SITE SAFTETY PLAN

FORT WINGATE DEPOT

FORT WINGATE, NEW MEXICO

EXPLORATION ACTIVITIES

The objective of this investigation is to characterize the possible extent of contamination in the upper soils which may be excavated. Specific objectives include:

* Characterize the geology of the site.
* Collect soil samples to quantify substance at the site.
* Collect soil samples to characterize index and engineering properties.

SUBSTANCE EXPLORATION ACTIVITIES

The subsurface exploration will consist of drilling eight (8) soil borings to average depth on the order of 65 feet below ground surface. Soils are anticipated to be sand and/or clay with no stiff soils, hard rock or cobble drilling. All borings to be advanced to the depths as specified by the Government's onsite representative or to practical auger refusal.

Envirotech, Inc. proposes to use a CME-55 Mobile Drill Rig with eight inch hollow stem auger flights. Soil sampling to be done using standard split-tube soil sampler. All drilling equipment to be decontaminated with a compressed steam cleaner.

KEY PERSONNEL

Site Health and Safety Officer:
Alternate:

Project Manager:
Alternate:

Site Supervisor:

Consolidated Coal Project Manager:

Following individual(s) located on Site will have the authority and responsibility in change levels of protection and when necessary shut down the operation:

1)

2)

SECTION A. PERSONNEL ROLES

- **Health and Safety Officer:**

  The health and safety officer (hereinafter referred to as HSO) is responsible for maintaining proper medical surveillance (including pre-entry and exit examinations if required), providing hazard communication information, training employees in safe operating procedures, and advising the project manager on any matters concerning the health and safety of employees or the public. The HSO may be required to perform various types of area of personnel monitoring for purposes of verifying worker exposure and proper selection of personal protective equipment. The HSO should be consulted before any changes in the recommended procedures or levels or protective clothing are made.

- **Project Managers:**

  The project manager has the primary responsibility for the fulfillment of the terms of the contract. He must oversee operations and ensure that all legal and safety requirements are met. It is his duty to keep the project on schedule, within budget, and to communicate daily with the client regarding the progress toward the specified goals.

- **Site Supervisor:**

  The site supervisor is the on-site coordinator and overseer of operations. It is his duty to maintain site security, supervise the laborers and technicians, ensure that all procedures (health and safety, decontamination, protective equipment, etc.) are followed.

* Telephone numbers for emergency services offered are as follows:

GALLUP FIRE DEPARTMENT: 863-1418
GALLUP POLICE DEPARTMENT: 863-3965

* Prior to mobilization at the Site, personal contact will be made with emergency room personnel, the local fire department and police.

* Emergency first aid equipment will be readily available on-site. Personnel on-site have received first aid and medical emergency training.

* Sufficient water and/or dry chemical fire extinguishers and neutralizing agents will be maintained on site to copy with any situation until emergency services can arrive.

Flammable Conditions

In the event that gasoline vapors exceed 50% of the lower explosion limit or strong odors are detected in sewers or residences, the following actions will be taken:

* Eliminate all ignition sources, no smoking, isolate electric switches from odors. Do not turn on/off electric switches if strong odors are present unless the switch is intrinsically safe. Do not allow cars to operate or travel over manholes.

* Remove personnel away from odors, structures, or manhole covers.

* Call the following in the listed sequence:

1) Fire Department: 863-1418
2) EPA:
3) ESDA:

Provide answering personnel with the call back number(s), locations, directions and situation assessment.

In the event that gasoline vapors are greater than 20% of the LEL, but less than 50% in sewers or residences and/or slight to mild gasoline odors are present (NOTE: gasoline odor threshold is 0.005 ppm - ppm, lower explosion limit is 1.4% (14.00 ppm) - 50% (500.00 ppm):

* Eliminate all ignition sources - No Smoking

* Call the following in the listed sequence:

1) Fire Department: 863-1418
2) Police Department: 863-3965

Provide answering party call back number, location, directions, and situation assessment.

Fire or Explosion

In the event of a fire or explosion, the local fire department will be summoned immediately. Upon their arrival, the field supervisor will advise the fire commander of the location, nature and identification of the hazardous materials on-site.

If it is safe to do so, employees may:

1) Use fire fighting equipment available on site to control or extinguish the fire.

2) Remove or isolate flammable or other hazardous materials which may contribute to the fire.

3) Extinguish other ignitable sources.

Evacuation

Evacuation will be conducted immediately, without regard for equipment, under conditions of extreme emergency.

SECTION G: HAZARD TRAINING

Any personnel not employed by **Envirotech Inc.** must read and sign the Hazard Training Program designed by **Envirotech Inc.** before entering work zone. The training will advise personnel on dangers that exist and precautions to follow to reduce the risk of injury. (NOTE: Work zone will be determined by Consolidation Coal Co.)

SECTION H: EQUIPMENT SAFETY

All equipment shall be operated by one person only, no passengers are allowed at any time. Employees and by-standers in the work zone should be aware that equipment can become mobil at anytime.

SECTION I: BORING

All persons around work zones should be aware of boring in progress. Drill rigs pose hazards due to their moving parts. Drilling zones will be marked with some type of safety barrier. Personnel should remain at a suitable distance from safety barriers, due to the possibility that walls could collapse at anytime during excavations.

HARD HATS, SAFETY GLASSES, AND STEEL-TOED BOOTS MUST BE WORN AT ALL TIMES.

GENERAL HEALTH AND SAFETY REQUIREMENTS

INCIDENT REPORTING

A health and safety logbook will be maintained onsite and should contain such information:

- weather information
- employees onsite
- level of protection equipment worn
- monitor instrumental readings
- safety violations

Injuries, exposures, illnesses, safety infractions, and other incidents specified in Operating Procedure HS-502 included as a part of **ATTACHMENT A** must be reported using a Heath and Safety Report Form within a 24 hours of occurrence.

SAFETY COMPLETION REPORT

Upon completion of the work covered by this Heath and Safety Plan, a Safety Completion Report must be completed. The report should include a complete evaluation of this plan and all approved modifications, names and affiliations od individuals who worked on the site, exposure monitoring data within monitoring dates and decisions made, summary of incidence and action taken, if any, and recommendations for improving the health and safety at similar sites.

SAFETY BRIEFING

Before onsite work commences, all employees assigned to work at the site must be briefed by the Site Safety Officer (SSO) on the specific health and safety requirements contained in this plan. The SSO giving the briefing should test the knowledge and understanding of the provisions of the Health and Safety Plan and shall not allow anyone who does not appear to understand the provisions perform work in excluded areas.

DISTRIBUTION OF THE HEALTH AND SAFETY PLAN

Before work begins, a copy of the plan must be provided to each employee assigned to the site and for each subcontractor assigned to perform work on the site. Individuals assigned to work must acknowledge receipt of the plan and agree to comply with its provisions by signing a compliance agreement.

PROJECT SAFETY ORGANIZATION

The Project Manager (PM) and the (SSO) have overall responsibility for implementing safety. The Site Safety Officer (SSO), reports to the PM, directs day-to-day health and safety activities in the field and must be present at work whenever work is being conducted at the site by any employees. The PM and the SSO have the authority to suspend work if the public is threatened and to remove individuals from the site for engaging in activities that jeopardize the health and safety of themselves or others.

POTENTIAL HEALTH AND SAFETY HAZARDS			
	PHASE I ASSESSSMENT	DRILLING	SOIL SAMPLING
Inhalation Hazard			
Contaminated Soil Contact		X	X
Noise Hazard			
Heat Stress		X	X
Electrical (Transformer and buried powerlines)			
Potential Fire/Explosion			
Contact with Contaminated Liquids			
Cold Stress			
Collapsing of Structure on Personnel			
Physical Injury		X	X
Overhead Powerlines			
Buried Tanks			
Underground Pipes		X	X
Skin Hazard			
Ventilation Problem			
Spillage of Liquids			
Vandalism			
Equipment Freezing			
Leaks in Lines			
Level of Protection	Hand hats, boots, eye protection only	Level D	Level D
Air Monitor	N/A	N/A	PID Screening
Precaution - See Section A		X	

SAFETY AND HEALTH RISK ANALYSIS VS. SITE TASK/OPERATION		
ACTIVITY	POTENTIAL HAZARD	PRECAUTIONS
Soil Boring Construction	Contact with contaminated soils	• Wear gloves when handling augers • Do not kneel on ground
	Electrical	• Locate all utilities prior to construction • Locate drill rig away from all overhead powerlines
	Underground pipes	• Locate all utilities prior to construction

STANDARD OPERATING PROCEDURES

A. PERSONAL PRECAUTIONS

* Eating, drinking, chewing gum or tobacco, smoking, or practice the increased the probability of hand-to-mouth transfer and indigestion of material is prohibited in any area designated contaminated.

* Contact with contaminated or suspected contaminated sources should be avoided. Whenever possible, do not walk through puddles, discolored surfaces, kneel on ground, lean, sit or place equipment on drums, containers, or the ground.

* Medicine and alcohol can potentiate the effects from exposure to toxic chemicals. Prescribed drugs should not be taken by personnel at hazardous waste operations where potential for absorption, inhalation, or indigestion of toxic substances exists unless specifically approved by a qualified physician. **Alcoholic beverage intake is prohibited.**

* All personnel must be familiar with standard operating safety procedures and any additional instructions and information contained in the Site Safety Plan.

* All personnel must adhere to the information contained in the Site and Safety Plan.

FIRST AID MEASURES/MEDICAL EMERGENCIES

In the event that personnel exposure symptoms occur, the following procedures will be used:

Petroleum Products:

*Eye Contact: Flush eye with copious amount of water and repeat until irritation is eliminated. If prolonged irritation occurs for more than 15 minutes, seek medical attention.

*Skin Contact: Washed exposed area with soap and water. If dermatitis or severe reddening occurs, seek medical attention.

*Inhalation: Remove person into fresh air. If symptoms occurs for more than 15 minutes, seek medical attention.

Emergency Action-Standard Operation Procedures

Name, address, and telephone number of the nearest medical treatment facility. This will be conspicuously posted. A map and directions for locating the facility, plus the travel time, will be readily available.

Provide answering party call back number, location, directions, and situation, and situation assessment.

Fire or Explosion

In the event of a fire or explosion, the local fire department will be summoned immediately. Upon arrival,the field supervisor will advise the fire commander of the location, nature and identification of the hazardous materials onsite.

If it is safe to do so, employees may:

1) Use fire fighting equipment available to control or extinguish the fire.

2) Remove or isolate flammable or other hazardous materials which may contribute to the fire.

3) Extinguish other ignitable sources.

Evacuation

Evacuation will be conducted immediately, without regard for equipment, under conditions of extreme emergency.

Equipment Safety

All equipment shall be operated by one person only, no passengers are allowed at any time. Employees and by-standards in the work zone should be aware that equipment can become mobile at anytime.

Boring

All persons around work zones should be aware of boring in progress. Drill rigs pose hazards due to their moving parts. Drilling zones will be marked with some type of safety barrier. Personnel should remain at a suitable distance from the safety barrier, due to the possibility that walls could collapse anytime during the drilling process.

HARD HATS, SAFETY GLASSES, AND STEEL-TOES BOOTS MUST BE WORN AT ALL TIMES

- NON-INTRUSIVE ACTIVITIES

Non-intrusive activities that will be performed at the site consist of the following:

- o Field mobilization/demobilization;
- o Decontamination; and
- o General support activities carried on outside of the exclusion zone.

The mobilization/demobilization, field surveys and general support activities are considered to be low hazard. These activities will be performed in the open. It is unlikely that direct contact by site personnel with hazardous substances will occur during the performance of these activities.

The decontamination activities are considered to be a low to medium hazard. Direct contact by site personnel with hazardous substances is possible during the decontamination of personnel and equipment. Exposure could occur by contact with decontamination fluids, spent personal protective equipment and through the handling of equipment. Inhalation, ingestion and dermal contact exposure routes are indicated.

- INTRUSIVE ACTIVITIES

Intrusive activities that will be performed at the site consist of drilling and soil sampling, and groundwater level measurements.

The drilling and sampling activities associated with the exploration is considered to be a medium hazard. Direct contact by site personnel with hazardous substances is likely. Exposure could occur by contact with contaminated equipment, by the handling of auger cuttings and samples and by the release of volatiles into the breathing zone from the borehole. Inhalation, ingestion and dermal contact exposure routes are indicated.

DETECTABILITY

Visual observations and an HNu photo-ionization detector will be used to assess whether or not volatile organic compounds have been encountered during performance of the work.

the SSO will stop the work and the work party will leave the exclusion zone, decontaminate, and proceed to the support zone. Work will remain stopped pending assessment and evaluation by the SSO and HSO.

During intrusive activities, if VOC's are detected in the breathing zone at a concentration greater than 1 ppm above background averaged over a 15 minute period, the top of borehole will be monitored for the presence of Benzene using the Sensidyne pump and detector tubes. At a minimum one set of measurements will be taken at one hour intervals. Monitoring will be discontinued when VOC concentrations in the breathing zone are less than or equal to 1 ppm above background averaged over a 15 minute period.

DECONTAMINATION PROCEDURES

General

Decontamination of equipment and personnel will be performed to limit the migration of contaminants off-site and between work zones at the site.

Equipment and other tools will be cleaned prior to site entry to remove grease, oil, encrusted dirt or other materials. Special attention will be given to the rear portions of drill rigs, auger flights (inside and outside), drill rods and sampling tools. The SSO will inspect all equipment prior to use on-site.

Reusable sampling equipment, auger flights, and any other tools used for intrusive work will be decontaminated between borings. Cleaning may consist of scraping and scrubbing to remove encrusted materials followed by a soap and water wash, if

necessary, and potable water rinse using a high-pressure steam cleaning unit. Following decontamination, clean equipment will be stored on plastic sheeting and/or sawhorses if not immediately reused.

Soil sampling tools (split-spoons) will be cleaned between each use by soap and water wash and potable water rinse.

At the conclusion of work at the site, the drill rig and other equipment will be thoroughly cleaned using the methods previously described. The SSO will inspect all equipment leaving the site for adequacy of decontamination.

Personnel Decontamination

Personnel decontamination will be conducted at a decontamination area setup outside of each exclusion zone. Decontamination will consist primarily of soap and water washing and water rinse of exterior protective gear followed by doffing of the gear.

The general decontamination sequence for activities conducted at Modified Level "D" follows:

1. Wash outer gloves and boots;
2. Rinse outer gloves and boots;
3. Remove tape at wrists and boot interface;
4. Remove outer gloves;
5. Remove coverall;
6. Remove and rinse goggles and hardhat; and
7. Remove inner gloves.

The general decontamination sequence for activities conducted at Level "C" follows:

1. Wash and rinse coverall with hand pump sprayer;
2. Wash outer gloves and boots;
3. Rinse outer gloves and boots;
4. Remove tape at wrists, boot and hood interface;
5. Remove outer gloves;
6. Remove and rinse hardhat;
7. Remove coverall;
8. Remove APR, discard cartridges, rinse APR; and
9. Remove inner gloves.

Gloves and coveralls should be removed by turning inside out. Ground cloths, gloves, coveralls and APR cartridges will be placed into plastic trash bags and stored at the contamination reduction zone.

Decontamination fluids will be collected and will be stored in 55 gallon drums with lids at the contamination reduction zone.

Respirators will be rinsed with potable water in the field after each use and will be cleaned at the end of the day using a soap and water wash followed by a potable water rinse. Respirators will be inspected daily for damage, missing parts and proper function. See **Attachment 1.**

Reusable protective equipment worn by personnel performing field activities will be rinsed with potable water after each use

and will be cleaned at the end of each day in the manner prescribed for respirators. Reusable items will be air-dried and placed into plastic bags for storage.

Decontamination equipment and supplies consist of the following:

- Potable water;
- Washtubs, 3 minimum;
- Alconox, follow mixing instructions;
- MSA disinfectant;
- Brushes, hand sprayers;
- Plastic sheet;
- 5-gallon buckets with lids;
- 55-gallon drums with lids; and
- Garbage bags.

Equipment Decontamination

Heavy equipment (i.e., drill rig, HSA) decontamination will be conducted at the exclusion zone. The general decontamination sequence for activities conducted at both Modified Level "D" and Level"C" follows:

1. Lay down plastic ground cloth;
2. Steam rinse with potable water to remove soils;
3. Steam wash with potable water; and
4. Steam rinse with potable water.

Sampler and drive rod decontamination will be conducted at the exclusion zone. The general decontamination sequence follows:

1. lay down plastic ground cloth;
2. wash and scrub with detergent and potable water;
3. air dry.

Decontamination fluids will be collected and will be stored in 55 gallon drums with lids at the exclusion zone. A steam cleaner driven by a portable generator will be required in addition to the decontamination equipment and supplies.

CONTROL OF FIELD WORK-GENERATED WASTE MATERIALS

Expendable materials having low probability of contamination will be collected on a routine basis. The Materials will be placed into trash bags and will be temporarily stored at the exclusion zone. Daily the materials collected will be putout for the municipal trash pick-up. Expendable materials include:

* Decontaminated expendable personnel protective equipment
* Ground cloths; and
* Domestic refuse.

Drum labeling will consist of painting a number on the outside wall of the drum and identification with a self-adhesive label indicating project number, contents, date and initial of person affixing the label. Chain-of Custody procedures and Quality Control Plan will be followed. Drum labels will be kept in a secure place at all times.

Level of Protection/Action Guidelines

The following activities will be conducted at EPA Level "D" Protection:

- Field mobilization/demobilization; and
- General support activities.

Level "D" action guidance: If HNu (11.7 eV probe) readings taken in the breathing zone are greater than 5 ppm above background averaged over a 15 minute period, the SSO will stop work and the work party will proceed to the support zone. Work will remain stopped pending assessment and evaluation by the SSO and HSO.

The following activities will be conducted at EPA Modified Level "D" Protection:

- Decontamination;
- Drilling and sampling; and
- Groundwater level measurements.

Modified Level "D" action guidance: If HNu (11.7 eV probe) readings taken in the breathing zone are greater than 5 ppm above background averaged over a 15 minute period, the SSO will stop the work and the work party will upgrade to Level "C" Protection. If HNu or OVA readings taken in the breathing zone return to a level that is equal to or less than 5 ppm above background averaged over a 15 minute period, the SSO will stop the work and the work party will downgrade to Modified Level "D" Protection. If HNu or OVA readings taken in the breathing zone are greater than 10 ppm above background averaged over a 15 minute period,

desired orientation due to physical restraints at the site. Additional engineering controls will not be required.

PERSONAL PROTECTIVE EQUIPMENT

Level "D" Protection

Activities performed at United States Environmental Protection Agency (EPA) Level "D" will require site personnel to wear the following protective ensemble:

- Hard hat;
- Goggles or safety glasses;
- Work gloves; and
- Work boots.

EPA Level "D" is considered to be the minimum protection for personnel at the site.

Modified Level "D" Protection

Activities performed at EPA Modified Level "D" will require site personnel to wear the following protective ensemble:

- Hard hat;
- Goggles or safety glasses;
- Face shield;
- Coverall, Tyvek or Rytex;
- Undergloves, latex;
- Outergloves, Neoprene;
- Boots, calf-high, Neoprene or PVC, steel toed and shanked; and
- Coveralls to be fully taped at wrists and boot interface with duct tape.

SPECIAL MEDICAL TESTS

Special medical tests will not be required.

SPECIAL TRAINING REQUIREMENTS

Special training beyond the basic 40-hour health and safety course will not be required.

SITE CONTROL

Site control measures will not be required.

WORK ZONES

A 25 ft radius exclusion zone will be established around the drill rig at each boring.

The area at the vicinity of the drilling operation will be used for equipment decontamination, drum storage and the management of solid waste from personnel decontamination. The drums will be used to store excess auger cuttings and decontamination fluids.

The support zone will consist of a van. The van will be utilized as a field office, for sample storage, for supply/equipment storage and as a personnel refuge. The support zone is located predominantly up-wind of the area being explored.

ENGINEERING CONTROLS

The field team will endeavor to position the drill rig facing upwind while conducting intrusive activities. It is recognized that it will not always be possible to achieve the ?

Personnel protective equipment places an additional strain on the wearer when performing work that requires physical activity. Heat exhaustion or heat stroke are possible, especially during warm weather. All personnel should be cognizant of the physical condition of fellow workers. A detailed description and treatment of heat stress is included as a part of **Attachment 1.**

Known underground facilities, structures and utilities have been located from available record information. The locations must be considered as being approximate. Be aware and always suspect the existence of underground utilities such as electrical, power, gas, petroleum, telephone, sewer and water.

Special precaution must be taken when operating machinery (i.e., drill rig) in the vicinity of electrical power lines. Electricity can shock, burn and result in death. All overhead electrical power lines are to be considered energized and dangerous. Walk completely around the machine before beginning work at a site in the vicinity of power lines. Determine what the minimum distance from any point on the machine to the nearest power line will be when operating. Do not raise a mast or boom, or operate the machine if this distance is less than 20 ft.

Assume that all animals are potentially dangerous. A person who is bitten by an animal may become infected by tetanus or rabies. Warm-blooded animals, such as dogs, cats, bats, rats, and squirrels can transmit rabies. Rabies is transmitted when the saliva from an infected animal contacts an open wound (even a scratch)

or any normal body opening, such as the mouth or eye. The infected animal can transmit rabies by biting or licking another animal or person.

PROHIBITED ACTIVITIES

The following activities are prohibited:

* Smoking, eating, and drinking while in the exclusion zone and contamination-reduction zones;
* Use of drugs, alcohol, or controlled substances while onsite.
* Wearing respirators while supporting facial hair that could interfere with a proper fit.
*Unauthorized removal of hazardous material from the site.

At the start of each work day, personnel taking drugs that day prescribed by a physician shall advise the SSO. At a minimum, the identification of the drug being taken shall be given to the SSO. Personnel will be required to obtain prior clearance from the HSO and/or the CHSO before being allowed to work at the site while taking prescription drugs.

VISITOR CLEARANCE

Visitor clearance will require clearance by the SSO and/or HSO. Visitors will only be allowed in support zone areas unless compliance with the HSP is acknowledged.

ATTACHMENT 1

OPERATING PROCEDURES

H-102 HEAT STRESS

H-501 DECONTAMINATION

H-502 INCIDENT REPORTING

H-509 SAFETY GUIDELINES FOR DRILLING

OPERATING PROCEDURE NO. HS-102

102.0 Heat Stress

102.1 Purpose

The purpose of this OP is to provide general information on heat stress and the methods that can be utilized to prevent or minimize the occurrence of heat stress.

Adverse climatic conditions are important considerations in planning and conducting site operations. Ambient temperature effects can include physical discomfort, reduced efficiency, personal injury, and increased accident probability. Heat stress is of particular concern while wearing impermeable protective garments, since these garments inhibit evaporative body cooling.

102.2 Requirements

The NIOSH criteria document for heat stress recommends that environmental monitoring and other preventive measures be adopted in hot work environments. However, the provisions are not directly applicable to employees who are required to wear impermeable protective clothing. The reason for this exception is that impermeable clothing prevents the evaporation of sweat, which is one of the most important cooling mechanisms of the body. There is no recognized health standard protection for workers wearing impermeable protective clothing and respirators in hot environments.

The ACGIH has adopted a TLV for heat stress. These guides relate to work/rest regimes.

102.3 Additional Hazard

The use of Personal Protective Equipment of the types commonly used for hazardous waste work can place stress on the body. One common problem with the use of personal protective equipment especially in hot environments is heat stress. Protective clothing can cause excessive sweating and can prevent the body from properly regulating body temperature.

102.4 Types of Heat Stress

Heat stress is the aggregate of environmental and physical work factors that constitute the total heat load imposed on the body. The environmental factors of heat stress are the air temperature, radiant heat exchange, air movement, and water vapor pressure. Physical work contributes to the total heat stress of the job by producing metabolic heat in the body in proportion to the intensity of the work. The amount and type of clothing also affect the heat stress.

Heat strain is the series of physiological responses to heat stress. When the strain is excessive for the exposed individual, a feeling of discomfort or distress may result, and, finally, a heat disorder may ensue. The severity of strain will depend not only on the magnitude of the prevailing stress, but also on the age, physical fitness, degree of acclimatization, and dehydration of the worker.

Heat disorder is a general term used to describe one or more of the following heat-related disabilities or illnesses:

- Heat cramps - painful intermittent spasms of the voluntary muscles following hard physical work in a hot environment. Cramps usually occur after heavy sweating, and often begin at the end of a work shift.
- Heat exhaustion - profuse sweating, weakness, rapid pulse, dizziness, nausea, and headache. The skin is cool and sometimes pale and

clammy with sweat. Body temperature is normal or subnormal. Nausea, vomiting, and unconsciousness may occur.

- Heat stroke - sweating is diminished or absent. The skin is hot, dry, and flushed. Increased body temperature, which, if uncontrolled, may lead to delirium, convulsions, coma, and even death. Medical care is urgently needed.

102.5 Methods of Controlling Heat Stress

As many of the following control measures as are appropriate to site conditions should be utilized to aid in controlling heat stress:

- Provide for adequate liquids to replace lost body fluids and replace water and salt lost from sweating. Encourage personnel to drink more than the amount required to satisfy thirst. Thirst satisfaction is not an accurate indicator of adequate salt and fluid replacement.
- Replace fluids with water, commercial mixes such as Gatorade or Quick Kick, or a combination of these.
- Establish a work regimen that will provide adequate rest periods for cooling down. This may require additional shifts of workers.
- Wear cooling devices such as vortex tubes or cooling vests beneath protective garments.
- Take all breaks in a cool rest area (77°F is best).
- Remove impermeable protective garments during rest periods.
- Do not assign other tasks to personnel during rest periods.
- Inform personnel of the importance of adequate rest, acclimation, and proper diet in the prevention of heat stress.

102.6 Monitoring

102.6.1 Temperature

The heat stress of an area can be monitored by the Wet Bulb Globe Temperature Index (WBGT) technique. Where heat stress monitoring is required, a heat stress monitoring device, such as the Wibget Heat Stress Monitor (Reuter Stokes) shall be utilized.

The WBGT shall be compared to the Threshold Limit Values (TLV) outlined by the ACGIH TLV guides, and a work-rest regimen shall be established in accordance with the WBGT. Note that 5°C must be subtracted from the TLVs for heat stress listed to compensate for the wearing of impermeable protective clothing.

102.6.2 Medical

In addition to the provisions of the WCC medical surveillance program, on-site medical monitoring of personnel shall be performed by qualified medical personnel for projects where heat stress is a major concern. Blood pressure, pulse, body temperature (oral), and body weight should be taken and recorded a minimum of three times daily (prior to work, at mid-shift, and after work).

102.4 References

American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Chemical Substances in the Work Environment, 1984-85.

Olishifski, J.B., Fundamentals of Industrial Hygiene, National Safety Council, 1983.

National Institute for Occupational Safety and Health, The Industrial Environment - Its Evaluation and Control, 1973.

OPERATING PROCEDURE HS-102
SUPPLEMENT
HEAT STRESS MONITORING/MANAGEMENT

General

The following work/rest schedule shall be used as a guideline:

Temperature Range (^{o}F)	Work Time (Min)
80 - 85	60
85 - 90	30
> 90	15

The SSO can modify the work schedule based on monitoring results, i.e., changing weather conditions or worker responses. A sheltered (air-conditioned, if possible) or shaded rest area will be provided. At each monitoring break, each worker shall consume one quart of fluid (water or Gatorade).

A thermometer will be kept in the vicinity of the workers and read during each monitoring break. The temperature and other weather-related observations will be recorded in the health and safety log book.

Heat Stress

Heat stress usually is a result of protective clothing decreasing natural body ventilation although it may occur at any time work is being performed at elevated temperatures.

If the body's physiological processes fail to maintain a normal body temperature because of excessive heat, a number of physical reactions can occur ranging from mild (such as fatigue, irritability, anxiety and decreased concentration, dexterity or movement) to fatal. Because heat stress is one of the most

common and potentially serious illnesses that hazardous waste sites, regular monitoring and other preventative measures are vital.

Heat Stroke

Heat stroke is an acute and dangerous reaction to heat stress caused by a failure of heat regulating mechanisms of the body - the individual's temperature control system that causes sweating stops working correctly. Body temperature rises so high that brain damage and death will result if the person is not cooled quickly.

- **Symptoms:** Red, hot dry skin, although person may have been sweating earlier, nausea, dizziness, confusion, extremely high body temperature, rapid respiratory and pulse rate, unconsciousness or coma.

- **Treatment:** Cool the victim quickly. If the body temperature is not brought down fast, permanent brain damage or death will result. Soak the victim in cool but not cold water, sponge the water with cool water or pour water on the body to reduce the temperature to a safe level (102^{o}F). Observe the victim and obtain medical help. Do not give coffee, tea or alcoholic beverages.

Heat Exhaustion

Heat exhaustion is a state of very definite weakness or exhaustion caused by the loss of fluids from the body. This condition is much less dangerous than heat stroke, but it nonetheless must be treated.

- **Symptoms:** Pale, clammy, moist skin, profuse perspiration and extreme weakness. Body temperature is normal, pulse is weak and rapid, breathing is shallow. The person may have a headache, may vomit and may be dizzy.

- Treatment: Remove the person to a cool, air conditioned place, loosen clothing, place in a head-

low position and provide bed rest. Consult physician, especially in severe cases. The normal thirst mechanism is not sensitive enough to ensure body fluid replacement. Have patient drink 1 to 2 cups of water immediately and every 20 minutes thereafter, until symptoms subside. Total water consumption should be about 1 to 2 gal per day.

Heat Cramps

Heat cramps are caused by perspiration that is not balanced with adequate fluid intake. Heat cramps are often the first sign of a condition that can lead to heat stroke.

- **Symptoms:** Acute painful spasms of voluntary muscles e.g., abdomen and extremities.
- **Treatment:** Remove victim to a cool area and loosen clothing. Have patient drink 1 to 2 cups water immediately and every 20 minutes thereafter, until symptoms subside. Total water consumption should be 1 to 2 gal per day. Consult with physician.

Heat Rash

Heat rash is caused by continuous exposure to heat and humid air and aggravated by chafing clothes. The condition decreases ability to tolerate heat.

- **Symptoms:** Mild red rash, especially in areas of the body in contact with protective gear.
- **Treatment:** Decrease amount of time in protective gear and provide powder to help absorb moisture and decrease chafing.

OPERATING PROCEDURE HS-501

501.0 Decontamination

501.1 Purpose

Decontamination of equipment and personnel should be performed to limit the migration of contaminants from hazardous waste sites and between work zones on the sites.

501.2 Equipment Decontamination

All major reusable equipment and other tools used for site investigation activities should be decontaminated prior to leaving the site area. Cleaning should consist of scrubbing to remove encrusted materials followed by a detergent-and-water wash and potable water rinse using a high-pressure low volume water spray or steam cleaning unit. Additional rinses with other solvents, such as methanal and hexane, may be used if warranted by the nature of the chemicals encountered.

Decontamination should be performed at a designated equipment decontamination area on the site. An excavated sump may be used to collect wash water as needed. Following decontamination, the clean equipment should be stored on plastic sheeting.

The under carriage of all vehicles (e.g., trucks, etc.) should be cleaned prior to driving them off the site. At the conclusion of site work, all major equipment should be thoroughly cleaned using the method described above.

501.3 Personnel Decontamination

Decontamination of personnel should be performed at a designated location on the site. Personnel decontamination should consist primarily of detergent-and-water washings and water rinse of exterior protective gear to remove contaminants,

followed by doffing of the gear. Coveralls should be removed by turning them inside out. A procedure appropriate to the degree of contamination should be established. A general sequence of doffing procedures is outlined below. The extent of washing required, or modifications to the sequence, may be specified as appropriate.

Typical steps in decontamination:

1. wash work gloves and boots;
2. rinse work gloves and boots;
3. wash and rinse outer protective coverall and respirator;
4. untape mask, wrists, ankles;
5. remove respirator mask (also goggles, if worn);
6. remove boots;
7. remove outer suit (also gloves, hard hat);
8. wash and rinse surgical gloves;
9. remove inner Tyvek coverall;
10. remove surgical gloves;
11. shower, if desired, and redress.

501.4 Containerization of Decontamination By-Products

All contaminated materials (i.e., gloves, coveralls, decontamination water) generated during decontamination should be collected and containerized. Final disposal procedures depend on the level of contamination of the materials.

501.4 Containerization of Decontamination By-Products

All contaminated materials (i.e., gloves, Tyvec, etc.) generated during decontamination should be collected, containerized, and shipped to a licensed hazardous waste disposal facility as appropriate.

OPERATING PROCEDURE NO. HS-502

502.0 Incident Reporting

502.1 Policy

All health and safety incidents that occur during field and laboratory activities associated with investigations and remediation of sites containing hazardous materials must be reported to management.

502.2 Definitions

A health and safety incident is any event listed below:

- Illness resulting from chemical exposure or unknown causes.
- Physical injury, including those that do not require medical attention.
- Fire, explosions, and flashes resulting from activities performed by WCC and its subcontractors.
- Property damage resulting from activities performed by WCC and its subcontractors.
- Vehicular accidents occurring on-site or while travelling to and from sites.
- Infractions of safety rules and requirements.
- Unexpected chemical exposures (indicated by irritation of eyes, nose, throat, or skin).

502.3 Reporting Procedures

502.3.1 Reporting Format

Incident reports shall be prepared by completing Form HS-502. This form may be obtained from any WCC health and safety officer.

502.3.2 Responsible Party

Reports of incidents occurring in the field shall be prepared by the site safety officer or, in the absence of the site safety officer, the supervising field engineer, witness, or injured/exposed individual.

502.3.3 Filing

A report must be submitted to the health and safety officer of the business unit to which the project manager belongs within 24 hours of each incident involving medical treatment. In turn, the health and safety officer must distribute copies of the report to the corporate health and safety administrator and the corporate health and safety officer. When an injury or illness is reported, the business unit health and safety officer must deliver a copy of the report to the business unit or operating group personnel department so that a Worker's Compensation Insurance Report can be filed if necessary. Reports must be received by the personnel department within 48 hours of each qualifying incident.

FORM HS-502

Project Name _____

Project Number _____

Date of Incident _____

Time of Incident _____

Location _____

TYPE OF INCIDENT (Check all applicable items)

☐ Illness ☐ Injury ☐ Fire, explosion, flash ☐ Vehicular accident

☐ Property Damage ☐ Unexpected exposure ☐ Health & safety infraction

☐ Other (describe) _____

PROJECT NAME _____ **LOCATION** _____

DESCRIPTION OF INCIDENT (Describe what happened and possible cause; identify individuals involved, witnesses, and their affiliations; and describe emergency or corrective action taken.)

_____

_____

_____

_____

_____

_____

_____

_____

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_____

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_____

_____

Reporter: _____ _____ _____

Print Name Signature Date

Reporter must deliver this report to the Business Unit Health and Safety Officer within 24 hours of the reported incident for medical treatment cases and within five days for other incidents.

Reviewed by _____ _____

Business Unit Health & Safety Officer Date

Distribution:

___ Corporate Health and Safety Administrator
___ Corporate Health and Safety Officer
___ Project Manager
___ Personnel Office (medical treatment cases only).

OPERATING PROCEDURE NO. HS-509

509.0 Safety Guidelines for Drilling into Soil and Rocks

509.1 Purpose

The purpose of this operating procedure is to provide guidelines for safe conduct of drilling operations with truck-mounted and other engine-powered, drill rigs. The procedure addresses off-road movement of drill rigs, overhead and buried utilities, use of augers rotary and core drilling, and other drilling operations and activities.

509.2 Application

The guidelines shall be applied for all projects in which truck-mounted or other engine-powered, drill rigs are used. The guidelines are applicable to all employees as well as employees of firms contracted to operate the drill rigs.

509.3 Responsibility and Authority

Drill rig safety and maintenance is the responsibility of the drill rig operator.

509.4 Safety Guidelines

509.4.1 Off-Road Movement of Drill Rigs

Before moving a rig, the operator must do the following:

* To the extent practical walk the planned route of travel inspect it for depressions, gulleys, ruts, and other obstacles.
* Check the brakes of the truck/carrier, especially if the terrain along the route of travel is rough or sloped.
* Discharge all passengers before moving on rough or steep terrain.
* Engage the front axle (4x4, 6x6, ect. vehicles) before traversing rough terrain or steep terrain.

Driving drill rigs along the side of hills should be avoided; however, if side-hill travel becomes necessary, the operator must conservatively evaluate the ability of the drill rig to remain upright while over the hill. The possibility that the presence of the drilling tools on the rig may reduce the ability of the rig to remain upright by raising the center of the mass of the rig must be considered.

Logs, ditches, road curbs, and other long horizontal obstacles should be normally approached and driven over squarely not at an angle.

When close lateral or overhead clearance is encountered, the driver of the rig should be guided by another person on the ground.

Loads on the drill rig and truck must be tied sown while the truck is moving and the mast must be in the fully lowered position.

After the rig has been positioned to begin drilling, all brakes and/or locks must be set before drilling begins. If the rig is positioned on a steep grade and leveling of the ground is impossible or impractical, the wheel of the transport vehicle should be blocked and other means of preventing the rig from moving or topping over employed.

509.5 Buried and Overhead Utilities

The location of overhead and buried utility lines must be determined before drilling begins, and their location must be noted on all borings plans and assignment sheets.

When overhead power lines are close by, the drill rig mast should not be raised unless the distance between the rig and the nearest power line is at least 20 feet or whatever distance local ordinances require. The drill rig operator or assistant should walk completely around the rig to make sure that proper distance exists.

When the drill rig is positioned near an overhead line, the rig operator should be aware that hoist lines and power lines can be moved towards each other by wind.

509.6 Clearing the Work Area

Before a drill rig is positioned to drill, the area on which the rig is to be positioned should be cleared of removable obstacles and leveled if sloped. The cleared/leveled area should be large enough to accommodate the rig and supplies.

509.7 Safe Use of Augers

Never place hands or fingers under the bottom of an auger flight when hoisting the flight over the top of another flight in the ground or other hard surfaces, such as the drill rig platform.

Never allow feet to get under the auger flight while the flight is being hoisted.

When an auger is rotating, stay clear of the auger and other rotating components of the drill dig. Never reach behind or around a rotating auger for any reason.

Move auger cuttings away from the auger with a long-handled shovel or spade; never use hands or feet.

Never clean an auger attached to the drill rig unless the transmission is in neutral or the engine is off, and the auger has stopped rotating.

509.8 Safe Use of Hand Tools

Rules described in 29 CFR 1926.301 and 302 should be observed in addition to the guidelines provided below:

- Each tool should be used only to perform tasks for which it was originally designed.
- Damaged tools should be repaired before use or discarded.
- Safety goggles or glasses should be worn when using a hammer or chisel. Nearby co-workers and by-standers should be required to wear safety goggles or glasses also.
- Tools should be kept cleaned and stored in an orderly manner when not in use.

509.9 Safe Use of Wire Line Hoists, Wire Rope, and Hoisting Hardware

Safety rules described in 29 CFR 1926.552 and guidelines contained in the Wire RPE User's Manual published by the American Iron and Steel Institute shall be used whenever wire line hoists, wire rope, or hoisting hardware are used.

509.10 Protective Gear

509.10.1 Minimum Protective Gear

Items listed below should be worn by all members of the drilling team while engaged in drilling activities.

- Hard Hat
- Safety Shoes (shoes or boots with steel toes and shanks)
- Gloves.

29 CFR 1926.100, 101, and 102 should be consulted for additional information.

509.10.2 Other Gear

Items listed below should be worn when conditions warrant their use. Some of the conditions are listed after each item.

- Safety goggles or glasses. Use when: (1) driving pins in and out of drive chains, (2) replacing keys in tongs, (3) handling hazardous chemicals, (4) renewing or tightening gauge glasses, (5) breaking concrete, brick, or cast iron, (6) cleaning material with chemical solutions, (7) hammering or sledging on chisels, cold cuts, or bars, (8) cutting wire lines, (9) grinding on abrasive wheels, (10) handling materials in powered or semi-powered form, (11) scraping metal surfaces, (12) sledging rock bits or core heads to tighten or loosen them, (13) hammering fittings and connections, and (14) driving and holding rivets.

- Safety Belts and Lifelines. Safety belts and lifelines should be worn by all persons working on top of an elevated derrick beam. The lifeline should be secured at a position that will allow a person to fall no more than eight feet.

ATTACHMENT 2

SAFETY COMPLETION REPORT

DATE:_____

EMPLOYEE NUMBER:_____

This form is to serve as the Safety Completion Report for the subject project.

1. Field Work Period:_____

2. Personnel onsite during work period:

NAME	AFFILIATION

Summary of Problems Encountered and Actions Taken:

_____

_____

_____

Recommendations:

_____

_____

_____

JOB SAFETY & HEALTH PROTECTION

The Occupational Safety and Health Act of 1970 provides job safety and health protection for workers by promoting safe and healthful working conditions throughout the Nation. Requirements of the Act include the following:

Employers

All employers must furnish to employees employment and a place of employment free from recognized hazards that are causing or are likely to cause death or serious harm to employees. Employers must comply with occupational safety and health standards issued under the Act.

Employees

Employees must comply with all occupational safety and health standards, rules, regulations and orders issued under the Act that apply to their own actions and conduct on the job.

The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor has the primary responsibility for administering the Act. OSHA issues occupational safety and health standards, and its Compliance Safety and Health Officers conduct jobsite inspections to help ensure compliance with the Act.

Inspection

The Act requires that a representative of the employer and a representative authorized by the employees be given an opportunity to accompany the OSHA inspector for the purpose of aiding the inspection.

Where there is no authorized employee representative, the OSHA Compliance Officer must consult with a reasonable number of employees concerning safety and health conditions in the workplace.

Complaint

Employees or their representatives have the right to file a complaint with the nearest OSHA office requesting an inspection if they believe unsafe or unhealthful conditions exist in their workplace. OSHA will withhold, on request, names of employees complaining.

The Act provides that employees may not be discharged or discriminated against in any way for filing safety and health complaints or for otherwise exercising their rights under the Act.

Employees who believe they have been discriminated against may file a complaint with their nearest OSHA office within 30 days of the alleged discrimination.

Citation

If upon inspection OSHA believes an employer has violated the Act, a citation alleging such violations will be issued to the employer. Each citation will specify a time period within which the alleged violation must be corrected.

The OSHA citation must be prominently displayed at or near the place of alleged violation for three days, or until it is corrected, whichever is later, to warn employees of dangers that may exist there.

Proposed Penalty

The Act provides for mandatory penalties against employers of up to $1,000 for each serious violation and for optional penalties of up to $1,000 for each nonserious violation. Penalties of up to $1,000 per day may be proposed for failure to correct violations within the proposed time period. Also, any employer who willfully or repeatedly violates the Act may be assessed penalties of up to $10,000 for each such violation.

Criminal penalties are also provided for in the Act. Any willful violation resulting in death of an employee, upon conviction, is punishable by a fine of not more than $10,000, or by imprisonment for not more than six months, or by both. Conviction of an employer after a first conviction doubles these maximum penalties.

Voluntary Activity

While providing penalties for violations, the Act also encourages efforts by labor and management, before an OSHA inspection, to reduce workplace hazards voluntarily and to develop and improve safety and health programs in all workplaces and industries. OSHA's Voluntary Protection Programs recognize outstanding efforts of this nature.

Such voluntary action should initially focus on the identification and elimination of hazards that could cause death, injury, or illness to employees and supervisors. There are many public and private organizations that can provide information and assistance in this effort, if requested. Also, your local OSHA office can provide considerable help and advice on solving safety and health problems or can refer you to other sources for help such as training.

Consultation

Free consultative assistance, without citation or penalty, is available to employers, on request, through OSHA supported programs in most State departments of labor or health.

More Information

Additional information and copies of the Act, specific OSHA safety and health standards, and other applicable regulations may be obtained from your employer or from the nearest OSHA Regional Office in the following locations:

Atlanta, Georgia
Boston, Massachusetts
Chicago, Illinois
Dallas, Texas
Denver, Colorado
Kansas City, Missouri
New York, New York
Philadelphia, Pennsylvania
San Francisco, California
Seattle, Washington

Telephone numbers for these offices, and additional area office locations, are listed in the telephone directory under the United States Department of Labor in the United States Government listing.

Washington, D.C.
1985
OSHA 2203

William E. Brock, Secretary of Labor

U.S. Department of Labor
Occupational Safety and Health Administration

Under provisions of Title 29, Code of Federal Regulations, Part 1903.2(a)(1) employers must post this notice (or a facsimile) in a conspicuous place where notices to employees are customarily posted.

FIGURE 3