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WORK PLAN FOR INITIAL GROUNDWATER ASSESSMENT UNDERGROUND STORAGE  
TANK 4 (UST 4) WELL ABANDONMENT M-82 AND WELL ABANDONMENT AT SHORT STAY  
NAVY RECREATIONAL FACILITY CNC CHARLESTON SC  
8/1/2002  
ADVENT ENVIRONMENTAL INC

**WORK PLAN**  
INITIAL GROUNDWATER ASSESSMENT – UST 4  
WELL ABANDONMENT – M82  
CHARLESTON NAVAL COMPLEX, CHARLESTON, SC  
AND  
WELL ABANDONMENT AT  
SHORT STAY NAVY RECREATIONAL FACILITY, MONCKS CORNER, SC

**Contract Number**  
N62467-02-M-0422

**Prepared By:**

ADVENT Environmental  
One Poston Road  
Charleston, SC 29407

August 2002

Prepared by: *[Signature]* Date 9/10/02

Approved by: *[Signature]* Date 9/10/02

Southern Division Approval: *[Signature]* Date 10 OCT 02

**WORK PLAN FOR**  
**INITIAL GROUNDWATER ASSESSMENT – UST 4**  
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**CHARLESTON NAVAL COMPLEX, CHARLESTON, SC**  
**AND**  
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**SHORT STAY NAVY RECREATIONAL FACILITY, MONCKS CORNER, SC**

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## ACRONYM LIST

API	American Petroleum Institute
COC	Constituents of Concern
CFR	Code of Federal Regulations
CRZ	Contamination Reduction Zone
EZ	Exclusion Zone
LEL	Lower Explosive Limit
MSDS	Material Safety Data Sheet
NFPA	National Fire Protection Association
OVA	Organic Vapor Analyzer
PAH	Polyaromatic Hydrocarbons
PPE	Personal Protective Equipment
PPM	Parts Per Million
PWC	Public Works Center
SCDHEC	South Carolina Department of Health and Environmental Control
SHSO	Site Health and Safety Officer
SSHSP	Site-Specific Health and Safety Plan
TPH	Total Petroleum Hydrocarbons

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**1.0 INTRODUCTION**

The objective of this work plan is to conduct an Initial Groundwater Assessment at UST 4, abandon one (1) permanent monitoring well at Facility M-82, Charleston Naval Complex; and, abandon twelve (12) monitoring wells at Short Stay Naval Recreational Facility.

**1.1 REFERENCES**

Publications listed below were used in the development of this work procedure and are referred to in the text by basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1926            Safety and Health Regulations for Construction

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

R. 61-71 South Carolina Well Standards, April 26, 2002

Initial Groundwater Assessment Guidance Document, March 15, 2000

**2.0 DESCRIPTION OF WORK**

The work will proceed in three phases:

WORK PHASE ONE will involve the Initial Groundwater Assessment at UST 4. One (1) permanent monitoring well constructed of two-inch diameter PVC casing with a ten-foot screen bracketing the water table shall be installed in the area showing the highest concentration of COC above risk based screening levels as documented from the previous soil and/or ground water assessment. Soil samples will be collected for screening at five-foot intervals and screened using an OVA. The sample with the highest field screening reading shall be submitted to a South

Carolina certified laboratory. A groundwater sample will be collected after the monitoring well has been installed and developed. The soil and groundwater samples will be analyzed for the parameter specified in the Initial Ground Water Assessment Guidance Document.

WORK PHASE TWO will consist of the abandonment of one (1) permanent monitoring well at Facility M-82. The monitoring well will be abandoned by forced injection of grout through a tremie pipe starting at the bottom and proceeding to the surface in one continuous operation. The casing will be cut below ground surface and backfilled.

WORK PHASE THREE will consist of the abandonment of twelve (12) monitoring wells at the Short Stay Facility. The monitoring wells will be abandoned by forced injection of grout through a tremie pipe starting at the bottom and proceeding to the surface in one continuous operation. The casings will be cut below ground surface and backfilled.

### **3.0 SUBMITTALS**

#### **3.1 REPORT**

ADVENT will prepare the South Carolina Department of Health and Environmental Control (SCDHEC) Initial Groundwater Assessment (IGWA) Report. Separate Completion Reports for Facility M-82 and Short Stay Naval Recreational Facility shall also be completed. A photographic record of the work shall be compiled for historical purposes and included in the Completion Reports. THE REPORTS WILL BE COMPLETED NO LATER THAN 60 DAYS AFTER THE COMPLETION OF THE WORK.

One draft copy of the reports shall be provided to the PM for UST 4 and M-82 for review and approval. One draft copy of the report for Short Stay Naval Recreational Facility shall be provided to the PM and Naval Weapons Station Point of Contact for review and approval. Once approved, ADVENT will provide the Naval Weapons Station with two (2) final copies of the Short Stay well abandonment report and the PM shall receive one (1) final copy of the well abandonment report for Short Stay and M-82, and two (2) final copies of the IGWA report at UST 4.

After all signatures (both CONTRACTOR's and Navy's) have been affixed to all signature pages in the final deliverables, ADVENT will provide four (4) CD copies of each final deliverable. The four CD copies will be provided to the government within two weeks after final approval of the Assessment Report. Adobe Acrobat software shall be used to convert word-processing files to searchable portable document format (PDF). Final CDD/GIS drawings shall also be provided in PDF format and shall be produced for a 600 dpi (dots per inch) minimum monochrome pdfWriter printer driver; if drawings include signatures,

electronically sign and seal the CADD/GIS drawings prior to converting to final PDF format. Sketches, photos, or forms-not available in electronic format-may be scanned for conversion to PDF format.

The entire final deliverable (both word processing document and CADD/GIS drawings, etc) shall be combined into a single CD. A navigation tree and document-viewing window shall be visible upon opening the PDF file. The navigation file shall be indexed similarly to the table of contents and the lists of figures and tables in the document. Each major section break, figure, table, or appendix shall be individually book-marked.

Each CD shall be labeled with contract and delivery order, document title, activity name, and final document approval date.

#### **4.0 QUALIFICATIONS AND RESPONSIBILITIES**

ADVENT's personnel and subcontractors, who have had a wide range of experience with complex industrial work, will perform the work. Personnel involved with this project have been employed in the installation and abandonment of monitoring wells and are experienced and capable workers. Employees have experience handling and disposing of wastes encountered in the installation and abandonment of monitoring wells. These employees are also trained and certified per the OSHA guidelines in excavation, confined spaces, gas testing, and disposal of petroleum liquids and sludge.

#### **5.0 GENERAL REQUIREMENTS**

##### **5.1 SITE SPECIFIC HEALTH AND SAFETY PLAN (SSHSP)**

The Site Specific Health and Safety Plan (SSHSP) is included in Appendix A of this work plan. A copy of the SSHSP will be onsite during all work. The Project Manager or Site Supervisor will be responsible for site safety.

##### **5.2 ENVIRONMENTAL PROTECTION PLAN**

An Environmental Protection Plan will be implemented during site work to ensure the natural resources within and surrounding the site are preserved in their existing condition or will be restored to an equivalent or improved condition. Measures will be taken to prevent oily or hazardous substances from entering the ground, drainage areas or local bodies of water as outlined in EPA Regulations on Oil Pollution Prevention, 40 Code Of Federal Regulations (CFR) 112 and SCDHEC regulations. A copy of the Environmental Protection Plan will be onsite during all work and is provided as Appendix B.

Monitoring well installation and abandonment operations will be performed so as to minimize the possibility of a spill or release. In the event of a spill or release, the work crew will initiate corrective action and notification will be made to the NAVFAC Project Manager, Gabriel Magwood. ADVENT will have clean-up material and equipment onsite in the event of a spill or release.

### **5.3 EXCLUSION ZONE (EZ) AND CONTAMINATION REDUCTION ZONE (CRZ)**

Personnel not directly involved with the project shall not enter the work zones, called the EZ and CRZ. The EZ shall be a minimum of 10 feet from the limits of drilling or abandonment activities. The Site Health and Safety Officer (SHSO) shall determine the perimeters of these zones.

### **5.4 SECURITY**

During the performance of work, a barrier preventing unintentional entrance of the general population into the work zone shall isolate the work area at the site. The Project Manager shall be responsible for establishing the barrier prior to start of work.

### **5.5 IGNITION SOURCES**

#### **5.5.1 Fire Extinguishers**

Two (2) 10-pound ABC fire extinguishers shall be readily available on the work site. The fire extinguishers will be located no closer than 25 feet and not more than 75 feet from the work area.

#### **5.5.2 Work Area**

Prior to performing work that might involve the release of flammable or hazardous vapors, vehicular and personnel traffic shall be routed away from the immediate area. All sources of ignition, including smoking, welding, burning, or other work that might be a source of ignition, shall be eliminated from the work area where flammable vapors may be present or likely to travel. This will include insuring all openings into surrounding structures are secured so as not to allow any flammable vapors to build up inside.

### **5.6 PERSONNEL AND EQUIPMENT DECONTAMINATION**

Equipment will be decontaminated as needed before exiting the work zones. Decontamination procedures will be performed by wiping, sweeping, and/or

scrubbing with water if needed to remove oil, or oily dirt, sand and mud from coveralls, gloves, boots, tools and equipment. Efforts will be made to minimize the use of water. Down-hole drilling and grouting equipment will be decontaminated using a high temperature (steam) pressure washer.

## **5.7 WASTE MANAGEMENT**

Soils cuttings from the monitoring well installation will be temporarily stored on site in 55-gallon drums. Decontamination water generated running the cleaning of down-hole equipment and purge and development water will be containerized in 55-gallon poly drums. Waste classified as PPE, disposable suits, gloves, boots, respirator cartridges, and plastic sheeting will be disposed of as solid waste.

## **5.8 WORKSITE ATMOSPHERE**

An OVA flame-ionization detector (FID) will be used to assess ambient air quality in the project work area. All monitoring surveys will be conducted in a manner as to include readings from the ground level up through the breathing zone. Surveys will include the internal areas of any excavation in the work area. Again, ground level to breathing zone readings will be obtained.

## **6.0 SCOPE OF ACTIVITIES**

Monitoring well installation and abandonment procedures will include:

- Labor, materials, necessary permits, laboratory tests and reports, and equipment to install and abandon monitoring wells.
- Soil and groundwater sampling.
- Grouting monitoring wells to the ground surface.
- Disposal of waste generated by the project in accordance with all appropriate federal, state, and local regulations.

## **6.1 INITIAL GROUNDWATER ASSESSMENT**

The Initial Groundwater Assessment will include installation of one (1) monitoring well near the location of the former UST. Following installation of the monitoring well, the well will be developed and sampled. All soil, decontamination water, and development water and purge water generated during implementation shall be temporarily stored in 55-gallon drums or a similar container. Upon receipt of laboratory analytical results, the soil and/or groundwater shall be characterized and disposed of in an appropriate manner.

### **6.1.1 Utility Location and Site Permits**

ADVENT will coordinate and schedule for the identification of possible underground utilities located at the site. Identification and marking of all utilities will include, but may not be limited to, underground electrical lines, natural gas lines, telecommunications, CATV and sewers. In addition, any required excavation permits will be obtained. ADVENT will obtain clearance from the Caretaker Site Office prior to entering and performing fieldwork.

### **6.1.2 Decontamination**

Equipment used to install the well will be decontaminated prior to use at the site and upon completion of the drilling activities.

### **6.1.3 Receptor Survey and Site Data**

Wells (drinking and non-drinking water wells) and other potential receptors (utilities, surface waters, wetlands, etc.) within 1,000 feet of the site, and the current use of the site and adjacent land (commercial, residential, agricultural, or industrial) shall be documented. If a drinking water well is located within 250 feet of the UST system (1,000 feet if a municipal supply well), a water sample shall be obtained from each well and analyzed for the appropriate parameters.

### **6.1.4 Monitoring Well or Boring Installation**

One permanent monitoring well constructed of two-inch diameter PVC casing with a ten-foot PVC screen bracketing the water table shall be installed in the area showing the highest concentration of COC above risk based screening levels as documented from the previous soil and/or ground-water assessment. The well will be installed using a conventional drilling rig. The well will be installed under the direct supervision of a South Carolina certified well driller and constructed in compliance with the South Carolina Well Standards and Regulations, R.61-71. The well shall require proper filter pack, grout, locking well cap, well pad at or above the land surface, data plate, and a cover held in place with bolts or screws. During well installation, soil samples are to be collected for screening at five-foot intervals. The soil lithology of each sample is to be described and the field screening readings reported in the boring log.

If ground water is encountered within 25 feet of the surface, a monitoring well shall be installed. If ground water is not encountered within 25 feet of the surface, additional boring footage up to a depth of 50 feet of the surface shall be completed subsequent to notification to the Department's project manager. The ground-water wells will be properly developed. The development method will be capable of removing enough formation cuttings, drilling fluids, and additives to provide relatively sediment-free ground water samples that are typical of the shallow aquifer. All development waters will be containerized and disposed of in

an appropriate manner. The static water level will be measured after each well is developed and allowed to equilibrate for a minimum of six hours.

If ground water is not encountered within 50 feet of the surface, or if auger refusal occurs prior to 50 feet, the soil sample with the highest field screening value shall be prepared for laboratory analysis. If the field screening for all samples within the boring is within ten percent of each other, the sample from the greatest depth above the water table shall be submitted for analysis. The boring shall be properly abandoned per the South Carolina Well Standards and Regulations, R. 61-71.

### **6.1.5 Soil and Ground Water Sampling**

The soil sample with the highest OVA field-screening reading shall be submitted to a South Carolina certified laboratory for analysis. If the field screening for all sample measurements within the boring is within 10 percent of each other, the sample from the greatest depth above the water table shall be collected and submitted for analysis.

A high-level ( $>200 \mu\text{g}/\text{kg}$ ) or low-level ( $\leq 200 \mu\text{g}/\text{kg}$ ) sample based on soil screening results shall be collected in accordance with EOA Method 5030B and 5035 protocol, respectively. The number and type of sampling containers, weighing of samples in the field, use of preservatives, and holding times must be in accordance with SW846, Test Methods for Evaluating Solid Wastes. All industry standard quality assurance and quality control methods shall be followed for shipping (sample label, sealed sample containers, chain of custody prepared, stored on ice). The sampling logs should note the location and type of each sample submitted for analysis.

The soil sample shall be analyzed for Benzene, Toluene, Ethylbenzene, Xylenes, Naphthalene, and Polynuclear Aromatic Hydrocarbons (PAHs).

The collection of a ground-water sample is not necessary if ground water is not encountered in the boring, or if the thickness of free product in the well exceeds 0.01 feet (1/8 inch). The distance from the top of the casing to the free product, to the ground water table and the thickness of free product shall be reported.

The well shall be purged prior to sampling and the pH, temperature, dissolved oxygen and specific conductance reported. Purging is considered complete once the ground-water temperature and pH measurements have equilibrated. All purge water shall be containerized and disposed of as appropriate.

The ground-water sample shall be submitted to a South Carolina certified laboratory for analysis. All industry standard quality assurance and quality control methods shall be followed for shipping (sample labels, sealed sample containers, completed chain of custody forms, shipments to the laboratory on ice).

The ground-water sample shall be analyzed for Benzene, Toluene, Ethylbenzene, Xylenes, Naphthalene, Methyl Tertbutyl Ether (MTBE), Lead, EDB, and PAHs.

#### **6.1.6 Reporting**

Following completion of the field activities, an Initial Ground-water Assessment Report will be developed in accordance with SC DHEC guidance documents.

### **6.2 WELL ABANDONMENT AT FACILITY M-82**

#### **6.2.1 Well Abandonment**

The monitoring well will be abandoned by forced injection of grout through a tremie pipe starting at the bottom and proceeding to the surface in one continuous operation. The casing will be cut below ground surface and backfilled. The well casing and other various wastes will be disposed of as solid waste.

#### **6.2.2 Reporting**

Following abandonment of the well, an Abandonment Report will be developed.

### **6.3 WELL ABANDONMENT SHORT STAY FACILITY**

#### **6.3.1 Well Abandonment**

The monitoring well will be abandoned by forced injection of grout through a tremie pipe starting at the bottom and proceeding to the surface in one continuous operation. The casing will be cut below ground surface and backfilled. The well casing and other various wastes will be disposed of as solid waste.

#### **6.3.2 Reporting**

Following abandonment of the well, an Abandonment Report will be developed.

# APPENDIX A



## **APPENDIX A**

### **SITE SPECIFIC SAFETY AND HEALTH PLAN**

#### **1.0 Purpose**

This plan provides site-specific information concerning the health and safety issues associated with the proposed installation and abandonment of monitoring well activities.

#### **2.0 Work Location**

UST 4 and Facility M-82, Charleston Naval Complex, Charleston, SC and Short Stay Naval Recreational Facility, Monks Corner, SC. Maps to the nearest Hospitals for each both sites are included in Appendix A of the Health and Safety Plan.

#### **3.0 Work Scope Brief**

The scope of work is conduct an Initial Groundwater Assessment at UST 4 and properly abandon one (1) permanent monitoring well at Facility M-82, Charleston Naval Complex; and, properly abandon twelve (12) monitoring wells at Short Stay Naval Recreational Facility.

ADVENT personnel will perform project management oversight for excavation of contaminated materials, monitoring well installation and development, soil sampling and ground-water sampling. ADVENT will also oversee the activities for well abandonment of thirteen (13) monitoring wells.

#### **Monitoring Procedures**

An OVA flame-ionization detector (FID) will be used to assess ambient air quality in the project work area. All monitoring surveys will be conducted in a manor as to include readings from the ground level up through the breathing zone. Surveys will include the internal areas of any excavation in the work area. Again, ground level to breathing zone readings will be obtained.

Initial monitoring will be conducted prior to commencement of each day's operation and will be recorded in the project field book. Subsequent to the initial monitoring, periodic monitoring will be conducted at a minimum of four times throughout the workday. In addition, monitoring shall be conducted prior to work beginning in a new area or prior to different work tasks being performed and after work stoppages of two hours or more. Should FID readings in excess of 35 PPM

or 35 meter deflection units (MDU's) be obtained in the breathing zone area, the following will occur:

- Personnel will don respiratory protection.
- Work will proceed under LEVEL C criteria.
- Personnel will continue to monitor the affected area(s). If FID readings drop below 35 PPM for a duration of at least 30 minutes, personnel may downgrade PPE at the discretion of the Site Safety and Health Officer (SSHO). Monitoring of the area will continue.

Should FID readings in excess of 400 PPM be obtained in the breathing zone area, all work will cease and contact to the PM will be made for additional recommendations.

Note: ADVENT's monitoring equipment is calibrated and maintained in accordance with its Measuring and Testing Equipment Calibration Program.

## **4.0 Hazards**

### **Primary Health Hazards**

The primary health hazard is from petroleum fuels, diesel and gasoline, which are a primary irritant. Dermatitis, a defatting of the skin, can result from continued skin contact with petroleum products. Some individuals develop hypersensitivity. The quickest entry into the body is by ingestion.

### **Heat Stress**

Field activities in hot climates create a potential for heat stress. The warning symptoms of heat stress include fatigue; loss of strength; reduced accuracy, comprehension and retention; and reduced alertness and mental capacity. To prevent heat stress, personnel shall receive adequate water supplies and electrolyte replacement fluids, and maintain scheduled work/rest periods. Pulse rate and body temperature shall also be monitored as appropriate.

### **Electrical Hazards**

Overhead power lines, downed electrical wires, buried cables and improper use of electrical extension cords can pose a danger of shock or electrocution. All project personnel should immediately report any condition, which could result in a potential electrical hazard.

## **Noise Hazard**

Operation of equipment may present a noise hazard to workers. ADVENT personnel will be provided with hearing protection to be utilized when noise levels are excessive.

### **5.0 Personnel Protective Equipment (PPE)**

- Hard hats
- Safety glasses
- Disposable chemical resistant gloves, suits, and boots
- Steel-toed safety shoes
- Full and half-face respirators with combination cartridges (organic vapor, acid gas dust/fume/mist high efficiency filters.) - If conditions warrant
- Hearing protection - If conditions warrant
- Cotton overgloves
- Electrolyte replacement fluids
- First aid supplies Safety shoes and hardhats, hearing protection are required. Gloves will be worn during handling of sampling.

Clean PPE will be used every day. If PPE failure causes skin contact, the PPE will be removed, the skin will be washed, and the PPE will be replaced.

### **6.0 Confined Space Emergency Notification Rescue Procedures**

Confined space entry is not anticipated or authorized for this project

### **7.0 Special Personnel Training Qualifications**

All ADVENT project personnel are trained and certified in accordance with 29 CFR 1910.120 as required.

Project Specific Training: Prior to project start-up all assigned ADVENT personnel will receive an initial project specific training session. This training will include but not be limited to the following areas:

- Review of the Health and Safety Plan;
- Review of chemical and physical hazards associated;
- Personal Protective Equipment levels to be used by project personnel;
- Project security control and operational work zones;
- Emergency Response and Site Evacuation Procedures;

- Project communication;
- Required decontamination procedures; and
- Prohibited on-site activities.

Daily Safety "Tailgate" Meetings: Before the start of work each day, all ADVENT project personnel will assemble for a brief safety meeting. The purpose of these meetings will be to discuss project status, problem areas, safety concerns, PPE levels and to reiterate Health and Safety Plan requirements.

ALL ADVENT field personnel participate in a medical monitoring program, which meets the requirements of 29 CFR 1910.120.

## **8.0 Occupational Safety and Health Precautions**

The Project Manager, Supervisor, or a person designated as acting supervisor will be present when work is in progress and all will have stop work authority.

Prior to the start of work the area must be checked for the presence of above or below ground power, gas or water lines, and they must be marked and secured by lockout tagout if they will be endangered. Extreme care will be taken when working around overhead/underground power lines. It will be ensured that notification has been made to CSO, to secure all electrical, water, gas, etc. prior to work. It will be determined from the facility custodian whether any other work (e.g. construction, electrical repairs, and hot work) is planned in the work area, which could impact the work of this procedure. It will also be determined whether the work area contains any remotely operated equipment or equipment that starts automatically. If any surrounding area work such as pumping, cleaning or venting nearby gasoline tanks is planned, steps will be taken to ensure that the area will not be affected by the work of this procedure. It will be ensured that systems are depressurized. Precautions will be taken to contain or prevent spillage of residual fluids on system opening. Any fluid drainage will be taken away from buildings or contained. Operation of any equipment on the tank and any digging in the work area without the approval of the Project Manager will be prohibited. No chemicals, compressed gasses, or gas lines will be taken inside the work area without the permission of the Project Manager, as these are explosion and asphyxiation hazards.

Personnel will not carry smoking materials into the work area; the materials will be left in a designated area. If necessary, a safe smoking area will be designated by the project manager with the agreement of the facility custodian and the cognizant fire department. Smoking will only be permitted in designated areas.

Electrical equipment, e.g. blowers and lights, shall meet the requirements of NFPA 70, Class 1, Division 1.

At least two (2) 10-pound ABC portable fire extinguishers will be kept at the work site.

Personnel will wash their hands and faces before eating or smoking and at the end of the day.

## **9.0 Material Safety Data Sheets**

Typical Material Safety Data Sheets (MSDSs) for gasoline and diesel fuel are included in Appendix B of the Health and Safety Plan.

## **10.0 Medical Surveillance**

ADVENT employees participate in annual medical monitoring.

## **11.0 Assigned Responsibilities and Qualifications**

The following personnel are assigned to this project in the listed positions. They hold responsibility based on their training and experience. Based on the size of the job, one person may hold responsibility for more than one (or all) position. **Any employee on-site has stop work authority.**

### **Project Manager:**

The project manager will be responsible for all phases of the work. He/she will make decisions with regard to project schedule, quality, and the safety of the work. The project manager will be responsible for all decisions on sampling and waste characterization.

### **Site Safety and Health Officer:**

The Site Safety and Health Officer (SSHO) will be responsible for safety and health decisions. He will ensure that work is performed safely and that environmental and health concerns are met for both onsite workers and the public in general. When the SSHO is away from the site, the Project Manager or Operations Supervisor may act as the SSHO.

### **Drilling Subcontractor:**

The drilling subcontractor will perform all drilling and well abandonment activities using typical rotary drilling equipment.

## **12.0 Emergency Procedures**

In the event of overt personnel exposure (i.e., skin contact, inhalation, ingestion), the FSC will immediately be notified and the following procedures shall be implemented.

### **Skin Contact**

Remove any contaminated equipment and clothing. Thoroughly wash area with soap and water.

### **Inhalation**

Move to fresh air; remove any respiratory protection equipment.

### **Eye Contact**

Flush with water or eye wash solution for at least 15 minutes. Seek medical help if necessary.

### **Ingestion**

Seek medical help if necessary.

### **Personal Injury**

A first-aid kit shall be readily available in the case of an injury. Administer first aid and/or seek medical help if necessary. Medical emergencies take precedence over decontamination procedures. Know route to nearest telephone and medical facility.

### **Potential or Actual Fire/Explosion**

ADVENT personnel will have a fire extinguisher on site. If it is safe to do so, on-site personnel may use the fire fighting equipment to control or extinguish the fire, and remove or isolate materials that may contribute to the fire. Contact the fire department; project manager and/or client company officials as appropriate.

# **DIESEL FUEL MSDS**



The Valvoline Company

Date Prepared: 01/14/02

DIESEL FUEL #2

MSDS No: 999.0013902-008.012I

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Material Identity

Product Name: DIESEL FUEL #2

General or Generic ID: HYDROCARBON

Company

The Valvoline Company  
P.O. Box 14000  
Lexington, KY 40512

Telephone Numbers

Emergency: 1-800-274-5263  
Information: 1-859-357-7206

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2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient(s)	CAS Number	% (by weight)
ALIPHATIC & AROMATIC HYDROCARBONS	68476-34-6	100.0

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3. HAZARDS IDENTIFICATION

Potential Health Effects

Eye

Can cause eye irritation. Additional symptoms of eye exposure may include: blurred vision

Skin

May cause mild skin irritation. Prolonged or repeated contact may dry and crack the skin.

Swallowing

Swallowing small amounts of this material during normal handling is not likely to cause harmful effects. Swallowing large amounts may be harmful. This material can get into the lungs during swallowing or vomiting. This results in lung inflammation and other lung injury.

Inhalation

Breathing of vapor or mist is possible.

Symptoms of Exposure

stomach or intestinal upset (nausea, vomiting, diarrhea), irritation (nose, throat, airways), central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness), and death.

Target Organ Effects

No data

Developmental Information

No data

Cancer Information

Diesel engine exhaust is listed as carcinogenic by the International Agency for Research on Cancer (IARC). Excess lung and bladder cancers have been reported in workers exposed to these emissions. In addition, exposure to diesel exhaust particulates is listed as carcinogenic by the National Toxicology Program. This product (or a component) is a petroleum-derived material. Similar materials and certain compounds occurring naturally in petroleum oils have been shown to cause skin cancer in laboratory animals following repeated exposure without washing or removal.

Other Health Effects  
No data

Primary Route(s) of Entry  
Inhalation, Skin contact.

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#### 4. FIRST AID MEASURES

##### Eyes

If symptoms develop, immediately move individual away from exposure and into fresh air. Flush eyes gently with water for at least 15 minutes while holding eyelids apart; seek immediate medical attention.

##### Skin

Remove contaminated clothing. Wash exposed area with soap and water. If symptoms persist, seek medical attention. Launder clothing before reuse.

##### Swallowing

Seek medical attention. If individual is drowsy or unconscious, do not give anything by mouth; place individual on the left side with the head down. Contact a physician, medical facility, or poison control center for advice about whether to induce vomiting. If possible, do not leave individual unattended.

##### Inhalation

If symptoms develop, immediately move individual away from exposure and into fresh air. Seek immediate medical attention; keep person warm and quiet. If person is not breathing, begin artificial respiration. If breathing is difficult, administer oxygen.

##### Note to Physicians

This material is an aspiration hazard. Potential danger from aspiration must be weighed against possible oral toxicity (See Section 3 - Swallowing) when deciding whether to induce vomiting. Preexisting disorders of the following organs ( or organ systems) may be aggravated by exposure to this material: skin.

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#### 5. FIRE FIGHTING MEASURES

Flash Point  
> 135.0 F (57.2 C)

Explosive Limit  
No data

Autoignition Temperature

No data

#### Hazardous Products of Combustion

May form: carbon dioxide and carbon monoxide, various hydrocarbons.

#### Fire and Explosion Hazards

Vapors are heavier than air and may travel along the ground or be moved by ventilation and ignited by heat, pilot lights, other flames and ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.

#### Extinguishing Media

regular foam, carbon dioxide, dry chemical.

#### Fire Fighting Instructions

Water or foam may cause frothing which can be violent and possibly endanger the life of the firefighter. Wear a self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode with appropriate turn-out gear and chemical resistant personal protective equipment. Refer to the personal protective equipment section of this MSDS.

#### NFPA Rating

Health - 1, Flammability - 2, Reactivity - 0

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## 6. ACCIDENTAL RELEASE MEASURES

### Small Spill

Eliminate all sources of ignition such as flares, flames (including pilot lights), and electrical sparks. Absorb liquid on vermiculite, floor absorbent or other absorbent material.

### Large Spill

Eliminate all ignition sources (flares, flames, including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from the area of the spill until clean-up has been completed. Contain spill to the smallest area possible. Dike area to prevent spreading. Prevent from entering drains, sewers, streams or other bodies of water. Recover as much of the product as possible by methods such as vacuuming and use of absorbant. Transfer contaminated absorbent, soil and other materials in proper containers for ultimate disposal.

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## 7. HANDLING AND STORAGE

### Handling

Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. All five gallon pails and larger metal containers including tank cars and tank trucks should be grounded and/or bonded when material is transferred.

### Storage

Not applicable

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection

Chemical splash goggles in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. Consult your safety representative.

Skin Protection

Wear resistant gloves such as: neoprene, nitrile rubber, To prevent repeated or prolonged skin contact; wear impervious clothing and boots..

Respiratory Protections

If workplace exposure limit(s) of product or any component is exceeded (See Exposure Guidelines), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (consult your industrial hygienist). Engineering or administrative controls should be implemented to reduce exposure.

Engineering Controls

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

Exposure Guidelines

Component

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ALIPHATIC & AROMATIC HYDROCARBONS (68476-34-6)  
No exposure limits established

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9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point

(for product) 320.0 - 400.0 F (160.0 - 204.4 C) @ 760.00 mmHg

Vapor Pressure

(for product) < 1.000 mmHg @ 68.00 F

Specific Vapor Density

> 5.000 @ AIR=1

Specific Gravity

.876 @ 60.00 F

Liquid Density

7.296 lbs/gal @ 60.00 F  
.876 kg/l @ 15.60 C

Percent Volatiles (Including Water)

No data

Evaporation Rate

SLOWER THAN ETHYL ETHER

Appearance

No data

State  
LIQUID

Physical Form  
HOMOGENEOUS SOLUTION

Color  
RED, DYED LIQUID

Odor  
No data

pH  
Not applicable

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#### 10. STABILITY AND REACTIVITY

Hazardous Polymerization  
Product will not undergo hazardous polymerization.

Hazardous Decomposition  
May form: carbon dioxide and carbon monoxide, various hydrocarbons.

Chemical Stability  
Stable.

Incompatibility  
Avoid contact with: strong oxidizing agents.

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#### 11. TOXICOLOGICAL INFORMATION

No data

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#### 12. ECOLOGICAL INFORMATION

No data

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#### 13. DISPOSAL CONSIDERATION

Waste Management Information  
Dispose of in accordance with all applicable local, state and federal regulations.

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#### 14. TRANSPORT INFORMATION

DOT Information - 49 CFR 172.101  
DOT Description:  
Not Regulated

Container/Mode:  
No data

NOS Component:  
None

RQ (Reportable Quantity) - 49 CFR 172.101  
Not applicable

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15. REGULATORY INFORMATION

US Federal Regulations

TSCA (Toxic Substances Control Act) Status  
TSCA (UNITED STATES) The intentional ingredients of this product are listed.

CERCLA RQ - 40 CFR 302.4  
None

SARA 302 Components - 40 CFR 355 Appendix A  
None

Section 311/312 Hazard Class - 40 CFR 370.2  
Immediate(X) Delayed(X) Fire(X) Reactive( ) Sudden  
Release of Pressure( )

SARA 313 Components - 40 CFR 372.65  
None

International Regulations

Inventory Status

AICS (AUSTRALIA) The intentional ingredients of this product are listed.

DSL (CANADA) The intentional ingredients of this product are listed.

ECL (SOUTH KOREA) The intentional ingredients of this product are listed.

EINECS (EUROPE) The intentional ingredients of this product are listed.

ENCS (JAPAN) The intentional ingredients of this product are listed.

State and Local Regulations

California Proposition 65  
None

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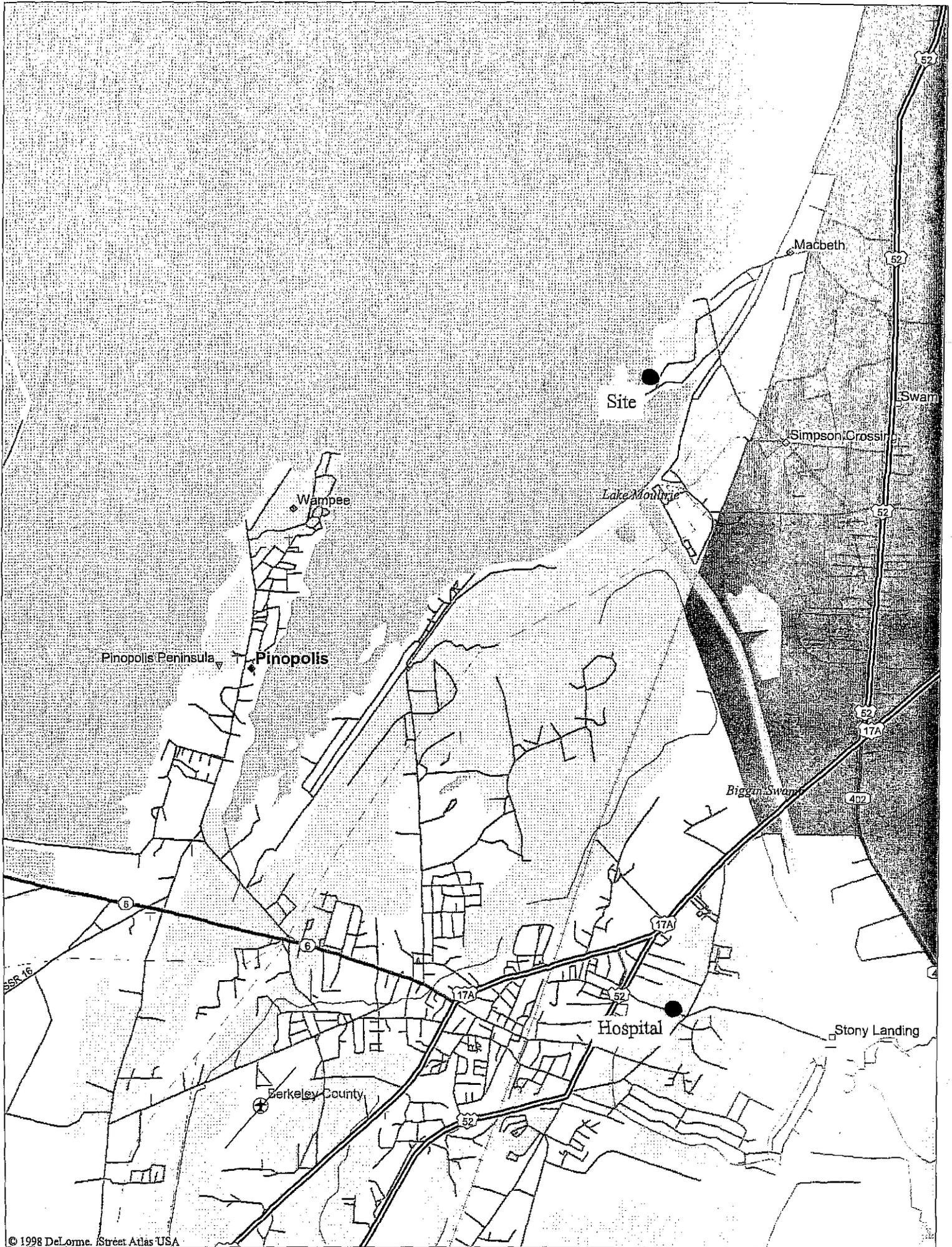
16. OTHER INFORMATION

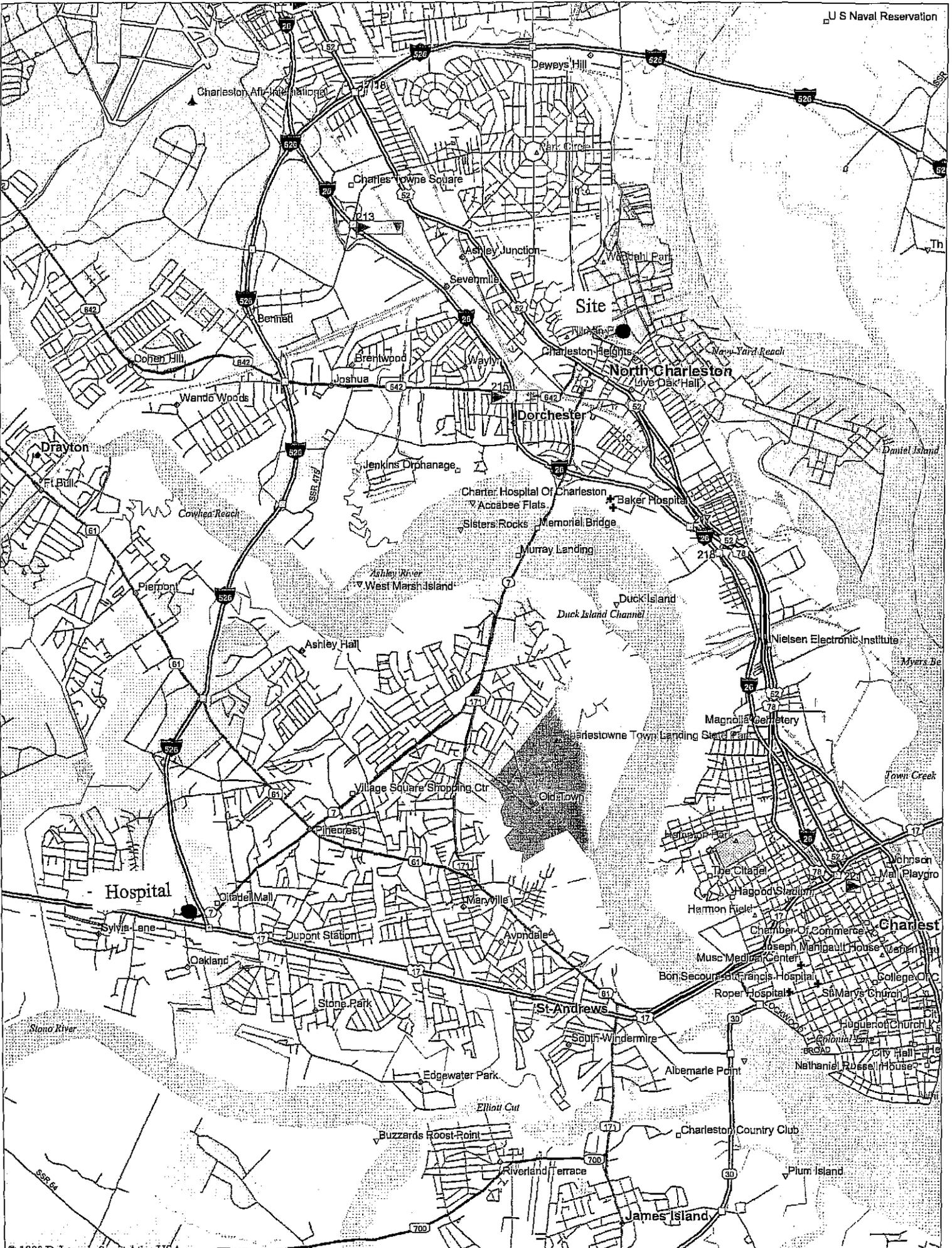
The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.

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# HOSPITAL LOCATION MAP







## **APPENDIX B**



## **APPENDIX B**

### **ENVIRONMENTAL PROTECTION PLAN**

#### **1.0 INTRODUCTION**

The purpose of the Environmental Protection Plan is to outline the methods and responsibilities for protecting natural resources and the environment. To accomplish this goal, ADVENT will comply with applicable federal, state, and local, environmental regulations.

##### 1.1 References

- a. 49 CFR 261.2 Protection of Environment
- b. Erosion and Sediment Reduction Act of 1983
- c. Storm Water Management and Sediment Reduction Act of 1991 (48-14-0, ET. Seq.)

#### **2.0 PROTECTION OF NATURAL RESOURCES**

ADVENT's workers will preserve natural resources within the project boundaries. Preservation of natural resources will be achieved through the use of work procedures designed to minimize environmental impact. Areas that must be disturbed during the course of remedial activities will be restored.

##### 2.1 Land Resources

Except in areas to be cleared, the ADVENT will not remove or deface trees or shrubs without approval. Care will be taken to minimize damage to nearby trees.

##### 2.2 Protection

ADVENT will protect existing trees and shrubs that will remain after completion of work.

##### 2.3 Replacement

ADVENT will restore landscape features damaged by equipment operations.

#### 2.4 Stream Crossings

Customer and/or regulatory approval will be obtained before any equipment crosses a stream. Temporary culverts or bridges will be utilized where necessary.

#### 2.5 Fish and Wildlife Resources

Fish and wildlife will not be unnecessarily disturbed. Stream flows and other significant native habitats will be protected.

#### 2.6 Temporary Construction

Traces of temporary construction facilities such as haul roads, work areas, structures, foundations, and stockpiles of excess or waste materials will be removed. Erosion control measures will be removed once the site has been stabilized by methods such as seeding, mulching, etc.

#### 2.7 Wetland Areas

ADVENT will not disturb any wetland area without authorization. Approval may be required by an affected state or local agency, or the Army Corps of Engineers.

### **3.0 HISTORICAL AND ARCHAEOLOGICAL RESOURCES**

ADVENT will preserve and report to the customer and/or applicable regulatory agency any findings of historical or archaeological items or human skeletal remains.

### **4.0 PROTECTION OF SURFACE SOIL, VEGETATION, AND SURFACE WATERS**

#### 4.1 Ground Cover

Burn off of ground cover will not be permitted.

#### 4.2 Erodible Soils

All earthworks will be brought to a final grade. Side slopes and back slopes will be protected immediately upon completion of rough grading. Protection against erosion will prevent any sedimentation of nearby creeks or streams.

#### 4.3 Temporary Measures

The following methods will be used to prevent erosion and control sedimentation:

#### 4.3.1 Mechanical Retardation and Control of Runoff

ADVENT will mechanically retard and control the rate of runoff from the site. This method includes building of diversion ditches, benches, plastic sheeting, hay bales and berms to retard and divert runoff to protected drainage courses. These erosion control measures will be maintained throughout the project to minimize environmental impact. Sound engineering and good work practices will be used to ensure the protection of the environment. During the land disturbing activity, good environmental practices utilizing non-erodible material such as silt fencing and hay bales will be installed.

#### 4.3.2 Project Manager Surveillance

Maintenance responsibilities will be assigned to the Project Manager. Duties will include routine surveillance of the control measures and repairs as required. Repairs will be performed in a timely manner.

#### 4.3.3 Vegetation and Mulch

ADVENT will provide temporary protection on sides and back slopes as soon as rough grading is completed or sufficient soil is exposed to require erosion protection. Slopes will be protected by accelerated growth of permanent vegetation, mulching, or netting.

### **5.0 POLLUTION DERIVED FROM OPERATIONS**

#### 5.1 Control and Disposal of Solid Wastes

Solid wastes will be collected, placed in containers, and regularly emptied at intervals to prevent the attraction of rodents or disease vectors. Debris and garbage will be disposed of in compliance with applicable laws and regulations.

#### 5.2 Manage and Dispose of Hazardous Waste

Procedures and requirements for the generation, management, transportation, and disposal of hazardous waste, as defined in the Resource Conservation and Recovery Act (RCRA), are described in each site specific Work Plan.

#### 5.3 Recycling Program

ADVENT recycles scrap metals, some batteries, fluorescent light bulbs, paper, aluminum. ADVENT's personnel shall minimize the amount of waste generated by utilizing site-specific work plans and good work practices. Containers shall be located throughout the work place by the Waste Program Manager.

## **6.0 OIL SPILL PREVENTION**

Procedures and requirements for oil spill prevention are based on good work practices. Piping will be cut and drained using buckets and absorbent material to contain any residue. Cleaning operations will be performed on a decon pad or on plastic to prevent run off. Cleaning solutions and/or rinse water will be collected and tested to determine the correct disposal method.

## **7.0 DRAINS**

No one shall dump any foreign material into the storm drains. Prior approval is required to dump Investigation Derived Waste (IDW) into the sanitary sewage system.