLE TO BUILDING SCHEDULES

CARPENTER-Pilegriver

WAGES(per hour)	6/1/90-5/31/91	6/1/91-5/31/92	6/01/92-5/31/93
Piledriver	18.87	Additional 1.33 per	Additional 1.33 per
Dockbuilder	18.87		

OVERTIME PAY: See (B,E,Q) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (1) on HOLIDAY PAGE attached.

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/Welfare	$ 3.85	hour	hour
Pension	4.15		

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-1978

WAGES(per hour)	6/01/88-5/31/89
Marine Construction:	
Marine Diver	194 56 per Day
Marine Tender	17.78

OVERTIME PAY: See (B,E,Q) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (1) on HOLIDAY PAGE attached.

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/Welfare	$ 3.85
Pension	3.90

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-1978

DRILLING

For Core Drilling - See Operating Engineer

For Water Well Drilling - See Operating Engineer

OCCUPATIONS APPLICABLE TO HEAVY/HIGHWAY and BUILDING SCHEDULES

ELECTRICIAN

WAGES(per hour) 6/01/90-5/31/91

Electrician	$ 19.55
High Voltage Splicer	21.51

OVERTIME PAY: See (AA, E, Q) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (1) on HOLIDAY PAGE attached.

ALLOWABLE RATIO: Apprentice(s) to Journeymen (1-1)(2-4)(3-7)
APPRENTICES: (6) month terms at the following percentage of Journeyman's wage.

1st.	2nd	3rd.	4th.	5th.	6th.	7th.	8th.	9th.	10th.
30%	35%	40%	40%	50%	50%	70%	70%	85%	85%

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/welfare	$ 4.15
Pension	1.75
Apprentice Training	1% gross
NERB Pension	3% gross
Annuity	.23

Listed supplements apply to ALL classifications (X)Yes ( )No. 3-237

WAGES(per hour) 9/01/87-8/31/89

Sound/Audio	
" Cabler 1st. 6 mos.	$ 6.25
" " 2nd. 6 "	6.99
" Installer Grade 1	8.58
" " " 2	9.06
" " " 3	9.71
" " " 4	10.20
" " " 5	10.66
" " " 6	11.15
Technician - 1	11.63
" - 2	12.14
Sr. Technician	12.87
Master Technician	13.53

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (1) on HOLIDAY PAGE attached.
SUPPLEMENTAL BENEFITS:(per hour worked)

Health/welfare	$ .40
Pension	.20
Appr. Trng	.30 +3% Gross

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-237snd

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OCCUPATIONS APPLICABLE TO HEAVY/HIGHWAY and BUILDING SCHEDULES

TELEPHONE

In the City of N. Tonawanda.

Rates below are for telephone work up to Point of Demarcation.
Point of Demarcation is defined as the point of interconnection between customer provided equipment and telephone company provided facilities.

WAGES(per hour)	8/07/88- / /
Telephone	
System Technician/Cable Splicing	
Starting	6.73
After 6 mos	7.40
" 12 mos	8.14
" 18 mos	8.95
" 24 mos	9.84
" 30 mos	10.83
" 36 mos	11.90
" 42 mos	13.09
" 48 mos	14.41
" 54 mos	15.86
" 60 mos	17.46
Cable Splicing Technician Helper	
Start	6.03
After 6 mos	6.63
" 12 mos	7.28
" 18 mos	8.01
" 24 mos	8.80
" 30 mos	9.70
" 36 mos	10.68
" 42 mos	11.74
" 48 mos	12.91
Service Technician	
Starting	6.73
After 6 mos	7.39
" 12 mos	8.13
" 18 mos	8.91
" 24 mos	9.80
" 30 mos	10.78
" 36 mos	11.84
" 42 mos	13.01
" 48 mos	14.31
" 54 mos	15.71
" 60 mos	17.28

OVERTIME PAY: See ( ) on OVERTIME PAGE attached.
PAID HOLIDAYS: See ( ) on HOLIDAY PAGE attached.

ALLOWABLE RATIO: Apprentice(s) to Journeymen ( )
APPRENTICES: (None)

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/welfare...$	10.0%
Pension	1.8%
Savings/Security	1.8%
Income Protect Fund	.4%

Listed supplements apply to ALL classifications ( )Yes ( )No. nytele/

OCCUPATIONS APPLICABLE TO HEAVY/HIGHWAY and BUILDING SCHEDULES

TELEPHONE(cont)

In the Remainder of County.

Rates below are for telephone work up to Point of Demarcation.
Point of Demarcation is defined as the point of interconnection between customer provided equipment and telephone company provided facilities.

WAGES(per hour)	8/07/88- / /
Telephone System Technician/Cable Splicing	
Starting	6.73
After 6 mos	7.40
" 12 mos	8.14
" 18 mos	8.94
" 24 mos	9.83
" 30 mos	10.81
" 36 mos	11.89
" 42 mos	13.06
" 48 mos	14.39
" 54 mos	15.81
" 60 mos	17.40
Cable Splicing Technician Helper	
Start	6.03
After 6 mos	6.61
" 12 mos	7.26
" 18 mos	7.99
" 24 mos	8.79
" 30 mos	9.66
" 36 mos	10.63
" 42 mos	11.68
" 48 mos	12.85
Service Technician	
Starting	6.73
After 6 mos	7.39
" 12 mos	8.11
" 18 mos	8.90
" 24 mos	9.79
" 30 mos	10.75
" 36 mos	11.81
" 42 mos	12.96
" 48 mos	14.25
" 54 mos	15.65
" 60 mos	17.20

OVERTIME PAY: See ( ) on OVERTIME PAGE attached.
PAID HOLIDAYS: See ( ) on HOLIDAY PAGE attached.

ALLOWABLE RATIO: Apprentice(s) to Journeymen ( )
APPRENTICES: (None)

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/welfare	$ 10.0%
Pension	1.8%
Savings/Security	1.8%
Income Protect Fund	.4%

Listed supplements apply to ALL classifications ( )Yes ( )No. nytele/alb

OCCUPATIONS APPLICABLE TO HEAVY/HIGHWAY and BUILDING SCHEDULES

TELEPHONE(cont)

In the City of N. Tonawanda.
Rates listed below are for installation of customer provided telephone equipment from point of demarcation.

WAGES(per hour)	5/27/90-5/25/91	5/26/91
Telephone System Technician		
Starting	6.71	6.86
After 6 mos	7.41	7.58
" 12 mos	8.20	8.37
" 18 mos	9.06	9.26
" 24 mos	10.01	10.23
" 30 mos	11.06	11.31
" 36 mos	12.22	12.50
" 42 mos	13.50	13.81
" 48 mos	14.92	15.26
" 54 mos	16.48	16.86
" 60 mos	18.22	18.63
Technician Asst.		
Start	6.38	6.52
After 6 mos	7.01	7.16
" 12 mos	7.70	7.86
" 18 mos	8.45	8.63
" 24 mos	9.27	9.48
" 30 mos	10.18	10.41
Senior Technician		
Starting	6.71	6.86
After 6 mos	7.45	7.62
" 12 mos	8.27	8.46
" 18 mos	9.18	9.38
" 24 mos	10.20	10.42
" 30 mos	11.32	11.57
" 36 mos	12.57	12.86
" 42 mos	13.96	14.27
" 48 mos	15.50	15.85
" 54 mos	17.21	17.60
" 60 mos	19.11	19.53
Services Technician		
Start	6.71	6.86
After 6 mos	7.41	7.58
" 12 mos	8.20	8.37
" 18 mos	9.06	9.26
" 24 mos	10.01	10.23
" 30 mos	11.06	11.31
" 36 mos	12.22	12.50
" 42 mos	13.50	13.81
" 48 mos	14.92	15.26
" 54 mos	15.86	16.22

OVERTIME PAY: See (B,I,S) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (5,6,16) on HOLIDAY PAGE attached.

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/welfare.....$	10%*Note	10%*Note
Pension.....	4.8%*Note	4.8%*Note
Training.....	4.5%*Note	4.5%*Note

Listed supplements apply to ALL classifications ( )Yes (X)No.

*Note- Listed Benefits are for Full Time & Part Time Employees working 25 or more hours per week. Other Part Time Employee benefits are as follows.
0-16 hrs.- H/W- 0; Pen.- 4.8%; Training- 4.5%
17-24 hrs.- H/W- 5%; Pen. 4.8%; Training- 4.5%

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OCCUPATIONS APPLICABLE TO HEAVY/HIGHWAY and BUILDING SCHEDULES

TELEPHONE(cont)

In the Remainder of County.

Rates listed below are for installation of customer provided telephone equipment from point of demarcation.

WAGES(per hour)	5/27/90-5/25/91	5/26/91-
Telephone System Technician		
Starting	6.71	6.86
After 6 mos	7.41	7.57
" 12 mos	8.18	8.37
" 18 mos	9.03	9.25
" 24 mos	9.98	10.21
" 30 mos	11.02	11.27
" 36 mos	12.18	12.46
" 42 mos	13.45	13.76
" 48 mos	14.86	15.20
" 54 mos	16.41	16.78
" 60 mos	18.12	18.53
Technician Asst.		
Start	6.38	6.52
After 6 mos	7.01	7.16
" 12 mos	7.70	7.86
" 18 mos	8.45	8.63
" 24 mos	9.27	9.48
" 30 mos	10.18	10.41
Senior Technician		
Starting	6.71	6.86
After 6 mos	7.45	7.51
" 12 mos	8.26	8.45
" 18 mos	9.17	9.38
" 24 mos	10.18	10.41
" 30 mos	11.30	11.56
" 36 mos	12.55	12.82
" 42 mos	13.92	14.23
" 48 mos	15.45	15.80
" 54 mos	17.15	17.53
" 60 mos	19.03	19.46
Services Technician		
Start	6.71	6.86
After 6 mos	7.41	7.57
" 12 mos	8.18	8.37
" 18 mos	9.03	9.25
" 24 mos	9.98	10.21
" 30 mos	11.02	11.27
" 36 mos	12.18	12.46
" 42 mos	13.45	13.76
" 48 mos	14.86	15.20
" 54 mos	15.80	16.15

OVERTIME PAY: See (B,I,S) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (5,6,16) on HOLIDAY PAGE attached.

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/welfare.....$	10%*Note	10%*Note
Pension.....	4.8%*Note	4.8%*Note
Training.....	4.5%*Note	4.5%*Note

Listed supplements apply to ALL classifications ( )Yes (X)No.

*Note- Listed Benefits are for Full Time & Part Time Employees working 25 or more hours per week. Other Part Time Employee benefits are as follows.
0-16 hrs.- H/W- 0; Pen.- 4.8%; Training- 4.5%
17-24 hrs.- H/W- 5%; Pen. 4.8%; Training- 4.5%

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ELECTRICIAN-Lineman

WAGES(per hour)	4/30/90-4/28/91	4/29/91-5/03/92
Lineman/Tech./Welder..	26.99	28.09
Digging Mach./Dynamite.	24.29	25.28
Chief Mech./Tract.Trlr.	22.94	23.88
Mobile Equip.Oper./Truck Dr./ Mech. 1st Class.....	21.58	22.47
Groundman	20.24	21.07
Cable Splicer.....	26.99	28.09
Flagman.....	12.15	12.64

Additional 1.00 per hr. for crew on helicopter job.
Above rates applicable on all overhead Transmission line work where other Construction trades are or have been involved.

Lineman/Technician.....	24.78	25.78
Digging Mach./Dynamite.	22.30	23.20
Chief Mech./Trctr.Trlr.	21.06	21.91
Mobile Equip.Oper./Truck Dr./ Mech. 1st Class.....	19.82	20.62
Groundman	18.59	19.34
Flagman.....	11.15	11.60
Certified Welder.....	24.78	25.78
**Certified Welder(pipe)	26.02	27.07
**Groundman Equip (pipe)	24.78	25.78
Cable Splicer	27.26	28.36

Additional 1.00 per hour on helicopter job.
Above rates apply on Sub-Stations, Switching Structures, Maintanence Projects, Railroad Cantenary install/maint, Third rail installation, Bonding of Rails, and Pipe Type Cable Installation.
**) Applicable for Pipe Type Cable Installations.

Lineman /Tech....$	23.59	24.55
Welder/Cable Splicer	23.59	24.55
Digging Mach./Dynamite.	21.23	22.10
Chief Mech./Trctr.Trlr.	20.05	20.87
Mobile Equip.Oper./Truck Dr./ Mech. 1st Class.....	18.87	19.64
Groundman.....	17.69	18.41
Flagman.....	10.62	11.05

Additional 1.00 per. hr. for crew on helicopter job.
Above rates applicable on overhead transmisson line work where NO other Construction Trades are or have been involved.

OVERTIME PAY: Pipe Type Cable See (D,O) on OVERTIME PAGE attached.
OVERTIME PAY: All Others See (B, E, Q) on OVERTIME PAGE attached.

PAID HOLIDAYS: See (5,6,8,10,12,13) on HOLIDAY PAGE attached.
ALLOWABLE RATIO: Apprentice(s) to Journeymen (1-2)(2-4)(3-6)
The following APPRENTICE Rates and the following SUPPLEMENTAL BENEFITS apply to all classifications catagories of CONSTRUCTION, TRANSMISSION and DISTRIBUTION.
APPRENTICES: (1000) hour terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS:	per Hour Worked.	
*Health/welfare.....$	3.25	3.50
*Pension.....	1.50+3%	1.50+3%
Apprentice Training...	3/4 %	3/4 %
Safety Training.....	3 %	3 %

NOTE(S): Each employee in a helicoptor crew to receive $ 1.00 above regularpay rate.
(*) H/W and Pens.(except 3%) for Overtime Hours, paid at Overtime rate. 6-1249a

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OCCUPATIONS APPLICABLE TO HEAVY/HIGHWAY and BUILDING SCHEDULES

ELECTRICIAN-Lineman

WAGES(per hour)	4/30/90-10/28/90	10/29/90-4/28/91	4/29/91-5/03/92
Cable Splicer/Welder...	21.01	21.73	22.73
Lineman/Technician.....	21.01	21.73	22.73
Digging Mach./Dynamite.	18.91	19.56	20.46
Chief Mech./Trctor Trler	17.86	18.47	19.32
Mobile Equip.Oper./Truck Dr./ Mechanic 1st Class...	16.81	17.38	18.18
Groundman	15.76	16.30	17.05
Flagman.....	9.45	9.78	10.23

Above rates applicable on ALL Overhead and Underground Distribution and Maintenance

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (5,6,8,10,12,13) on HOLIDAY PAGE attached.

ALLOWABLE RATIO: Apprentice(s) to Journeymen (1 - 2)
The following APPRENTICE Rates and the following SUPPLEMENTAL BENEFITS apply to all classifications
APPRENTICES: (1000) hour terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS:	per Hour Worked.		
*Health/welfare.....$	3.25	3.25	3.50
*Pension.....	1.50+3%	1.50+3%	1.50+3%
Apprentice Training...	3/4 %	3/4%	3/4%
Safety Training.....	3%	3%	3%

NOTE(S): Each employee in a helicoptor crew to receive $ 1.00 above regularpay rate.
(*) H/W and Pens.(except 3%) for Overtime Hours, paid at Overtime rate. 6-1249a-JO

WAGES(per hour)	5/02/88-4/30/89	5/01/89-4/30/90	5/01/90-4/30/91
Cert. Welder...	17.85	18.90	19.99
Crane/Line/Tech/Splic..	17.00	18.00	19.04
Digging Mach./Dynamite.	15.30	16.20	17.14
Chief Mech./Trctor Trler	14.45	15.30	16.18
Mobile Equip.Oper./Truck Dr./ Mechanic 1st Class...	13.60	14.40	15.23
Groundman 3rd Yr.....	12.75	13.50	14.28
" 2nd Yr.....	10.20	10.80	11.42
" 1st Yr.....	7.65	8.10	8.57
Flagman.....	7.65	8.10	8.57

Above rates applicable on ALL Lighting and Traffic Signal Systems.

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (5,6,8,10,13 & Gov'ns Election Day) on HOLIDAY PAGE attached.
ALLOWABLE RATIO: Apprentice(s) to Journeymen (1 - 2)
The following APPRENTICE Rates and the following SUPPLEMENTAL BENEFITS apply to all classifications
APPRENTICES: (1000) hour terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS:	per Hour Worked.		
*Health/welfare.....$	3.00	3.00	3.00
*Pension.....	1.50+3%	1.50+3%	1.50+3%
Apprentice Training...	3/4 %	3/4%	3/4%
Safety Training.....	1.5 %	1.5%	1.5%

NOTE(S): Each employee in a helicoptor crew to receive $ 1.00 above regularpay rate.
(*) H/W and Pens.(except 3%) for Overtime Hours, paid at Overtime rate. 6-1249a-LT

OCCUPATIONS APPLICABLE TO HEAVY/HIGHWAY and BUILDING SCHEDULES

IRONWORKER

WAGES(per hour) 6/01/90-5/31/91

Structural.....$	21.10
Reinforcing.....	21.10
Ornamental.....	21.10
Chain Link Fence.....	21.10
Sheeter.....	23.21
Certified Welder.....	21.35

OVERTIME PAY: See (D, O) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (1) on HOLIDAY PAGE attached.

ALLOWABLE RATIO: Apprentice(s) to Journeymen (1 - 7)
APPRENTICES: (1) year terms at the following percentage of Journeyman's wage.

1st.	2nd	3rd.
50%	60%	75%

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/Welfare.....$	2.28
Pension.....	3.75
Apprentice trng.....	.10

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-9

MASON-Bricklayer

WAGES(per hour) 7/01/90-3/31/91

Bricklayer..... $ 22.11

OVERTIME PAY: See (B, O) on OVERTIME PAGE attached.
PAID HOLIDAY: See (1) on HOLIDAY PAGE attached.

ALLOWABLE RATIO: Apprentice(s) to Journeymen (1 - 3)
APPRENTICES: (1/2) year terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th
55%	60%	65%	70%	75%	80%	85%	95%

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/Welfare.....$	1.50
Pension.....	2.80
Supp.Unempl.Benefit...	.45
Appr. trng.....	.24

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-2/15C

OCCUPATIONS APPLICABLE TO HEAVY/HIGHWAY and BUILDING SCHEDULES

TREE TRIMMER

Applies to line clearance, tree work and right-of-way preparation on all new or existing overhead electrical, telephone and CATV lines.

WAGES(per hour)	1/01/89-12/31/89	1/01/90-12/31/90	1/01/91-12/31/91
Tree Trimmer:			
Treeman	$ 11.22	11.67	12.08
* Equip. Operator	9.94	10.34	10.70
* Mechanic	9.94	10.34	10.70
* Truck Driver	8.43	8.77	9.08
Inexperienced Grdsman	6.99	7.27	7.52

OVERTIME PAY: See (B, H) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (5,6,8,10,15,16) on HOLIDAY PAGE attached.

SUPPLEMENTAL BENEFITS: (per hour worked.)			
Health/welfare	$ 1.70	1.95	1.95
Pension	.70+1 %	.70+1%	.70+1%

Listed supplements apply to ALL classifications (x)Yes (.)No. 6-1249TT

WELDER

Welder	To be paid the rate of the mechanic performing the work.

OCCUPATIONS APPLICABLE TO HEAVY/HIGHWAY and BUILDING SCHEDULES

CARPENTER-Heavy/Highway

All of Niagara County except City of North Tonawanda.

WAGES(per hour)	7/01/90-5/31/91
Heavy/Highway:	
Carpenter .....$	17.74

OVERTIME PAY: See (B, E, Q, V) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (1) on HOLIDAY PAGE attached.

ALLOWABLE RATIO: Apprentice(s) to Journeymen (1 - 5)
APPRENTICES: (1) year terms at the following percentage of Journeyman's wage.

1st.	2nd	3rd	4th
45%	50%	65%	75%

SUPPLEMENTAL BENEFITS:(per hour paid)
Health/welfare.....$ 5.18*note
Pension..... 4.32*note

Listed supplements apply to ALL classifications ( )Yes (X)No.
*Note-Appr Suppl.: H/W 1st. & 2nd yrs. 50%; 3rd. & 4th. yrs. 100%
Pen. 1st. & 2nd. yrs. 0%; 3rd. & 4th. yrs. 100%

3-280/322h

City of North Tonawanda

WAGES(per hour)	6/01/90-5/31/91	6/01/91-5/31/92	6/01/92-5/31/93
Building:			
Carpenter.....$	18.87	Additional	Additional
Floorlayer.....	18.87	1.33	1.33
Millwright, Piledriver..	18.87	per	per
Heavy/Highway:			
Carpenter.....$	18.87	hour	hour
Millwright.....	18.87		

OVERTIME PAY: See (B,E,Q) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (1) on HOLIDAY PAGE attached.

SUPPLEMENTAL BENEFITS:(per hour worked)
Health/Welfare.....$ 3.85
Pension..... 4.15

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-BDC

OCCUPATIONS APPLICABLE TO HEAVY/HIGHWAY SCHEDULES

MASON-Heavy/Highway

WAGES(per hour)	6/03/88-5/31/89	6/01/89-5/31/90	6/01/90-5/31/91
Cement Finish	17.76	18.21	18.53
Swing or 42ft Scaffold	18.01	18.46	18.78

OVERTIME PAY: See (D, O, V) on OVERTIME PAGE attached.
PAID HOLIDAY: See (1) on HOLIDAY PAGE attached.

ALLOWABLE RATIO: Apprentice(s) to Journeymen ( )
APPRENTICES: (1/2) year terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th	6th
60%	65%	70%	75%	80%	95%

SUPPLEMENTAL BENEFITS:(per hour worked)

Health/Welfare.....$	-.--	-.--	-.--
Pension.....	-.--	-.--	-.--
Security.....	7.30	8.00	8.80

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-130

LABORER-Heavy/Highway

Niagara County except City of North Tonawanda

Laborer - Heavy/Highway and Sewer/Water:
GROUP #1: Basic.
GROUP #2: Blasters
GROUP #3: Form Setter, Wagon Drill Operator, Road Finishers, Gunnite Nozzelmen, Sand Blasters, Burning Torch, Operator of Concrete Saw and Utility Pipe Driver
GROUP #4: Potman, Pipelayer, Pavement Breakers or Busters, Jack Hammer Operator, Barco Rammers, Chain Saw, Powder Monkey, Black Top Rakers, Scalers, Drill Helpers, Mortar Mixers, Men Working from Swinging Scaffold, Bosum Chair, Suspended Cage or Bucket, Work in Caissons below 8 feet, Concrete Motor Buggy. All other operators of Mechanical Tools, including Vibrators regardless of type of power and Boat men.
GROUP #5: Chemical Waste Men Working With Hazardous Waste and Toxic materials as defined in Article VI, Section 2C or in areas of radioactive material and asbestos as specified in bidding documents and specifications.
GROUP #6: Welder
GROUP #7: Vidio Machine.
Group #8: Supplied Air Respirators.

WAGES (per hour)	7/01/90-5/31/91
Laborer - Heavy/Highway and Sewer/Water:	
Group # 1.....$	16.00
Group # 2.....	17.60
Group # 3.....	16.50
Groups # 4 & 7.....	16.20
Group # 5.....	17.25
Group # 6.....	17.00
Group # 8.....	20.25

OVERTIME PAY: See (B, E, P,T, V) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (5, 6) on HOLIDAY PAGE attached.

SUPPLEMENTAL BENEFITS: (per hour worked)

Health/Welfare.....$	6.05
Pension.....	3.25
Education/Training....	.43

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-91h/s

Continued

Laborer-Heavy/Highway

City of North Tonawanda

Heavy/Highway Contract Laborer:
GROUP # A: Basic, Drill Helper, Flagman, Outboard and Hand Boats, Demolition Worker, Nurseryman, IBC Barriers (except on structes), Guard Rails, Road Markers
GROUP # B: Bull Float, Chain Saw, Concrete Aggregate Bin, Concrete Bootmen, Gin Buggy, Hand or Machine Vibrator, Jack Hammer, Mason Tender, Mortar Mixer, Pavement Breaker, Handlers of all Steel Mesh, Small Generators for Laborers' Tools, Installation of Bridge Drainage Pipe, Pipe Layers, Vibrator Type Rollers, Tamper, Drill Doctor, Tail or Screw Operator on Asphalt Paver, Water Pump Operators(1-1/2" and Single Diaphragm), Nozzle (Asphalt, Gunite, Seeding, and Sand Blasting), Laborers on Chain Link Fence Erection, Rock Splitter and Power Unit, Pusher Type Concrete Saw and all other Gas, Electric, Oil and Air Tool Operators, Wrecking Laborer and Laser Man.
GROUP #C: All Rock or Drilling Machine Operators (Except Quarry Master and Similar Type), Acetylene Torch Operators, Asphalt Raker, Powderman and Welder.
GROUP #D: Blasters, Curb & Flat work Form Setter(except on structers), Stone or Granite Curb Setters and Stone Cutter.

WAGES(per hour)	7/01/90-11/30/90	12/01/90-6/30/91	7/01/91-11/30/91	12/01/91-6/30/92
Heavy/Highway Contract Laborer:				
Group # A	13.85	14.05	14.75	15.55
Group # B	14.05	14.25	14.95	15.75
Group # C	14.25	14.45	15.15	15.95
Group # D	14.45	14.65	15.35	16.15

For all Deleader & Asbestos work add 1.00 to Group A rate.
For all Hazardous Waste work add 2.00 to Group A rate.

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE attached.
PAID HOLIDAYS: See (1) on HOLIDAY PAGE attached.

SUPPLEMENTAL BENEFITS:(per hour worked) ALL WORK				
Health/Welfare	$ 2.60	2.90	3.20	3.50
Pension	2.46	2.46	2.46	2.46
Suppl.Unemploy.Benefit	.65	.65	.65	.65
Apprentice Training	.38	.38	.38	.38
Education	.05	.05	.05	.05

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-210h

OCCUPATIONS APPLICABLE TO HEAVY/HIGHWAY SCHEDULES

TEAMSTER-Heavy/Highway

Truck Driver(H/H):
GROUP 1: Warehousemen, Yardmen, Truck Helpers, Pickups, Panel Trucks, Flatboy Material Trucks(straight jobs), Single Axel Dump Trucks, Dumpsters, Material Checkers and Receivers, Greasers, Truck Tiremen, Mechanics Helpers and Parts Chasers.

GROUP 2: Tandems and Batch Trucks, Mechanics, Dispatcher.

GROUP 3: Semi-Trailers, Low-boy Trucks, Asphalt Distribitor Trucks, and Agitator, Mixer Trucks and dumpcrete type vehicles, Truck Mechanic, Fuel Trucks.

GROUP 4: Specialized Earth Moving Equipment, Euclid type, or similar off-highway,where not self-loading, Straddle (Ross) Carrier, and self-contained concrete mobile truck.

GROUP 5: Off-highway Tandem Back-Dump, Twin Engin Equipment and Double-Hitched Equipment where not self-loading.

WAGES(per hour)	7/01/90-6/30/91	7/01/91-6/30/92	7/01/92-6/30/93
Heavy/Hiway:			
Group #1	18.145	19.245	20.645
Group #2	18.145	19.245	20.645
Group #3	18.145	19.245	20.645
Group #4	18.145	19.245	20.645
Group #5	18.145	19.245	20.645

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE attached.
PAID HOLIDAY: See (5, 6) on HOLIDAY PAGE attached.

SUPPLEMENTAL BENEFITS:(per hour worked)			
Health/Welfare	$ 1.25	1.25	1.25
Pension	1.625	1.725	1.725

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-449h

SURVEY CREW

SURVEY CLASSIFICATIONS:
Party Chief- One who directs a survey party.
Instrumentman- One who runs the instrument and assists the Party Chief.
Rodman- One who holds the rods and in general, assists the survey party.

WAGES:(per hour)	6/01/88-5/31/89	6/01/89-5/31/90	6/01/90-5/31/91
Survey Rates:			
Party Chief A	$ 15.43	16.28	17.30
Party Chief B	14.66	15.47	16.44
Instrument Man	13.12	13.84	14.71
Rodman/Chainman	11.57	12.21	12.98

Additional 2.00 per hr. for work in a tunnel.
Additional 2.50 per hr. for DEC or EPA certified toxic or hazardous waste work.

OVERTIME PAY: See (B, E, Q) on OVERTIME PAGE attached.
PAID HOLIDAY: See (5, 6) on HOLIDAY PAGE attached.
ALLOWABLE RATIO: Apprentice(s) to Journeymen (1 --10--)-----
APPRENTICES: (1000) hour terms at a percentage of Class "A" Tech. Engineer.

	1st	2nd.
88/89-	9.26	10.41
89/90-	9.77	10.99
90/91-	10.38	11.68

SUPPLEMENTAL BENEFITS: (per hour worked)			
Health/Welfare	$ 2.40	2.60	2.80
Local Pension	2.05	2.05	2.15
Central Pension	.45	.65	.75
Suppl.Unemploy.Benefit	.60	.60	.60
Apprentice Training	.25	.25	.25

Listed supplements apply to ALL classifications (x)Yes ( )No . 6-545Dhcatt

OCCUPATIONS APPLICABLE TO HEAVY/HIGHWAY SCHEDULES

POWER EQUIPMENT OPERATOR-Heavy/Highway

Building / Heavy/Highway / Sewer & Water Classifications:
CLASS A:Finish blacktop roller,crane work,shovels,derricks,steel erection,overhead or bridge cranes and clam buckets,all excavating machines, backfillers, cableways, draglines, backhoes, pile driving rigs, tunnel mucking machines, all tractors used in connection with scraperwagons, snowloader, all repair work or maintenance work under the supervision of Master Mechanic, lubrication engineers, bulldozers, graders, blacktop spreaders, front and back loaders(except small types), power driven stone spreaders, portable stone crushers, and the following combination machines: Crawler or rubber tire tractor with blade or bucketand crane boom or hoe boom or shovel boom attached(except farm type crawler or rubber tire tractor unless used with hydraulic back hoe), compressor with paving breaker attached, graders with bulldozer blades, multiple drum hoists with air compressor when used simultaneously for more than one purpose and single drum hoist when used to hoist steel, any make of Portable Concrete Batching Machine, automatic batch plant operator, concrete spreader operator and finishing machine operator, form puller, self-propelled rollers if on blacktop, scraper(either double or single bowl), CMI grading machine, truck mounted concrete pump, self-propelled riding vibrators, Kolman loaders, mechanic, welder, Euclid Type Belt Loaders, mechanical and hydraulic pipe pushing machine, and all scoopmobiles,forklift/hoist which lift higher than twenty-five (25) feet,Rotomill.

CLASS B:All elevators, material hoist, all road rollers(except the finish blacktop roller), tractors, pavement busters, Jeep trenches, pumps over four(4) inches, concrete blowers, Compressors: when used in banks of two(2) and not over three(3) (within a fifty(50)foot radius,if possible, but within a one hundred(100)foot radius, and if fuel is stored it will be stored within the same radius); Gunite machines, Locomotives, Scoopmobiles(when used as a stationary hoist, or one which does not lift over twenty-five(25)feet, concrete pumps, conveyors, gas or diesel driven temporary lighting and power systems of twenty-five(25) kilowatt capacity or over, stone crushers and winch hoists mountedon trucks, all earth drills, LeTourneau Turnatrailers, Highlift hoist which does not lift over twenty-five(25)feet, for two(2)but not over three(3) gasoline or diesel driven welding machines,trenchers, trenchers on the back of a Jeep, small trenchers which excavate to a depth of not more than four(4)feet, post drivers, snow-go,small front or back loaders, small farm-type crawler or rubber tire tractor with blade or bucket not to exceed one-half (1/2)yard capacity, and single drum hoist for hoisting materials other than steel, pug machine, self-propelled rollers not on blacktop and under seven(7)tons, bobcat loader or forklift which does not lift over twenty-five(25)feet, concrete mixers(one(1)yard and over), winch tractors, air hoist commonly known as air tugger when hoisting materials provided one(1)engineer operates-both machines and also provided the compressor and the tugger are not separated by more than one hundred (100)feet, power driven generator and compressor when used simultaneously,hydraulic concrete joint jammer, concrete planer. When a parts room is manned it shall be by an engineer and he shall be paid the rate provided by this sub-paragraph.

CLASS C:A Truck Crane Apprentice will be provided on rubberized equipment, when there is a separate cab to the house.

CLASS D:Sub-apprentice Engineer shall be employed on all shovels,cranes,draglines, backhoes (cable crawler over 3/4 cu.yds.), backhoes(hydraulic crawler over 1-1/2 cu.yds.), dredges, derrick boats, concrete pavers (excluding stationary set-up), pile drivers, quarry master(or its equivalent), hydrocranes, automated batch plants (wet or dry mix plants), compressors up to and including four(4)inches, gasoline heaters and generators used in banks of two and not over three.

WAGES(per hour)	7/01/90-11/30/90	12/01/90-5/31/91
Heavy/Highway:		
Master Mechanic.....	20.76	21.16
Ass't.Master Mechanic..	19.91	20.30
CLASS A.....	19.23	19.62
CLASS B.....	17.76	18.12
CLASS C.....	14.14	14.45
CLASS D.....	12.28	12.56
Steam Boiler Operator..	11.69	11.96
Long Boom Rate(includes jib):		
* over 100ft-.....	19.73	20.12
* over 200ft-.....	20.23	20.62
* over 300ft-.....	20.73	21.12

OVERTIME PAY: See (B,E,Q,V)on OVERTIME PAGE attached.
PAID HOLIDAY: See (5, 6) on HOLIDAY PAGE attached.

SUPPLEMENTAL BENEFITS:(per hour worked)		
Health/Welfare.....$	2.80	2.80
Local Pension Fund....	3.55	3.55
Suppl.Unemploy.Benefit	1.15	1.15
Apprentice Training...	.30	.30

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-463h

OCCUPATIONS APPLICABLE TO HEAVY/HIGHWAY SCHEDULES

POWER EQUIPMENT OPERATOR-SEWER/WATER

Building / Heavy/Highway / Sewer & Water Classifications:
CLASS A:Finish blacktop roller,crane work,shovels,derricks,steel erection,overhead or bridge cranes and clam buckets,all excavating machines, backfillers, cableways, draglines, backhoes, pile driving rigs, tunnel mucking machines, all tractors used in connection with scraperwagons, snowloader, all repair work or maintenance work under the supervision of Master Mechanic, lubrication engineers, bulldozers, graders, blacktop spreaders, front and back loaders(except small types), power driven stone spreaders, portable stone crushers, and the following combination machines: Crawler or rubber tire tractor with blade or bucketand crane boom or hoe boom or shovel boom attached(except farm type crawler or rubber tire tractor unless used with hydraulic back hoe), compressor with paving breaker attached, graders with bulldozer blades, multiple drum hoists with air compressor when used simultaneously for more than one purpose and single drum hoist when used to hoist steel, any make of Portable Concrete Batching Machine, automatic batch plant operator, concrete spreader operator and finishing machine operator, form puller, self-propelled rollers if on blacktop, scraper(either double or single bowl), CMI grading machine, truck mounted concrete pump, self-propelled riding vibrators, Kolman loaders, mechanic, welder, Euclid Type Belt Loaders, mechanical and hydraulic pipe pushing machine, and all scoopmobiles,forklift/hoist which lift higher than twenty-five (25) feet,Rotomill.

CLASS B:All elevators, material hoist, all road rollers(except the finish blacktop roller), tractors, pavement busters, Jeep trenches, pumps over four(4) inches, concrete blowers, Compressors: when used in banks of two(2) and not over three(3) (within a fifty(50)foot radius,if possible, but within a one hundred(100)foot radius, and if fuel is stored it will be stored within the same radius); Gunite machines, Locomotives, Scoopmobiles(when used as a stationary hoist, or one which does not lift over twenty-five(25)feet, concrete pumps, conveyors, gas or diesel driven temporary lighting and power systems of twenty-five(25) kilowatt capacity or over, stone crushers and winch hoists mountedon trucks, all earth drills, LeTourneau Turnatrailers, Highlift hoist which does not lift over twenty-five(25)feet, for two(2)but not over three(3) gasoline or diesel driven welding machines,trenchers, trenchers on the back of a Jeep, small trenchers which excavate to a depth of not more than four(4)feet, post drivers, snow-go,small front or back loaders, small farm-type crawler or rubber tire tractor with blade or bucket not to exceed one-half (1/2)yard capacity, and single drum hoist for hoisting materials other than steel, pug machine, self-propelled rollers not on blacktop and under seven(7)tons, bobcat loader or forklift which does not lift over twenty-five(25)feet, concrete mixers(one(1)yard and over), winch tractors, air hoist commonly known as air tugger when hoisting materials provided one(1)engineer operates both machines and also provided the compressor and the tugger are not separated by more than one hundred (100)feet, power driven generator and compressor when used simultaneously,hydraulic concrete joint jammer, concrete planer. When a parts room is manned it shall be by an engineer and he shall be paid the rate provided by this sub-paragraph.

CLASS C:A Truck Crane Apprentice will be provided on rubberized equipment, when there is a separate cab to the house.

CLASS D:Sub-apprentice Engineer shall be employed on all shovels,cranes,draglines, backhoes (cable crawler over 3/4 cu.yds.), backhoes(hydraulic crawler over 1-1/2 cu.yds.), dredges, derrick boats, concrete pavers (excluding stationary set-up), pile drivers, quarry master(or its equivalent), hydrocranes, automated batch plants (wet or dry mix plants), compressors up to and including four(4)inches, gasoline heaters and generators used in banks of two and not over three.

WAGES(per hour)	7/01/90- 5/31/91
Sewer/Water:	
Master Mechanic.....	21.16
Ass't.Master Mechanic..	20.30
CLASS A.....	19.62
CLASS B.....	18.12
CLASS C.....	14.45
CLASS D.....	12.56
Steam Boiler Operator..	11.96
Long Boom Rate(includes jib):	
* over 100ft-Add per/hr	.50
* over 200ft-Add per/hr	1.00
* over 300ft-Add per/hr	1.50

OVERTIME PAY: See (B,E,Q,V) on OVERTIME PAGE attached.
PAID HOLIDAY: See (5, 6) on HOLIDAY PAGE attached.
SUPPLEMENTAL BENEFITS:(per hour worked)

Health/Welfare.....$	2.80
Local Pension Fund....	3.35
Suppl.Unemploy.Benefit	1.15
Apprentice Training...	.30

Listed supplements apply to ALL classifications (x)Yes ( )No. 3-463s/w

OCCUPATIONS APPLICABLE TO HEAVY/HIGHWAY SCHEDULES

MARINE CONSTRUCTION

WAGES(per hour)	10/01/88-9/30/89	10/01/89-9/30/90	10/01/90-9/30/91
Hydraulic Dredge:			
Leverman	18.00	18.85	19.53
Engineer	17.48	18.15	18.65
Maint.Engineer	17.23	17.89	18.39
Derrick Oper.	17.48	18.15	18.65
Chief Mate on Dredge	17.23	17.89	18.39
Mate	16.14	16.76	17.23
DeckHand	14.24	14.65	14.93
Oiler	14.75	15.18	15.47
Fireman	14.75	15.18	15.47
Shoreman	14.24	14.65	14.93
Boat Captain	16.26	16.89	17.36
Tug Boats:			
Tug Master	16.98	17.63	18.12
Tug Captain	16.26	16.89	17.36
Tug Chief Engineer	16.56	17.20	17.68
Tug Engineer	16.26	16.89	17.36
Tug Deckhand	14.41	14.83	15.11
Dipper and Clamshell Dredges:			
Operator	18.31	19.17	19.86
Engineer	17.83	18.52	19.03
Maint.Engineer	17.23	17.89	18.39
Mate	16.14	16.76	17.23
Deckhand	14.41	14.83	15.11
Oiler	14.75	15.18	15.47
Boat Master	16.98	17.64	18.13
Boat Captain	16.26	16.89	17.36

OVERTIME PAY: See (B, E, P, S) on OVERTIME PAGE attached.
PAID HOLIDAY: See (5, 6, 10, 15) on HOLIDAY PAGE attached.

The following SUPPEMENTAL BENEFITS apply to all to ALL classifications of the above HYDRAULIC, DIPPER, CLAMSHELL DREDGES and TUG BOATS.

SUPPLEMENTAL BENEFITS:(per hour worked.)

Health/Welfare.....$	1.56	1.56	1.56
Pension.....	1.03	1.03	1.03
Vacation.....	8 %	8%	8%

4-25a

WAGES(per hour)	10/01/88-9/30/89	10/01/89-9/30/90	10/01/90-9/30/91
Drill Boat:			
Engineer	19.13	19.87	20.42
Blaster	19.33	20.07	20.63
Driller/Welder/Machinist	19.14	19.88	20.43
Oiler	18.13	18.66	19.01
Helper	18.13	18.66	19.01

OVERTIME PAY: See (B, E, P, S) on OVERTIME PAGE attached.
PAID HOLIDAY: See (5, 6, 10, 15) on HOLIDAY PAGE attached.

SUPPLEMENTAL BENEFITS: (per hour worked)

Health/Welfare.....$	1.56	1.56	1.56
Pension.....	1.03	1.03	1.03
Vacation.....	8 %	8 %	8%

Listed supplements apply to ALL classifications (x)Yes ( )No. 4-25/3

OCCUPATIONS APPLICABLE TO HEAVY/HIGHWAY SCHEDULES

ATTACHMENT F

HEALTH AND SAFETY PLAN

E.C. JORDAN CO.
HEALTH AND SAFETY PLAN
(Level D or C PPE only)

SITE: Love Canal CONTACT: Philip G. Waite, NYDEC

LOCATION: Love Canal, Niagara County, Niagara Falls, NY

PREPARED BY: T. Arnold DATE: 12/6/90

APPROVED BY: Cindy Sundquist DATE: 12/14/90

PROPOSED DATE(S) OF INVESTIGATION: Mid February

PROPOSED ACTIVITY(S): Test pitting program to investigate storm sewer pipe bedding

OVERALL HAZARD: ___ Serious X Moderate ___ Low ___ Unknown

HEALTH HAZARDS:
- X Liquid
- ___ Gas
- X Volatile
- ___ Reactive
- X Solid
- ___ Corrosive
- X Toxic
- ___ Unknown
- ___ Sludge
- ___ Ignitable
- ___ Radioactive
- ___ None

CONTAMINANT LOCATION:
- X Soil
- ___ Tank
- ___ Other (list)
- X Ground Water
- ___ Surface
- ___ Sediment
- ___ Underground

MAJOR EXPOSURE ROUTE:
- ___ Dermal
- ___ Puncture
- X Ingestion
- X Respiratory

SAFETY HAZARDS:
- ___ Heights
- ___ Noise
- ___ Heat Stress
- ___ Near Water
- ___ Other (list)
- ___ Equipment
- ___ Eye
- ___ Cold Stress
- ___ Burns
- ___ Machinery
- X Confined Spaces
- ___ Uneven Terrain
- ___ Lifting

LEVEL OF PROTECTION: C in Exclusion Zone
B in confined space (anyone who enters test pit)

EQUIPMENT SELECTED:
- X Cartridge Respirator
- X Escape Respirator
- X Coated Tyveks
- X Chemical Resistant Safety Boots/Shoes
- X Disposable Boot Covers
- X Chemical Resistant Gloves
- X Hard Hat
- X Safety Glasses
- ___ Face Shield
- X Coveralls
- ___ Ear Protection
- X Other (list) SCBA for Level B work

MONITORING EQUIPMENT:
- X Combustible Gas/Oxygen Meter
- ___ Explosimeter
- ___ Hydrogen Sulfide Meter
- X PID (HNU/TIP/TE)
- ___ Detector Tubes (MSA/Draeger) (tube: ___)
- ___ Radiation Survey Meter
- X Dosimeter Badges
- X Other (list) Respirable Dust Monitor.

EMERGENCY EQUIPMENT:
- X First Aid Kit
- X Eye Wash
- X Fire Extinguisher
- ___ Other (list)

CONTAMINANT LEVELS FOR MODIFICATION OF PROTECTIVE EQUIPMENT: Immediate stoppage of work and backfilling of test pit will occur if any of the following levels are exceeded: PID ≥ 5 ppM above background, O2 < 19.5%, or particulates ≥ 150 µg/m³ above background.

DECONTAMINATION/DISPOSAL: All personnel and/or equipment leaving contaminated site areas are subject to decontamination. Under no circumstances (except emergency evacuation) will personnel be allowed to leave the site prior to decontamination.

EMERGENCY MEDICAL TREATMENT/FIRST AID: First aid will be rendered to any person injured on-site, as appropriate. The injured person will then be transported to a medical facility for further examination and/or treatment. An ambulance will be used to transport the injured person to the hospital unless one is not readily available or could result in excessive delay. In this case, other transport is authorized. Under no circumstances will injured persons transport themselves to a medical facility for emergency treatment.

EMERGENCY TELEPHONE NUMBERS:

Local Police Department - Niagara Falls	(716) 286 - 4547 or 911
Local Fire Department - Niagara Falls	(716) 286 - 4725 or 911
Local Rescue Service Niagara Ambulance	(716) 278 - 4394
Primary Hospital: Niagara Falls Memorial Medical Center	(716) 278 - 4000
Secondary Hospital: Mount St. Mary's Hospital	(716) 297 - 4800
National Poison Control Center	(800) 492-2414
Chemical Mfg. Assoc.-Chemical Referral Center	(800) 262-8200
Regional HSS: ~~Cindy Sundquist~~ Meg Capasse - C. Sundquist	(207) 775 - 5401
CE Environmental Health & Safety Mgr.: ~~JA Reynolds~~	207 775 - 5401 (~~201~~) ~~922-2323~~

AUTHORIZED PERSONNEL:

HSO: Jeff Pickett — A. Casavant

C. Horstman

T. Arnold *

* Current First Aid Training
\+ Current CPR Training

FIELD TEAM REVIEW: I have read and reviewed the HASP, understand the information contained, and agree to comply.

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

ROUTES TO EMERGENCY MEDICAL FACILITIES

PRIMARY SOURCE OF MEDICAL ASSISTANCE:

Facility Name: Niagara Falls Memorial Medical Center

Address: 621 10th Street

Telephone Number: Main number: (716) 278-4000 Emergency: (716) 278-4394

DIRECTIONS TO PRIMARY SOURCE OF MEDICAL ASSISTANCE: (attach map)

Go west on La Salle Expressway. Continue west on Niagara (Robert Moses) Parkway until it ends and becomes 8th Street. Continue north on 8th Street to Walnut Avenue. Turn right (east) on Walnut Av to 10th Street. Turn left (north) onto 10th Street to hospital at 621 10th Street.

ALTERNATE SOURCE OF MEDICAL ASSISTANCE:

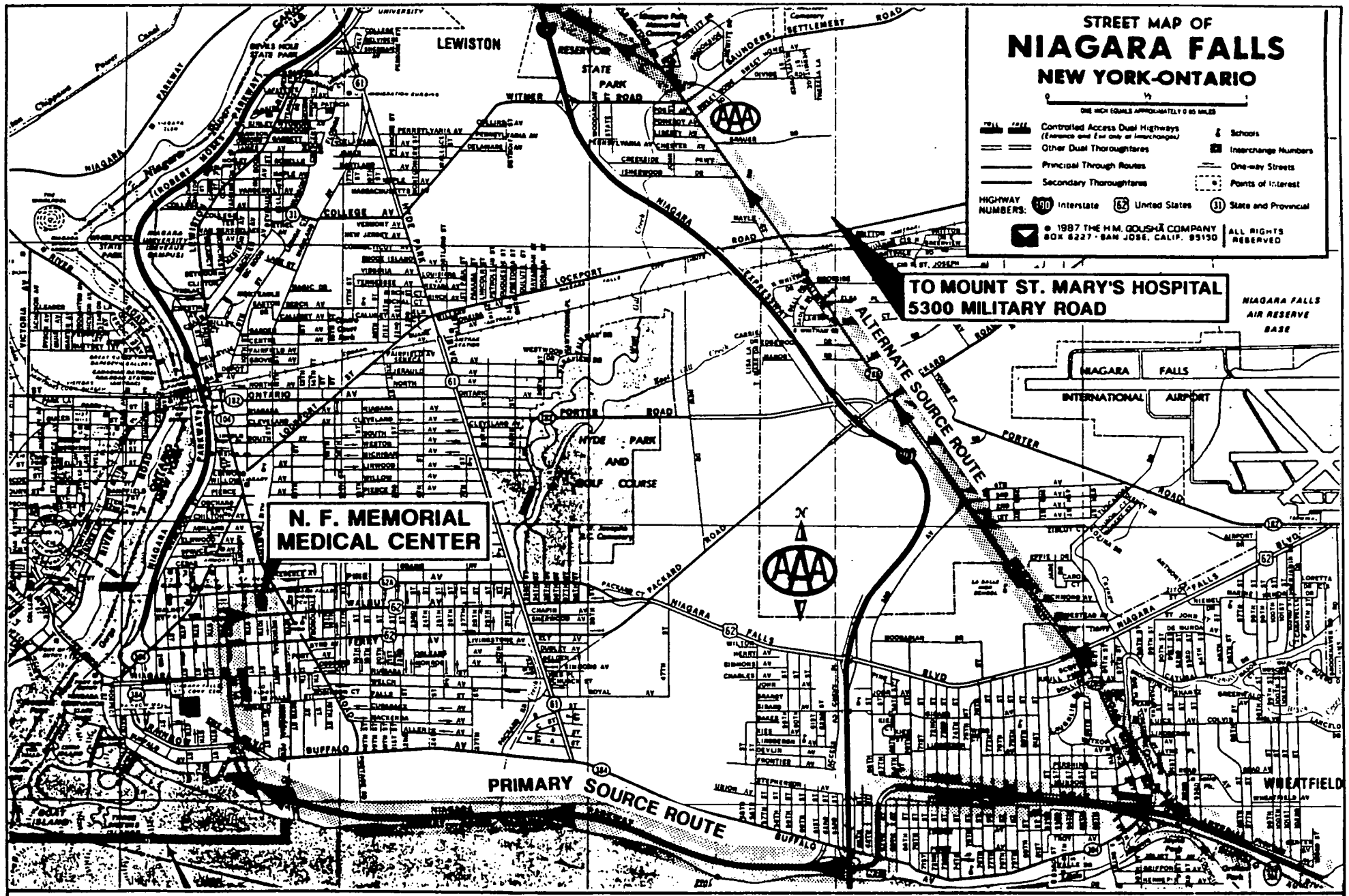
Facility Name: Mount St. Mary's Hospital

Address: 5300 Military Rd

Telephone Number: (716) 297-4800

DIRECTIONS TO ALTERNATE SOURCE OF MEDICAL ASSISTANCE: (attach map)

Go west on Frontier Avenue and bear north (right) onto S. Military Arterial. Continue on S. Military Arterial to Cayuga Drive. Turn right (north). Stay on Cayuga Drive, which turns into Military Road (Rt 265) for approximately 4.5 miles. Bear left at fork (Military Rd) to hospital at 5300 Military Rd.



SOURCE: MAP OF BUFFALO, NIAGARA AND ROCHESTER, NEW YORK, AMERICAN AUTOMOBILE ASSOCIATION, THE H. M. GOUSHA COMPANY, 1987.

APPROXIMATE SCALE IN MILES

0 .65 1.30

TRANSPORTATION ROUTES TO HOSPITALS

E.C.JORDAN CO.

5669-00

ATTACHMENT G

ADDITIONAL DATA

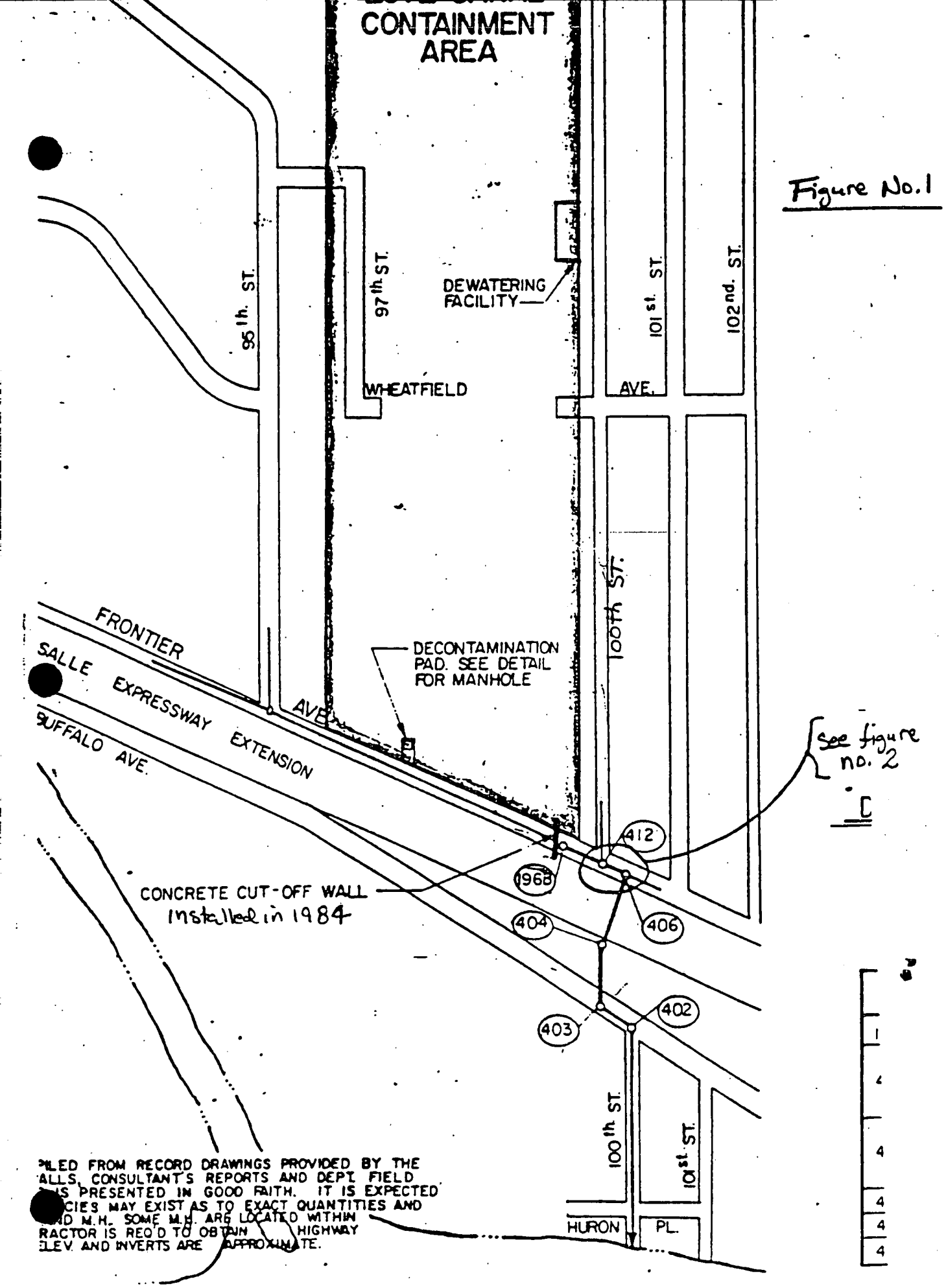
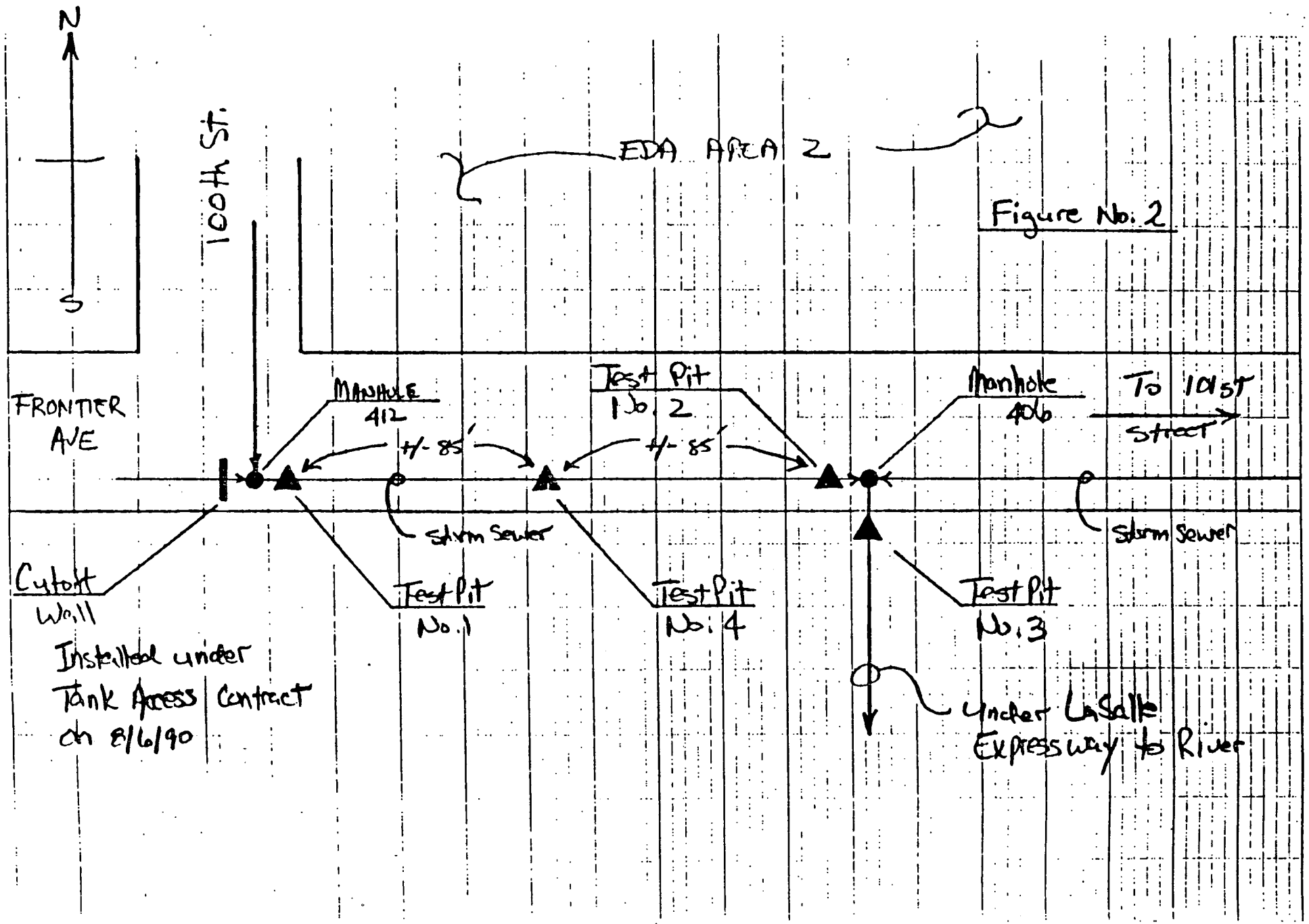


Figure No. 1

LED FROM RECORD DRAWINGS PROVIDED BY THE ALLS, CONSULTANT'S REPORTS AND DEPT. FIELD S PRESENTED IN GOOD FAITH. IT IS EXPECTED CIES MAY EXIST AS TO EXACT QUANTITIES AND D M.H. SOME M.H. ARE LOCATED WITHIN RACTOR IS REQ'D TO OBTAIN HIGHWAY LEV. AND INVERTS ARE APPROXIMATE.


N
S
100th St.
EDA AREA 2
Figure No. 2
FRONTIER AVE
Manhole 412
+/- 85'
Test Pit No. 2
+/- 85'
Manhole 406
To 101st Street
Storm Sewer
Storm Sewer
Cutoff Wall
Installed under Tank Access Contract on 8/6/90
Test Pit No. 1
Test Pit No. 4
Test Pit No. 3
Under LaSalle Expressway to River

FRONTIER AVENUE TEST PITS
Love Canal Site No. 9-32-020

Pits dug in August 1990

September 27, 1990

Location	Sampl No.	Matrix	Compound Detected	Value (ppb)
Pit No. 1			VOLATILES	
	1578-01	Water	None	***
	1582-01	Soil	Methylene Chloride	25
			SEMIVOLATILES	
	1582-01	Soil	None	***
			PCBs/PESTICIDES	
	1582-01	Soil	None	***
Pit No. 2			VOLATILES	
	1579-02	Water	Benzene	520
			Toluene	5,800
			Chlorobenzene	2,700
	1583-02	Soil	Chlorobenzene	930
			SEMIVOLATILES	
	1583-02	Soil	1,2,4-Trichlorobenzene	1,000
			2-Chloronaphthalene	1,900
			PCBs/PESTICIDES	
	1583-02	Soil	gamma-BHC (Lindane)	1,700
			Heptachlor	3,100
			Endosulfan II	480
Pit No. 3			VOLATILES	
	N.A.	Water	No Samples Taken	***
	1584-03	Soil	None	***
			SEMIVOLATILES	
	1584-03	Soil	None	***
			PCBs/PESTICIDES	
	1584-03	Soil	gamma-BHC (Lindane)	210

FRONTIER AVENUE TEST PITS
Love Canal Site No. 9-32-020

September 27, 1990

Location	Sampl No.	Matrix	Compound Detected	Value (ppb)
Pit No. 4			VOLATILES	
	1580-04	Water	Benzene	450
			Toluene	6,000
			Chlorobenzene	1,800
	1585-04	Soil	Chlorobenzene	11
			SEMIVOLATILES	
	1585-04	Soil	None	***
			PCBs/PESTICIDES	
	1585-04	Soil	gamma-BHC (Lindane)	510
M.H. 406			VOLATILES	
	1581-05	Water	None	***
	N.A.	Soil	No Samples Taken	***
			SEMIVOLATILES	
	N.A.	Soil	No Samples Taken	***
			PCBs/PESTICIDES	
	N.A.	Soil	No Samples Taken	***

ATTACHMENT H

STANDBY CONSULTANT CONTRACT WORK ASSIGNMENT - LOVE CANAL

LOVE CANAL HAZARDOUS WASTE DRUM HANDLING PROCEDURE

MAY 1990

PURPOSE:

1) To provide consistent and proper handling of hazardous waste drums at Love Canal.

2) To record and track Canal remedial wastes from "Cradle to Grave".

DESCRIPTION:

Hazardous wastes are continually being generated as a result of both short-term remedial construction projects and long-term operations and maintenance at the site. Spent activated carbon, contaminated soil, used protective clothing and contaminated glassware are drummed and stored at Love Canal. This procedure seeks to revise and reaffirm the existing drum storage guidance.

PROCEDURE:

STEP ONE: Notify

Notify the Leachate Treatment Facility Operator at least 3 days in advance of anticipated storage. Remedial Project Managers will be responsible for notifying. At least one month's advance notice is recommended for larger waste quantities (greater than 20 drums).

STEP TWO: Drum

1. Use new 17-H 55 gallon capacy drums unless overpacking.

2. A polyethlyene liner must be inserted into the drum prior to placing wastes in the drum. Drum interior shall be dry prior to installing liner. See plant oprerator(s) for liners.

3. Only put wastes of the same waste code in the same drum. (See waste Code Chart, attached)

4. Remove all liquid. Absorbent is to be added to damp wastes. All wastes are to be dewatered to the satisfaction of the Love Canal Leachate Treatment Facility Operator or Project Engineer.

5. Compact waste using compactor if possible. Follow manufacturer's directions and posted procedures.

6. Keep lid closed securely unless it is necessary to add or remove waste.

STEP THREE: Prepare Drums For Identification

1. High pressure, hot water wash the drums exterior with detergent (ex. Steam Jenny).

2. Air or cloth dry the cylindrical part of the drum where the "HAZARDOUS WASTE" label will be placed.

STEP FOUR: Identify

Once the drum is full and can no longer be compacted, its contents must be identified on the outside of the drum immediately.

1. Affix a "HAZARDOUS WASTE" label on each drum. These labels will be provided by the Treatment Plant operator(s). Fill in the requested information with indelible pen. See example at the end of this procedure. The log number will be written in later (under STEP FIVE, number 4.)

2. Mark the waste code on the exterior of each drum using a paint pen. (See Waste Code Chart attached for codes.)

The markings on the labels and drums must be made in durable ink or paint and be unobsecured. Place label in a clean, smooth area of the drum.

STEP FIVE: Acceptance

1. Once the drums are full, secured, and identified, they shall be placed on pallets at a designated temporary storage area (see plant operator(s)).

The pallets are to be provided by the contractor and shall consist of:

- new wood construction
- four-way pallets
- size 54" x 54"
- minimum stringer thickness 1 3/8" and width 4"
- 12 top boards, 3/4" thick, 4" wide, spaced 1/2" to 3/4" apart.
- 5 bottom boards, 3/4" thick, 4"wide

Drums on the pallet shall:

- all consist of the same waste code
- be of the same height
- have all the labels on the outside of two opposing sides
- be banded tightly together (See plant operator(s) on bander)
- have been washed clean on the outside

2. Project Manager completes the Love Canal Drum Storage Log form including signature.

3. Treatment Facility Operator will inspect the drums and approve or disapprove the drums for storage. If approved, the Operator(s) will assign a log number to the form.

4. If approved, write the log number and waste code down on each drum. An example of the coding is 001-A where 001 is the log number and A is the spent carbon (see Waste Code Attached). If disapproved take the necessary corrective action.

STEP SIX: Storage

Once accepted, the drums on the pallets are to be placed in the Decontamination/Drum Storage Facility (Drum Storage Building).
Drums shall be placed:

_____ **Under the supervision of the treatment plant operator(s)**
_____ In the appropriate waste code area for the type of material in the drum (see building diagram)
_____ Pallets butt against each other evenly
_____ Minimum 2.5' of aisle space
_____ 2nd tier pallets are stable

FOR FURTHER INFORMATION:

Contact the Leachate Treatment Facility Operator at (716) 283-0111.

Any accidents or spills are to be taken care of in accordance with the Love Canal Contingency Plan.

LOVE CANAL HAZARDOUS WASTE CODE CHART

LOG CODE	DRUM CONTENT DESCRIPTION
A	Spent Carbon, Vent Sorbs
B	Protective Clothing
C	Soil Sediment
D	Plastics, Filter Bags, Sample Bottles, Hose, Wood, Pails, Rope, Cloth
E	Hard Stock, Motors, Pipe, Metal, Tools
F	Other non-liquid wastes. (describe on drum and log)

NOTE: No liquid, including non-aqueous phase liquid - N.A.P.L., is to be drummed. (See PROCEDURE, STEP TWO, Number 4). If you are unsure of whether or not the waste is NAPL, see the plant operator(s).

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE, OR PUBLIC SAFETY AUTHORITY, OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY

PROPER DOT SHIPPING NAME: SOLID UN OR NA#: 9189

GENERATOR INFORMATION

NAME: STATE AGENCY/CONSULTANT/CONTRACTOR

ADDRESS: PROJECT NAME

CITY: NIAGARA FALLS STATE: NY ZIP: 14304

EPA ID NO: NYD000767657 EPA WASTE NO: U-129

~~ACCUMULATION START DATE~~: FULL CAPACITY AND SEAL DATE ~~MANIFEST DOCUMENT NO~~: 001-A LOG

HANDLE WITH CARE!

CONTAINS HAZARDOUS OR TOXIC WASTES

LOVE CANAL DRUM STORAGE LOG

LOG NUMBER: _____ DATE OF STORAGE: _____
(Contact treatment plant for log number, coding and labeling requirements)

LOVE CANAL PROJECT NAME: _____

PROJECT MANAGER: _____

AGENCY/BUREAU/SECTION: _____

TOTAL NUMBER OF DRUMS TO BE STORED THIS SHIPMENT: _____

IDENTIFY BELOW THE NUMBER OF DRUMS FOR EACH SPECIFIC TYPE OF WASTE AND THE CORRESPONDING CODING USED ON THE DRUMS:

WASTE DESCRIPTION/TYPE	WASTE CODING	NUMBER OF DRUMS
1.		
2.		
3.		
4.		

COMMENTS: _____

_____

_____

The following is for final inspection purposes only:

NUMBER OF DRUMS RECEIVED: _____ DRUMS LABELED PROPERLY: YES/ NO

DRUM PLACEMENT INSPECTION: APPROVED/DISAPPROVED _____

COMMENTS: _____

_____

FINAL APPROVAL

PROJECT MANAGER: _____ (Signature) _____ (Date)

SR. FACILITY OPERATOR: _____ (Signature) _____ (Date)

FACILITY OPERATOR: _____ (Signature) _____ (Date)

cc: Assoc. Sanitary Engineer/Operations and Maintenance Section