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This Site Safety Plan (Plan) has been developed for the field activities that may be performed by Locus Technologies (Locus) for the Naval Weapons Industrial Reserve Plant, Plant 3, Area of Concern 22. Locus will construct, develop and operate a Closed-Loop Bioreactor (CLB) ground water extraction and treatment System. This site is located at 999 South Oyster Bay Road in Bethpage, New York. The plan has been prepared in accordance with 29 CFR 19110.120, 8 CCR 5192, and New York State Division of Occupational Safety and Health Parts 12 and 23 as well as other applicable regulations. All work practices have been established and will be executed in accordance with accepted good safety, health, and hygiene practices.

This Plan applies only to the activities described herein, at the above listed site only, and may not be extrapolated to other substances, work activities or project locations without modification to address the specific hazards associated with those substances, activities and/or any other specific regulatory requirements.

Approved and Accepted:

Kevin R. Braun, CIH

THE AMERICAN BOARD OF INDUSTRIAL HYGIENE INCORPORATED 7029 CP EXPIRES 9-1-2008 KEVIN R. BRAUN, C.I.H.

James E. Boarer, P.E., Vice President

04/25/04

Date

HEALTH AND SAFETY PLAN
CLOSED-LOOP BIOREMEDIATION SYSTEM
FIELD WORK ACTIVITIES

1. INTRODUCTION

This Plan has been prepared by Locus for the field work activities for the Naval Weapons Industrial Reserve Plant 3, Area of Concern 22 (site). The site is located at 999 South Oyster Bay Road in Bethpage, New York (Figure 1). This plan describes the health and safety guidelines for any field work that may be performed by Locus to construct, modify, maintain and operate the CLB.

This Plan establishes guidelines to protect on-site personnel, visitors, and the public from physical harm and exposure to hazardous materials or wastes that may be encountered during fieldwork at the site. This Plan applies to field work performed by **all** Project Team Partners (PTPs) and **all** subcontractors. All field activities will be coordinated with the client.

This plan is intended as a practical approach to the activities in light of the potential occupational and public health hazards. This Health and Safety Plan outlines the procedures necessary to ensure a safe working environment under the actual conditions that may be encountered. This Plan may be upgraded/downgraded, as appropriate, in light of actual site conditions, after consultation with the consulting Certified Industrial Hygienist (CIH).

This Plan has been prepared in accordance with (i) the U.S. Occupational Safety and Health Administration's (OSHA's) Title 29 Code of Federal Regulations (CFR), Parts 1910 and 1926; (29 CFR 1910 and 1926); (ii) U.S. Department of Health and Human Services' **Occupational Safety and Health Guidance for Hazardous Waste Site Activities;** (iii) EPA's **Standard Operating Safety Guides**. All work at the site shall be conducted in accordance with applicable federal, state, and local health and safety laws and regulations.

Locus will construct the CLB and conduct operating, inspections of the mechanical equipment , Recovery, and Injection wells, well vaults, pumps, piping, vessels, instruments, control panels, and other components of the treatment system, on a regular basis, noting any malfunction or other needs for repair or replacement. Observation and maintenance issues will be recorded in a field logbook, and repair/replacement will be recommended to the client, as soon as possible.

This Plan serves as a minimum guideline for protective measures. Individual contractors or employers are solely responsible for the health and safety of their employees, and may elect to implement more stringent measures for their own workers. Each employer will provide health and safety equipment for its employees.

All personnel seeking access to the active work areas will be appropriately trained and certified in accordance with the California, New York, and Federal requirements for Hazardous Waste Operations (8 CCR 5192, 29 CFR 1910.120, New York State Division of Safety and Health Parts 12 and 23). **All personal must be trained appropriately.**

All on-site personnel, including regulatory agency personnel, client personnel and visitors are expected to be familiar with, and comply with the provisions of this Plan. **FAILURE TO COMPLY WITH THE PROVISIONS OF THIS PLAN MAY RESULT IN REMOVAL FROM THE ACTIVE WORK AREAS, AND/OR THE PROJECT, AT THE DISCRETION OF THE CIH/ OR H & S MANAGER.**

This Health and Safety Plan is designed as part of an overall Health and Safety Program or Injury and Illness Prevention Program (IIPP) as specified in 8 CCR 5192 and 8 CCR 3203, respectively. If, in any instance, there is a conflict between this Plan and any employer's IIPP, the more stringent requirement shall apply to the work.

This Plan applies to field work performed by **all** PTPs and subcontractors. All other personnel on site will be expected to possess the appropriate training, experience, personal protective equipment and **Health and Safety** procedures that are at least as stringent as those designated in this Plan. **If circumstances**

outside the scope of this Plan occur on site, the Plan will be amended to account for such circumstances.

2. SITE BACKGROUND AND SCOPE OF WORK

The Naval Weapons Industrial Reserve Plant (NWIRP) is located in the town of Bethpage on Long Island, New York on a relatively flat, featureless, glacial out wash plain. The site and nearby vicinity are highly urbanized. Because of this, most of the natural physical features have been reshaped or destroyed. The topography of the activity is relatively flat with a gentle slope toward the south. Elevations range from greater than 140 feet above mean sea level (msl) in the north to less than 110 feet above msl at the southwest corner.

The NWIRP is approximately 108 acres in size. The dominant features at the site are Plant No. 3 (the manufacturing plant) and three groundwater recharge basins. The recharge basins are each approximately 1.5 to 2.5 acres in area and about 30 feet deep.

In 1997, Northrop Grumman conducted a soil investigation at the former UST location (AOC 22). During this investigation soil borings were installed around and under the former tanks. Approximately 144 soil samples were collected in 8 areas from depths of 8 to 65 feet below ground surface (bgs). This range represents soils from the bottom of the former USTs to the approximate water table. The samples were analyzed for petroleum-based volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) in accordance with the New York State Department of Environmental Conservation (NYSDEC) Spill Technology and Remediation Series (STARS) Memorandum No. 1 - Petroleum-Contaminated Soil Guidance Policy (August 1992) and for Total Petroleum Hydrocarbons (TPH).

In 1999, fourteen soil borings were drilled under the supervision of Tetra Tech NUS, Inc. to investigate the vertical and horizontal extent of potential free petroleum product within the area of concern. Five borings were converted to groundwater monitoring wells based on field observations concerning the presence of free product. Groundwater was encountered at approximately 55 to 57 bgs during drilling.

Two borings (MW01 and MW02) were installed in close proximity to the suspected source area. Monitoring wells MW03 and MW04 were installed near the boundary of the area of concern, in soil borings that showed limited evidence of free product. Well MW-5 was installed inside Plant No. 3. Following installation, all of the wells were developed, and a top-of-casing elevation survey was completed.

Work currently scheduled for the site, includes construction and operation of a CLB pilot study at the site. The field work activities will include installation, development, and sampling of monitoring, injection, recovery wells, shallow trenching (less than 4.0' in depth), installation of conveying pipes, and well boxes.

Well installation will involve drilling soil borings, collecting water samples, recording geophysical logs in the borings, and constructing the wells.

The CLB process creates a large in-situ bioreactor in vadose and saturated soils. The process design is patented and uses; a closed loop system with a continual circulation of air from groundwater sparge points to vadose injection and vacuum extraction wells. The CLB System is a combination of technologies, which includes vapor extraction (VE), airs sparging (AS), vacuum enhanced product recovery, desorption of hydrocarbons from soil particles, and enhanced bio-degradation. These include remediation of vadose soils affected by low viscosity petroleum product, trapped product in the saturated zone and dissolved constituents in the groundwater.

At the initiation of the process, the CLB technology uses a small surface bioreactor to initiate the formation of degrading bacteria at the surface operation location. The bioreactor enhances moisture, nutrients, and associated co- metabolites, to accelerate the growth of indigenous bacteria that are then capable of destroying petroleum constituents. Once biogrowth occurs, the vapor based biomixture is then circulated into the vadose zone through a series of vapor extraction and injection wells, which forms a site wide "closed loop" system. Accordingly, the biomass vapor that is created and injected in the vadose zone is circulated through the subsurface to the appropriate extraction wells, and back to the small surface bioreactor for testing and restimulation.

This procedure occurs without any discharge to the atmosphere. Once this process is started, the CLB operation continues until an appropriate biomass is established in the vadose which causes the vadose itself to act and operate as a huge site wide bioreactor. This unique situation is maintained during the entire remediation process.

After the product is removed and the vadose zone bioreactor is fully established, groundwater air sparging processes are initiated. The initial design of the CLB program also allows for the installation of dual use wells, which act as sparge point locations. The mechanical sparging action addresses volatile dissolved constituents that are in the groundwater. As this process proceeds, the air sparging action liberates the volatile petroleum fractions in the groundwater, upward into the vadose zone bioreactor, where the constituents are consumed by vadose bioreactor.

3. KEY PERSONNEL AND RESPONSIBILITIES

Locus Technologies Vice President,: James E. Boarer, P.E.

Mr. Boarer or his designee (Locus Technologies **Project Manager: Dave Peskin**) is **directly** responsible for implementation of, and compliance of Locus Technologies personnel with, this Health and Safety Plan. Mr. Boarer or his designee will be the Response Coordinator in case of an emergency.

Each Subcontractor Supervisor or their designee(s) will be responsible for implementation of and compliance of their employees with this Health and Safety Plan.

Locus Technologies Health and Safety Coordinator: Reza Garajehdaghi

Each subcontractor supervisor is responsible for oversight of the site activities of their own employees, including handling of any hazardous materials encountered.

Locus Technologies Health and Safety Coordinator/ Site Safety Officer has the **responsibility and** authority to implement **immediate** mitigation measures in the field regarding health and safety matters, whenever applicable. This authority shall include the authority to stop work, if conditions warrant such action.

Consulting Certified Industrial Hygienist (CIH): Kevin Braun, CIH, Raibon & Colbert Associates, LLC

The Consulting CIH **will prepare and approve any changes to this Plan**, and will provide support to the Site Supervisors for questions or problems relating to health and safety concerns at the site. The CIH will conduct:

- Review all available site data; circumstances, and conditions for the purpose of hazard evaluation; and

- Designate appropriate protective measures and/or revisions to this plan in response to site conditions including measured concentrations of airborne site contaminants.

4. JOB HAZARD ANALYSIS

4.1. Physical Hazards

The primary physical hazards potentially associated with the site are expected to include:

a. Construction equipment

b. Heat Stress

c. Electrical Hazard

d. Noise

e. Buried utilities/overhead power lines

f. Open excavations/uneven terrain

g. Fire

h. Head, neck and back injuries

i. Drill Rig Operations

j. High-pressure and/or high-temperature steam cleaners

All personnel on site could encounter any of these hazards at one time or another.

4.1.1. Construction Equipment

Drill rigs, and other heavy equipment may be used at the site. On-site personnel will be made aware of the presence of this equipment and the hazards of working around such equipment. All personnel operating such equipment will be made aware of the presence of other site personnel. Communication

between workers on the ground and operators will be by line-of-sight, utilizing standard construction hand signals. Ground personnel will stand clear of the travel path and swing radius of heavy equipment, and avoid becoming boxed in between equipment and buildings or other structures. Personnel will remain in a position where they are clearly visible to the equipment driver or operator. Ground personnel will obtain eye contact and an "all clear" signal from the operator before approaching the cab or entering the travel path or swing radius of the equipment. Ground personnel are also prohibited from standing or walking under suspended loads or lifted blades or buckets on heavy equipment. Backup alarms and rollover protection will be utilized, as appropriate.

All site personnel will wear high-visibility reflective vests to enhance visibility to the equipment operators and because the work is being done adjacent to a roadway.

Locus Technologies and its subcontractors will only use equipment that is in safe working order. To maintain this policy, all equipment brought onto the project site will be inspected for structural integrity, smooth operational performance, and proper functioning of all critical safety devices in accordance with the manufacturer's specifications. This initial inspection will be performed jointly by the Site Safety Officer and a qualified equipment operator and will be repeated periodically by site safety personnel.

Equipment not found to conform to site operational and safety requirements during this inspection will be "red-tagged" and not allowed into service until all necessary repairs are made to the satisfaction of the inspection group.

4.1.2. Heat Stress

All on-site personnel must be familiar with the symptoms of heat stress and the conditions during which it may occur. Heat stress symptoms may include nausea, headache, lightheadedness, lack of coordination, or slurred speech. The use of protective clothing greatly enhances the likelihood of heat stress. Where site conditions warrant, the site health and safety officer will monitor for heat stress and implement work/rest regimens, if necessary. Shaded rest areas with potable water and/or an electrolyte replacement drink such as Gatorade will be available on-site at all times.

Adverse climate conditions, particularly heat, are an important consideration in planning and conducting site operations. The following are identified as conditions of heat stress;

Heat Cramps - cramping of muscles usually due to excessive sweating and loss of body salts - most often associated with moderate or strenuous physical exercise.

Heat Rash - a rash produced when working and sweating in hot environments- greatly enhanced by excessive rubbing of clothing or items in direct contact with the skin.

Heat Exhaustion - Excessive sweating, cool clammy skin, fatigue, weakness, headache, un-coordination nausea; fainting may occur. This generally results from dehydration and consequent electrolyte imbalance.

Heat Stroke- a response to heat characterized by extremely high body temperature and failure of the sweating mechanism. Heat Stroke symptoms include hot dry skin, weak rapid pulse, and mental confusion. Unconsciousness may occur. Heat Stroke is considered an immediate, life-threatening emergency for which medical care is urgently needed. Call emergency medical personnel immediately for assistance.

Preventive measures for heat stress include:

- Frequent rest periods in a shaded area when heat and/or humidity are high.

- Drinking of cool (not cold) fluids will be encouraged and done outside of exclusion zones. Drinking water and electrolyte replacement drinks (i.e. Gatorade) will be provided as needed.

The use of protective clothing greatly enhances the likelihood of heat stress. When the site ambient temperature exceeds 70°F, the Safety Officer will monitor the site conditions/work rates, and implement work/rest regimens, if necessary. Personal heat stress monitoring will be implemented as described below, as necessary.

To monitor the workers, measurements will be made of their heart rate as described below, with subsequent adjustments to work schedule:

- Count the wrist pulse during a 30-second period as early as possible in the rest period. If the heart rate exceeds 110 beats per minute (BPM) at the beginning of the rest period, shorten the next work cycle by one-third, and keep the rest period at 10 - 15 minutes.

- If the heart rate still exceeds 110 BPM at the next rest period, shorten the next work cycle by one-third and keep the rest period the same.

- If the heart rate still exceeds 110 BPM at the next rest period, shorten the following work cycle by one-third and keep the rest period the same.

4.1.3. Electrical Hazards

Treatment system operation requires 120 and 230 volt electrical service. Live circuits to which an employee may be exposed must be deenergized before the employee works on or near them.

While an employee is exposed to contact with parts of fixed electrical equipment or circuits which have been deenergized, the circuits energizing the parts must be locked out and tagged out. A lock and a tag must be placed on each disconnecting means used to deenergize circuits and equipment on which work is to be performed. The lock must be attached so as to prevent persons from operating the equipment unless they resort to undue force or the use of tools. All lockout/tagout procedures will be performed in accorance with Locus Technologies' "Control of Hazardous Energies" program.

All 120-volt, electrically energized, portable worker-operated equipment must have a ground-fault circuit interrupter (GFCI) inserted in the circuit. All equipment must be suitable and approved for the class of hazard. All equipment not protected by GFCIs will be inspected monthly as part of Locus' Assured Grounding Program.

Applicable OSHA electrical standards (29 CFR 1926 subpart K) must apply. As a part of general site hazard training, tailgate meetings will cover the electrical hazard.

4.1.4. Noise

Work around heavy equipment always involves the possibility of excessive noise. Where excessive noise may be encountered, employees will be provided with hearing protection such as earplugs or earmuffs. Excessive noise can be readily indicated to the workers on site by difficulty in hearing verbal communication at approximately an arm's length away. All hearing protection used onsite will have a minimum Noise Reduction Rating (NRR) of 20 decibels.

4.1.5. Buried Utilities/Overhead Power Lines

Site personnel or a locator will examine excavation areas, and utilities will be protected during excavation activities. **Underground Service Alert will be provided notice at least two days prior to the commencement of excavation/drilling activities.** The USA notification will be renewed, as necessary, or at least every 14 days, to keep the notification number current. Protection from overhead power lines will be accomplished by maintenance of safe distances of at least 10 feet at all times. The excavation contractor is responsible for utility locating.

4.1.6. Fire and Explosion

Appropriate measures shall be taken by the contractor to reduce fire risk through proper monitoring of the operation, good housekeeping, especially during any welding or hot work, and through the maintenance on-site of a supply of ABC fire extinguishers. At a minimum, adequately sized portable ABC fire extinguishers shall be readily available in the work areas and on each piece of heavy equipment.

All flammable liquids will be stored in UL-Approved safety containers in designated areas. Oxygen and acetylene cylinders will be stored secured upright in separate areas except when on carts for immediate use. All high-pressure cylinders will be transported with caps in place, and all valves and gauges will be inspected before each use. Monitoring for explosive gases will be performed before any welding or other hot work is performed at or near the opening of any bore, well, or deep excavation.

All site personnel will be familiar with the proper use of fire extinguishers. In addition, all site personnel will be specifically made aware of the possibility of, and hazards of brush fires. Site personnel **WILL**

NOT engage in **fire fighting** for brush fires or other fires beyond incipient stage fires. An incipient stage fire shall be considered a fire that can be extinguished using one fire extinguisher. If the fire cannot be extinguished by one fire extinguisher, site personnel shall evacuate the area until professional firefighters assure the fire has been extinguished. Local fire agencies will be called to respond to **all** fires, regardless of size.

4.1.7. Head, Back and Neck Injuries

Prevention of head, neck or back injuries is expected to be accomplished through the use of protective equipment and proper lifting procedures.

All site personnel will be required to wear a hard hat while working at the project sites. Hard hats must be worn properly and not altered in any way that would lessen the degree of protection offered.

Eye protection is required when there is the presence of airborne objects that may be projected or blown into the eyes. Eye protection will include safety glasses with side shields. Eye protection must be worn at all times during soil disturbance on site.

Wherever possible, material handling will be done mechanically. Where manual handling is absolutely necessary, personnel will be instructed in safe handling techniques, and will be instructed to use the appropriate protective gear to prevent abrasions, cuts, and struck-by accidents.

A proper method for lifting is:

- Get a good footing;
- Place feet about shoulder width apart;
- Bend your knees to pick up the load. Never bend from the waist;
- Keep your back straight;
- Get a firm hold. Grasp opposite corners of the load, if possible;

- Keep your back as upright as possible;
- Lift gradually by straightening your legs, don't jerk the load;
- Keep the weight as close to your body as possible;
- When changing directions, turn your entire body, including your feet. Don't twist your body or make awkward moves, which force you to be off balance.

4.1.8. Standard Operating Procedures for Drill Rig Operations

These Standard Operating Procedures must be applied when a drill rig is used at the site for well cleaning, pump repairing/replacement, well destruction or construction.

- Know the capabilities and limitations of the equipment. The operator must fully comprehend the manufacturer's operation, maintenance, and safety procedures.
- Know the location of emergency stop switches or buttons, first aid kits, fire extinguishers, and communications equipment; and know how to use them.
- Clothing worn around the rig should be relatively close-fitting. Loose or open shirts, jackets, or shirtsleeves; ties; rings; or other jewelry are prohibited around the machinery.
- Wear safety-toe boots, safety glasses or goggles, and hard hats. Where specified by the Site Safety Officer, chemically-resistant clothing and respiratory system protection, and hearing protection will be used.
- The location of underground utilities at designated drilling areas shall be determined before any drilling operations. This may be accomplished by notifying Underground Service Alert (USA) at 1 (800) 227-2600 for underground utilities on public property. Underground utilities located on private property may be determined by contracting a professional locator service.

- Before moving onto the site, check for local height, weight, width, or length restrictions along the route.

- A reconnaissance of the area where the next drilling operation will take place should be performed prior to mobilization. Be sure there is adequate clearance for drill rig operations. Take note of the surface area where drilling operation will take place. If drilling operations are to be conducted on a dirt surface or grassy area, plastic may be placed on the surface where the drill rig is to be set up. This will prevent the tires of the drill rig from tracking mud or dirt off-site.

- Prior to drilling operations, the tires of the drill rig shall be covered with plastic to prevent the tires of the drill rig from coming in contact with any potentially contaminated soil or ground water. The plastic must be removed before leaving the restricted access work area around the location of the operation, or exclusion zone, and disposed of appropriately. This procedure would eliminate either tracking mud or dirt off-site or the need to rinse off the tires of the drill rig.

- Check for fluid leaks. Inspect all hydraulic fittings and hoses for defects, especially hoses that flex during operation. Replace worn, cracked, leading, or damaged parts. Secure all caps and filler plugs.

- Inspect air or mud system lines, valves, drain cocks, and other components. Be sure air pressure is correct and that there are no leaks. **Never** disconnect a pressurized hydraulic, air, or mud system line. Bleed off pressure first.

- Inspect all lines, cables, wire ropes, etc., for evidence of excessive wear, fraying, broken strands, "bird-caging," or unraveling. Replace defective or damaged lines if any found.

- Inspect pulleys for wear and proper lubrication.

- Ensure that all hooks used for auger bits or casing have the required safety catch and that hooks and safety catches are inspected for defects regularly.

- Be sure all safety devices such as pressure relief valves, gauges, etc. are in place and are in good working order.

- Visually inspect the rig for evidence of physical deterioration such as cracks, or broken welds. Do not operate the rig if defects are found.

- All protective guards and panels should be in place before starting or operating the rig. Know the location of all other personnel, and be sure they are clear of machinery and are aware the rig will be started.

- Never leave the rig running unattended.

- Eating, drinking, or smoking on or around the rig is prohibited.

- Jacks (levelers) must be down and the frame in a level position before raising the mast. Plumb the kelly or drill sub with a magnetic level or use the built-in bubble level if the drilling rig is equipped with a level.

- When working near high-voltage electrical lines use the following table for minimum clearances.

Normal Voltage	**Minimum**
(Kilovolts)	**Clearance**
Up to 50	10 feet
Over 50 to 100	12 feet
Over 50 to 200	15 feet
Over 200 to 300	20 feet
Over 300 to 500	25 feet

Over 500 to 750	35 feet
Over 750 to 1,000	45 feet

- Consider all electrical wires to be live. The drill operator is responsible to obey the minimum clearance guidelines and to advise management if the well location is too close to the power line.

- If any part of the drill rig comes in contact with electrical lines, do not attempt to rescue anyone on an electrically energized rig or to leave one if you are on it. Wait until power has been shut off before touching any person or the rig.

4.1.9. High-pressure and/or high-temperature steam cleaners

High-pressure and/or high-temperature steam cleaners will be used for equipment decontamination (DECON). Physical hazards arise from use of this type of high-pressure and/or high-temperature steam cleaners.

The **safety guidelines and the Personal Protective Equipment (PPE)** for the use of high-pressure and/or high-temperature steam cleaners are as follows:

- Read or review the manufacturer's operating and safety instructions.
- Inspect the equipment. Check operating controls; pressure and temperature gauges; and pressure relief devices, hoses, etc., for any defects, leaks, or inoperability. Make sure the nozzle is clean and free of obstructions or debris.
- Use only cleaners or additives recommended by the manufacturer. Read the MSDSs before using them. Make sure the Site Safety Officer has a copy of the MSDSs.
- Operate the pressure washer at the minimum pressure and temperature required doing the job. Do not work at pressures or temperatures higher than required.
- Keep the pressure washer wand under control at all times. Always use two hands to aim and control the wand.
- Wear eye protection. At a minimum, wear a face shield; preferably, wear a face shield **and** safety goggles.

- Wear hearing protection.
- Wear foot protection (safety-toe boots) as well as rubber gloves, rain gear, and overboots.
- Be sure you have good footing while operating the pressure washer. Be careful of wet, muddy, icy, or slippery surfaces.
- Do not climb or hang on the sides of vehicles or equipment while trying to clean them. Use scaffolding if necessary to get up high or overhead.
- Never point the high-pressure stream of steam at another person or **yourself**. Do not let others work in areas in the path of the stream or overspray.
- Do not aim the high-pressure stream of steam at glass, bottles, ice, plastics, or other materials that are likely to shatter and send shrapnel flying. Work slowly and carefully. Do not whip the wand back and forth.
- Do not block the nozzle by forcing it up against surfaces or into cracks or crevices.
- Shut down the equipment and relieve the pressure from the lines when not in use or when performing maintenance or repairs. Do not leave the equipment unattended and pressurized. Only trained and competent personnel will perform maintenance and repairs.
- If necessary, construct a spray booth, containment, or other barriers to protect others from overspray.

4.2. Chemical Hazards

There are two categories of chemical hazards associated with site activities:

Site Constituents; and

Chemicals used to conduct the site work.

Site constituents are those which exist at the site and are the reason for conducting site activities. The chemicals that are brought on site in order to conduct the work may be hazardous and subject to regulation under the Occupational Safety and Health Administration's (OSHA's) Hazard Communication Standard (29 Code of Federal Regulations [CFR] 1910.1200).

4.2.1. Site Constituents

From an occupational health standpoint, given that any potential exposure to site personnel will only be for a short period of time (intermittent for several days), the levels of contaminants that will or could be, encountered during site activities should not represent a significant concern if the provisions of this HSP are appropriately implemented. Overviews of the hazards associated with exposure to the chemicals that may pose a danger during site activities are presented below in terms of the following occupational exposure limits:

- **PEL**: Permissible Exposure Limit (OSHA Standard)
- **TLV**: Threshold Limit Value (American Council of Governmental Industrial Hygienists [ACGIH] Guidance)
- **REL**: Recommended Exposure Limit (National Institute of Occupational Safety and Health [NIOSH] Guidance)
- **STEL**: Short-Term Exposure Limit
- **C**: Ceiling Limit. (OSHA, Cal/OSHA Standard)
- **TLV-C**: Ceiling Limit (American Council of Governmental Industrial Hygienists [ACGIH])

OSHA PELs, ACGIH TLVs, and NIOSH RELs are time-weighted averages (TWAs) defined as average exposures for a normal 8-hour shift and 40-hour workweek to which almost all workers can be repeatedly exposed without suffering adverse health effects.

STEL is defined as the concentration to which workers can be exposed for short time periods without irritation, tissue damage, or narcosis sufficient to likely cause impairment of self-rescue or precipitate accidental injury. The STEL is a 15-minute time-weighted average that should not be exceeded at any time during the workday. STELs are used by OSHA, ACGIH, and NIOSH for chemical exposure criteria.

A ceiling value (C) is a concentration that should not be exceeded at any time in any workday. Ceiling limits are used by OSHA, ACGIH, and NIOSH for chemical exposure criteria.

Skin contact with potentially contaminated materials will be minimized by the use of personal protective clothing (as described in Section 4.0). Inhalation of vapors during the site activities will be minimized by air monitoring and the use of engineering controls, and respiratory protection will be used if Action Levels described in Section 5 are reached. Ingestion of contaminated materials will be minimized by the use of appropriate personal hygiene procedures during decontamination (i.e., thoroughly washing face and hands with soap and water after leaving the work area and prior to eating or drinking).

The main contaminants of concern include petroleum hydrocarbons, particularly heavy fuel oils. Bunker oil may contain varying concentrations of volatile and semi-volatile organic compounds as well as significant concentrations of hydrogen sulfide, a respiratory irritant and neurotoxin, which is expected to have dissipated during previous handling. Remaining hazards associated include:

Petroleum Hydrocarbons (Volatile)

Volatile Organic Compounds identified on site in significant concentrations are consistent with petroleum distillates such as gasoline and heating oil, either associated with tanks previously removed from the vicinity or from a previously unidentified UST. Exposure causes skin, eye, and respiratory irritation; absorption through skin and mucus membranes and through inhalation produces damage to the central nervous system, cardiovascular system, liver, and kidneys resulting acutely in nausea and disorientation.

Polynuclear Aromatic Hydrocarbons

Polynuclear Aromatic Hydrocarbons (Coal-tar pitch volatiles) belong to a class of benzene-derived semi-volatile compounds that are absorbed readily through the skin and lungs. Exposure causes skin, eye, and respiratory irritation; absorption through skin and mucus membranes and through inhalation produces damage to the central nervous system, cardiovascular system, liver, and kidneys resulting acutely in nausea, disorientation, convulsions, and coma. A number of compounds in this family also act as sensitizers to ultraviolet light, significantly increasing the potential for sunburn and associated dermal

damage. Several of this chemical family have been identified as confirmed or suspected human carcinogens. Vapor pressure for PNAs is insignificant; requirements for skin protection and dust control measures are expected to adequately prevent exposures to these and other particulate-bound compounds.

Table 1 presents the toxicological information and exposure limits for the important hydrocarbon components, and is included in Appendix B.

4.2.2. Chemicals Used to Conduct the site Work

Safe Reagent Handling Procedures

Chelated Iron: Chelated Iron is a non-toxic, non-reactive, non-hazardous material. Handling precautions are limited to prevention of eye or skin contact through use of safety goggles and gloves.

Deep Treat: Deep Treat is a concentrated hydrogen peroxide solution. This is a strong oxidizer, capable of initiating combustion if allowed to contact a fuel source (including wood pallets). This material should be stored in a segregated, well-ventilated secondary containment to prevent accidental contact or mixing with any source of fuel. Hydrogen peroxide slowly decomposes, evolving oxygen gas, which may result in pressure accumulation and rupture of containers if not vented, and can result in acceleration of combustion should containers rupture in a fire. During mixing, add concentrated solution to water to allow for dispersal of heat of solvation and prevent accidental boilover.

This material is a **severe eye and skin irritant**, and care should be taken to prevent any contact with concentrated solutions during handling. Proper personal protective equipment required for handling and mixing includes goggles with a face shield, nitrile or butyl rubber gloves, and a rain suit or waterproof coverall.

An eye wash capable of supplying a fifteen-minute flow of potable water **must** be located in the immediate proximity of areas in which Deep Treat is stored or handled. First aid for any contact exposure consists of flushing the area with copious quantities of water. In case of inhalation, move victim to a clean

area, provide oxygen (if available), and transport immediately to the designated emergency medical facility. Seek medical attention even if symptoms abate; exposure to respiratory irritants can result in delayed-onset pulmonary edema, a life threatening condition that can manifest itself hours after exposure.

Nitro-Boost: Nitro-Boost contains is a liquid that contains a mixture macro and micronutrients developer especially for inset Bioremediation. The main additives are ammonium nitrate, monoammonium phosphate, and water extract from cretaceous period class C bituminous coal. This mixture provides a broad range of organic acid and trace metal micronutrients required growing and sustaining healthy microbial populations.

.The Material Safety Data Sheets for these chemical are included in Appendix (B).

Plant Operation:

Other than the normal precautions for noise and mechanical hazards, no special requirements are in place for routine operation. Hard Hats, work shoes, and safety glasses are recommended for work in any process area. Repair/replacement or maintenance of feed lines, process vessels, etc. will require additional protective equipment appropriate to the contents of the pipe or vessel. All process piping, feed lines, etc, will be clearly labeled in accordance with the Hazard Communication Standard and Site Health and Safety Plan.

Potential exposure to the chemicals of concern which exist at the site, is possible during intrusive activities, such as excavation, drilling, and well sampling, at the site. Exposure could occur through direct contact with soil or ground water, through inhalation of organic or inorganic laden dusts, or through inhalation of organic chemical vapors. Field personnel will minimize potential exposure to chemical hazards by the following actions:

- Avoiding direct contact with ground water and soil;
- Performing air monitoring, as required, to determine the necessary level of personal protective equipment [PPE (see Sections 5 and 6)];
- Minimizing generation of dust.

In accordance with OSHA's Hazard Communication Standard (29) CFR 1910.1200), material safety data sheets (MSDS) for any regulated chemical materials, which may be used during the performance of site operations, will be available from the Site Safety Officer. MSDS training will be conducted in accordance with 29 CFR 1910.1200 and Locus Hazard Communication Program.

Potential exposure to chemical hazards may occur during the site operations. During these operations, site personnel may be exposed to the chemicals noted in Chemical Hazard Information (Appendix B). Exposure may occur through inhalation, ingestion, and dermal contact or absorption. Dermal exposure will be controlled by limiting contact through safe work practices, the use of chemical protective clothing, and personal hygiene. Ingestion hazards will be controlled by strict limitation of eating, drinking, and smoking in the work areas, and by rigorous application of decontamination and personal hygiene protocols. Inhalation hazards will be controlled by performing air monitoring as required by this plan and directed by SSO to determine the necessary level of personal protective equipment (including respiratory protection), by utilization of good engineering practices, and minimizing generation of dust.

General symptoms of exposure to the site chemicals include: irritation of the eyes, nose, mucous membranes, and respiratory system; headache, nausea, vomiting, abdominal pain, giddiness, excitement, dizziness, staggered gait, fatigue, weakness, lassitude, anorexia, corneal vacuolization, dermatitis. Target organs include the central nervous system, eyes, skin, gastrointestinal tract, blood, liver, and kidneys. Inhalation of vapors is the most prevalent pathway of exposure to hydrocarbons, although skin absorption and ingestion may also result from poor work practices or hygiene.

5. AIR MONITORING PLAN/RESPIRATORY PROTECTION UPGRADES

Direct reading air monitoring will be conducted during site activities whenever exposure to site contaminants is anticipated or indicated by detection of odor, stained soils, or any signs or symptoms of exposure are noted. Air monitoring will be carried out as necessary by or at the direction of the Site Safety Officer. Flame Ionization Detector (FID) or Photoionization Detector (PID) will be used. All direct-reading monitoring results will be compared to background levels, as measured at locations upwind of the work area. All equipment will be calibrated at least twice daily, according to the manufacturer's instructions. During site activities, additional calibration will be carried out as necessary. Calibration and monitoring data will be recorded in the field log for the project.

Site worker(s) will be informed that they are always entitled to make use of respiratory protection prior to reaching a work area action level. Once an action level is reached, designated protection levels will be mandatory. All respiratory protective equipment will be approved by the National Institutes for Occupational Safety and Health (NIOSH).

During the site activities, if readings consistently reach 50 ppm above background in the breathing zone for five minutes, workers will upgrade to level C PPE including half or full-face respirators with organic vapor cartridges (and filter). If FID readings consistently reach more than 75 ppm in the breathing zone, work activities will be discontinued and worker(s) will leave the area until the source and work practices are re-evaluated by Locus.

ALL air monitoring devices must be calibrated twice daily and calibrations must be documented.

- Air monitoring shall be conducted as **directed by the Site Safety Officer**.

Possibility of reaching the action level is minimal. **However,** if someone encounters odiferous ground water, or odiferous and/ or discolored soil that may be considered contaminated, **ALL** work activities **must** be stopped at that location until the situation can be evaluated by the Locus' Health and Safety team.

6. PERSONAL PROTECTIVE EQUIPMENT

The use of all protective equipment will be at the direction of the SSO based on the table below, or upon the request of on-site personnel.

Hearing protection will consist of the worker's choice of earplugs or earmuffs. Eyewash bottles will be maintained in the support area, along with the site first aid kit. ABC fire extinguishers will be maintained in the support area and on each piece of heavy equipment.

If necessary for nuisance exposures or as directed by the Health and Safety Officer half-mask respirators with HEPA P100 cartridges will be used to provide protection against dust. All respirators will be approved by NIOSH.

All respirator cartridges shall be changed out at least daily, or sooner if breathing resistance is increased due to dust loading on the cartridges. Selection and use of respiratory protection must conform to the Locus Respiratory Protection Program and the California, New York, and Federal OSHA Respiratory Protection Standard, and Requirements.

PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

Condition/Activities	Protective Equipment
General Site Work (not in contaminated areas)	Minimum Level D: Hardhat, steel-toed boots, work clothes, safety glasses and hearing protection as appropriate.
Drilling; well construction. Any excavation	Minimum Level D as described plus: nitrile gloves and poly-coated Tyveks or rain pants if personal clothing may be in contact with wet site materials. Regular Tyvek coveralls for dry materials. Level C: Level D plus half or full-face APR with organic vapor cartridges.

7. WORK ZONES AND SITE SAFETY

LOCUS personnel will follow the site control measures implemented by this Health and Safety Plan, and as directed by the Site Safety Officer. The Site Safety Officer will define the Zones if **any established**.

7.1. Exclusion Zone

The active work area during soil disturbance activities will be considered the Exclusion Zone. The Exclusion Zone will be modified, as necessary, as subsurface work is started and/or completed. Barricades and warning tape, temporary construction fence, or other such measures will demarcate such areas. Access to these zones will be limited to authorized personnel with the appropriate protective equipment, who have met the training and medical requirements appropriate for their level of work effort and protection.

7.2. Decontamination Area

All personnel working in the Exclusion Zone must pass through the Decontamination Area before proceeding to the Support Area. A temporary wash pad will be constructed for equipment decontamination, as necessary, to collect wash water for disposal. Facilities for personnel decontamination will be located adjacent to the active work area. Personal protective equipment cleaning and storage areas will be included in the decontamination area.

7.3. Support Area

The Support Area will be located adjacent to, and upwind (if possible) of the decontamination zone. Eyewash bottles, first aid kit, fire extinguishers, toilet facilities, potable water for the workers, and emergency communications will be maintained in the Support Area.

7.4. Site Security

The active work areas will be demarcated or barricaded, as appropriate during the work. If contaminated soils are stockpiled on the site they will be covered with plastic sheeting and secured before the end of each workday.

8. DECONTAMINATION PROCEDURES

8.1. Personal Decontamination

All disposable clothing will be deposited in containers on-site for off-site disposal in accordance with applicable regulations. Washtubs with soap and water and rinse tubs will be provided for decontamination of boots and gloves to be reused. Respirators will be cleaned with respirator wipes unless gross contamination requires heavier cleaning in separate wash and rinse tubs.

Soap and water will be available for personnel to wash up after work or if any skin contact occurs during the workday.

Site personnel will be specifically warned that shaking of clothes, dry sweeping and other activities that could create airborne dust are prohibited.

Decontamination procedures implemented in the decon zone for personnel will consist of the following:

- Clean outer gloves with soap and rinse thoroughly with water.
- Remove booties and outer gloves and place in the disposal container.
- Remove suit by rolling it off and placing it in the disposal container.
- Remove face piece gear and place on portable table for cleaning.
- Remove and dispose of inner gloves.
- Clean face piece gear by wiping with sanitizing wipes.
- Thoroughly wash hands and face with soap and water.

8.2. Equipment Decontamination

Any equipment that comes in contact with contaminated materials will be properly cleaned before leaving the site by pressure washing, sweeping or other appropriate means. Smaller pieces of equipment will either be pressure washed or washed in the same manner as contaminated personal protective equipment, i.e., with a brush and soapy water and rinse water. Again, site personnel will be specifically warned that any activities that could create airborne dust are prohibited.

8.3. Decontamination Materials

All decon materials will be collected for appropriate disposal to a proper disposal site in accordance with applicable regulations. Contaminated protective suits and other contaminated disposable equipment will be collected and disposed of at an appropriate site in accordance with applicable regulations.

9. GENERAL SITE SAFETY PROVISIONS

9.1. General Site Health and Safety and Work Rules

- No drinking or illegal drugs will be allowed on-site. Anyone reporting to work under the influence of alcohol and/or illegal drugs will be subject to disciplinary action. Any employee under a physician's care and/or taking prescribed narcotics must notify the Project Supervisor.

- Personal protective equipment is required in designated areas. Such equipment may include, but is not limited to, respiratory protection, earplugs/earmuffs, hardhat, Tyvek coveralls, boots, gloves, chemical goggles, safety glasses, and protective face shields.

- Eating, drinking, smoking, and chewing gum or tobacco is allowed only in designated areas in the support zone.

- Changes in work practices or work rules will be implemented only after approval by the project supervisor.

- Construction equipment always has the right-of-way over regular vehicles in a work area.

- All protective clothing to be worn inside the Exclusion Zone will be supplied. None of this equipment will be permitted to leave the site with any employee for personal use. Also, any equipment to be used elsewhere for another project will be fully decontaminated before leaving the site.

- Employees shall listen for warning signals on construction equipment and shall yield to construction equipment.

- All equipment operators shall pay deliberate attention to watching for workers on the ground that may be in their path and provide these people with warning before moving.

- All workers shall follow emergency procedures explicitly.

- Kneeling and/or sitting directly on the ground in the Exclusion Area are prohibited.

- **All employees will utilize a buddy system while working on site.**

- Shaking of clothes, dry sweeping of potentially contaminated surfaces, or other activities that could create airborne dust are prohibited.

9.2. Conditions of Site Access to the Exclusion Zone

- All personnel must meet the medical monitoring requirements of 29 CFR 1910.120/8 CCR 5192 and described in Section 12.0. Failure to submit to, or pass, any exam will be grounds for excluding the employee from the site.

- All employees must participate in the air quality exposure-monitoring program by wearing the personal monitors or sampling devices designated by the SSO, the Consulting CIH and/or this Plan. Any employee refusing to participate, or who tampers with a sample, will be subject to disciplinary action.

- No beards or long sideburns will be allowed by personnel utilizing respiratory protection since they interfere with the seal of the respirator to the face. Trimmed sideburns and mustaches are acceptable. All employees potentially using respirators must report to work clean-shaven.

- All employees, subcontractors **must** complete the required training programs **prior to starting work** at the site. Training certification **must remain current throughout the duration of the project.**

- All on-site personnel must wear the prescribed health and safety equipment, and go through the decontamination procedures prior to exiting the site.

10. EMERGENCY PROCEDURES

The medical center will be notified of the site activities and the potential for contaminated materials being present on the clothing or body of personnel brought to the facility. Directions for the emergency route to the medical center are included in Appendix A. A list of the emergency telephone numbers is also included in Appendix A. The emergency route to medical center/hospital is shown on Figure 1.

Whenever possible, personnel injured while working in the Exclusion Zone will be decontaminated as long as such procedures do not further compromise the health and safety of the individual.

Potential on-site emergencies are expected to be limited to minor fires, or injuries to site personnel. On-site conditions are expected to be within the limits of measures that can be taken by on-site personnel. Any emergency that poses a potential threat to the public will be considered a situation requiring outside assistance from emergency response agencies. During any on-site emergency, work activities will cease until the emergency is brought under control.

11. TRAINING

All site workers will be appropriately trained and certified in accordance with the Cal-OSHA requirements for hazardous waste operations (8 CCR 5192). Such training includes the 40-hour basic training, three days of supervised field experience, 8-hour annual update training, 8-hour supervisory training, as appropriate, as well as a project-specific training session, which will be provided prior to startup of on-site activities. The project-specific training will include:

- Site health and safety plan
- Decontamination
- Personal protection levels
- Chemical hazards
- Physical hazards
- Medical monitoring
- Air monitoring
- Use and maintenance of personal protective equipment
- Work zones
- Site safety rules and conditions of employment
- Emergency provisions
- Buddy system

On-site **tailgate meetings** will be held before each workday to reinforce pertinent topics from the above list and to anticipate problems that may arise during the day. The Project Supervisors will conduct these meetings for their respective crews. These meetings may be combined into a single meeting in order to aid coordination between the contractors. This training will be documented as part of the daily documentation for the site.

A copy of this Plan including the appendices must be maintained onsite and available to site personnel at all times. Copies of applicable portions of the Cal-OSHA regulations will be provided to the site employees during the Site Specific Training.

12. MEDICAL MONITORING

All on-site personnel using respiratory protection will participate in a medical monitoring program. Any site personnel and visitors, who have not received medical clearance and are required to use respiratory protection, must be excluded from the active work areas.

For those employees regularly working in the Exclusion Zone, the monitoring program will consist of either a corporate annual physical examination or a pre-employment physical (if the employee was hired specifically for this job). The examining physician will determine the content of the exam.

Employees not directly involved with the work activities at the site, and not likely to be exposed to site contaminants, are not subject to the medical monitoring requirements.

13. DOCUMENTATION

Documentation of each employee's compliance with the training and medical monitoring requirements, and their signature indicating they have attended site meetings to review this Health and Safety Plan, will be maintained on site. In addition, copies of tailgate meeting minutes, air monitoring data, and accident reports will be maintained on site.

14. ACKNOWLEDGEMENT AND UNDERSTANDING OF THIS HEALTH AND SAFETY PLAN

Field personnel will be briefed on the nature of work at the site, potential hazards, and protective clothing requirements prior to site work.

The site personnel will be required to sign the following statement:

This Health and Safety Plan has been explained to me. I agree to abide by the Plan and procedures outlined herein. I understand that non-compliance with the HSP may lead to termination of my involvement at the project work site.

Signature:	**Date:**
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

APPENDIX A
EMERGENCY PHONE NUMBERS
AND
DIRECTIONS TO MEDICAL CENTER

Emergency Telephone Numbers and Directions to the Medical Facility

EMERGENCY MEDICAL FACILITY

SEE ATTACHED MAP (Figure 4) FOR DIRECTIONS TO THE MEDICAL FACILITY

Contact	Phone Number
Fire	**911**
Police	**911**
Ambulance	**911**
New Island Hospital	**516.576.6000**
Poison Control	**800.523.2222**
Locus Technologies Office: James Boarer, VP Office	**916.679.2600**
Locus Technologies: Dave Peskin, Project Manager Mobil	**602.751.3217**
Raibon & Colbert Associates, LLC: Office **Kevin Braun, CIH: Mobil** **Locus Technologies H & S Department: Office** **Reza Garajehdaghi Mobile**	**415.951.4709** **925.980.0568** **650.960.1640** **408.592.7785**

Directions to New Island Hospital:

New Island Hospital is located at 4295 Hempstead Tpke, Oyster Bay Town, New York.

Start at 999 South Oyster Bay Road, going towards Grumman Road /West, Hazel Street and go about 0.2 mile. Turn Left onto Hicksville Road/South Broadway and go 0.5 mile. Continue on Hicksville Road and go less than 0.1 mile. Continue on Hicksville Road/Hicksville-Massapequa Road and go 1.1 mile. Continue on Hicksville Road go 0.2 mile. Turn Left onto Bethpage Tpke/Hempstead Tpke and go 0.6 mile. Arrive at New Island Hospital.

APPENDIX B
THE CHEMICALS OF CONCERN
AND
HAZARD INFORMATION

TABLE 1
OCCUPATIONAL HEALTH AND TOXICOLOGICAL PROPERTIES FOR CONTAMINANTS OF CONCERN

Contaminant	OSHA PEL	NIOSH REL	ACGIH TLV	ACGIH/OSHA STEL	NIOSH IDLH	IP eV	Route of Exposure	Symptoms of Exposure
Petroleum Distillates [(NAPHTHA) Representing Diesel fuel, Fuel Oil No. 2, JP-4 and JP-5)	300 ppm	350 ppm	300 ppm	NA	10,000ppm	NA	INH, CON, ING	Dizziness, drowsiness, headache, nausea; irritant to eye, nose and throat ; dry, cracked skin.
Hydrogen Sulfide (H_2S)	10 ppm	10 ppm	10 ppm	15 ppm	300 ppm	NA	INH	Characteristic rotten-egg odor followed by respiratory collapse; possibly with delayed onset pulmonary edema.
Toluene	100 ppm	100 ppm	50 ppm	NA	2,000 ppm	8.82	INH, ING, CON, ABS	Fatigue, weakness, confusion, euphoria, dizziness, headache, dilated pupils, lactimation, nervousness, muscle fatigue, insomnia, paresthesia, and dermatitis.
Polynuclear Aromatic Hydrocarbons (PNAs, General) (Residual Fuel Oil, Bunker C, Fuel Oil No. 4, 5, & 6)	0.1 mg/m3**	0.1 mg/m3**	0.1 mg/m3**	N/A	N/A	N/A	INH, ING, CON, ABS	Dark, Viscous Liquid with sweet, creosote-like odor. Can affect CNS, mucous membranes, eyes, skin (irritation and u/v sensitization) Suspected human carcinogens.
Total Petroleum Hydrocarbons (represented as gasoline because it is the closes compound with occupational exposure limits	300	No REL	300	500	NA	NA	INH, CON, ING, ABS	Irritant to eyes, mucus membrane, headache, narcosis, dermatitis

Notes: ppm parts per million NA Not Applicable
INH Inhalation ING Ingestion
CON Skin Contact ABS Skin Absorption
** Exposure to carcinogens maintained As Low As Reasonably Achievable

DOD Hazardous Material Information (ANSI Format)
For Cornell University Convenience Only

RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6

Section 1 - Product and Company Identification
RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6

Product Identification: RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6
Date of MSDS: 10/01/1993 **Technical Review Date:** 09/02/1994
FSC: 9140 **NIIN:** 01-235-2882
Submitter: D DG
Status Code: C
MFN: 01
Article: N
Kit Part: N

Manufacturer's Information

Manufacturer's Name: BP NORTH AMERICA PETROLEUM INC
Manufacturer's Address1: 550 WESTLAKE PARK BLVD SUITE 1800
Manufacturer's Address2: HOUSTON, TX 77079-2608
Manufacturer's Country: US
General Information Telephone: 713-560-3836
Emergency Telephone: 800-321-8642/CHEMTREC 800-424-9300
Emergency Telephone: 800-321-8642/CHEMTREC 800-424-9300
MSDS Preparer's Name: BP OIL HSEQ DEPT.
Proprietary: N
Reviewed: Y
Published: Y
CAGE: 0BF86
Special Project Code: N

Item Description

Item Name: FUEL OIL,NAVAL
Item Manager:
Specification Number: IF-O-380
Type/Grade/Class: NONE
Unit of Issue: GL
Unit of Issue Quantity: X
Type of Container: BULK

Contractor Information

Contractor's Name: AIR BP, BP OIL LTD
Contractor's Address1: CLEVELAND HOPKINS INTL AIRPORT
Contractor's Address2: CLEVELAND, OH 44135
Contractor's Telephone: 216-267-3550
Contractor's CAGE: 0NDT1

Contractor Information

Contractor's Name: BP NORTH AMERICA PETROLEUM INC
Contractor's Address1: 550 WESTLAKE PARK BLVD SUITE 1800
Contractor's Address2: HOUSTON, TX 77079-2608
Contractor's Telephone: 713-558-3443
Contractor's CAGE: 0BF86

Contractor Information

Contractor's Name: BP OIL INTERNATIONAL LTD
Contractor's Address1: BRITANNIC HOUSE, MOOR LN
Contractor's Address2: LONDON ENGLAND, NK 00000
Contractor's Telephone: UNKNOWN
Contractor's CAGE: 7X331

Section 2 - Compositon/Information on Ingredients
RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6

Ingredient Name: FUEL OIL RESIDUAL
Ingredient CAS Number: 68476-33-5 **Ingredient CAS Code:** M
RTECS Number: LS8960000 **RTECS Code:** M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: <100
% Enviromental Weight:
Other REC Limits: NONE RECOMMENDED

OSHA PEL: NOT ESTABLISHED **OSHA PEL Code:** M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT ESTABLISHED **ACGIH TLV Code:** M
ACGIH STEL: N/P **ACGIH STEL Code:**
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical: N

Ingredient Name: HYDROGEN SULFIDE (SARA III)
Ingredient CAS Number: 7783-06-4 **Ingredient CAS Code:** M
RTECS Number: MX1225000 **RTECS Code:** M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: TRACE
% Enviromental Weight:
Other REC Limits: NONE RECOMMENDED
OSHA PEL: C, 20 PPM **OSHA PEL Code:** M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: 10 PPM/15 STEL; 9394 **ACGIH TLV Code:** M
ACGIH STEL: N/P **ACGIH STEL Code:**
EPA Reporting Quantity: 100 LBS
DOT Reporting Quantity: 100 LBS
Ozone Depleting Chemical: N

Section 3 - Hazards Identification, Including Emergency Overview
RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6

Health Hazards Acute & Chronic: ACUTE: MAY BE IRRITATING TO SKIN, EYES AND RESPIRATORY TRACT. POSSIBLE ASPIRATION HAZARD IF SWALLOWED-CAN ENTER LUNGS AND CAUSE DAMAGE. INHALATION MAY CAUSE CNS EFFECTS. TOXIC HYDROGEN SULFIDE GAS MAY BE PRESENT IN CONFINED VAPOR SPACES. CHRONIC: SKIN CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS.

Signs & Symptoms of Overexposure:
INHALED: EUPHORIA, HEADACHE, DIZZINESS, DROWSINESS, BLURRED VISION, FATIGUE, TREMORS, CONVULSIONS, LOSS OF CONSCIOUSNESS, COMA, RESPIRATORY ARREST AND DEATH. SWALLOWED: NAUSEA, VOMITING, DIARRHEA. SKI N: REDNESS, ITCHING, INFLAMMATION, CRACKING, POSSIBLE SECONDARY INFECTION. EYES: REDNESS, TEARING, DISCOMFORT.

Medical Conditions Aggravated by Exposure:
NONE SPECIFIED BY MANUFACTURER.

LD50 LC50 Mixture: ORAL LD50 (RAT) IS UNKNOWN

Route of Entry Indicators:

Inhalation: YES

Skin: NO

Ingestion: NO

Carcenogenicity Indicators

NTP: NO

IARC: YES

OSHA: NO

Carcinogenicity Explanation: IARC HAS DETERMINED THAT DIESEL ENGINE EXHUST IS PORBABLY CARCINOGENIC TO HUMANS (IARC CLASS 2A).

Section 4 - First Aid Measures
RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6

First Aid:
INGESTION-DO NOT INDUCE VOMITING!IF SPONTANEOUS VOMITING OCCURS;MONITOR FOR BREATHING DIFFICULTY.GET IMMEDIATE MEDICAL ATTENTION.SKIN-REMOVE CONTAMINATED CLOTHES.WASH WITH SOAP & WATER.GET MEDICAL ATT ENTION IF IRRITATION PERSISTS.EYES-FLUSH WITH LOTS OF WATER FOR 15 MINUTES,HOLD LIDS OPEN.GET MEDICAL ATTENTION.INHALED-REMOVE TO FRESH AIR.RESTORE BREATHING.GET MEDICAL ATTENTION.

Section 5 - Fire Fighting Measures
RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6

Fire Fighting Procedures:
WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL BUNKER GEAR. IF NOT IGNITED, VENTILATE AREA AND USE WATER SPRAY TO DISPERSE VAPOR OR PROTECT PERSONNEL.
Unusual Fire or Explosion Hazard:
DANGEROUS WHEN EXPOSED TO HEAT OR FLAME. CONTAINERS MAY EXPLODE IN HEAT OF FIRE. RUNOFF TO SEWER MAY CAUSE FIRE OR EXPLOSION HAZARD.
Extinguishing Media:
WATER SPRAY, DRY CHEMICAL, FOAM OR CARBON DIOXIDE. USE WATER SPRAY TO COOL FIRE EXPOSED CONTAINERS.
Flash Point: Flash Point Text: 140F,60C

Autoignition Temperature:

Autoignition Temperature Text: N/A

Lower Limit(s): UNKNOWN

Upper Limit(s): UNKNOWN

Section 6 - Accidental Release Measures
RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6

Spill Release Procedures:
TAKE IMMEDIATE STEPS TO STOP AND CONTAIN THE SPILL. EXERCISE CAUTION-ENSURE PERSONNEL WEAR PROPER CLOTHING/EQUIPMENT. NOTIFY NATIONAL RESPONSE CENTER (800-424-8802), IF REQUIRED. ALSO NOTIFY LOCAL/STA TE REGULATORY AGENCIES, THE LEPC AND THE SERC.

Section 7 - Handling and Storage
RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6

Handling and Storage Precautions:

Other Precautions:

Section 8 - Exposure Controls & Personal Protection
RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6

Repiratory Protection:
IF ENGINEERING CONTROLS FAIL OR NON-ROUTINE USE OR EMERGENCY OCCURS; USE NIOSH/MSHA APPROVED RESPIRATOR OR SUPPLIED AIR RESPIRATOR OR SCBA, AS REQUIRED. USE IAW 29 CFR 1910.134.
Ventilation:
USE ADEQUATE EXPLOSION-PROOF MECHANICAL VENTILATION OR LOCAL EXHAUST TO MAINTAIN EXPOSURE BELOW PEL/TLV.
Protective Gloves:
CHEMICAL RESISTANT-EG. NITRILE.
Eye Protection: SAFETY GLASSES/CHEMICAL SPLASH GOGGLES
Other Protective Equipment: DEPENDING ON CONDITIONS, ADDITIONAL EQUIPMENT SUCH AS FACE SHIELD, APRON, ARMCOVERS ETC. SHOULD BE WORN. EYEWASH STATION
Work Hygenic Practices: WASH HANDS AFTER USE AND BEFORE EATING, DRINKING, OR SMOKING. LAUNDER CONTAMINATED CLOTHES BEFORE REUSE.
Supplemental Health & Safety Information: N/P

Section 9 - Physical & Chemical Properties
RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6

HCC: F4
NRC/State License Number: N/R
Net Property Weight for Ammo: N/R
Boiling Point: Boiling Point Text: >399F,>204C

Melting/Freezing Point: Melting/Freezing Text: 50.0F,10.0C
Decomposition Point: Decomposition Text: UNKNOWN
Vapor Pressure: NEGLIGIBLE **Vapor Density:** NEGLIGIBLE
Percent Volatile Organic Content:
Specific Gravity: 0.95-1.01
Volatile Organic Content Pounds per Gallon:
pH: N/K
Volatile Organic Content Grams per Liter:
Viscosity: 10-55 CST
Evaporation Weight and Reference: <1 (WATER=1)
Solubility in Water: NEGLIGIBLE
Appearance and Odor: BLACK VISCOUS LIQUID; PETROLEUM OIL ODOR.
Percent Volatiles by Volume: N/K
Corrosion Rate: UNKNOWN

Section 10 - Stability & Reactivity Data
RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6

Stability Indicator: YES
Materials to Avoid:
STRONG OXIDIZING AGENTS.
Stability Condition to Avoid:
AVOID CONTACT WITH STRONG OXIDIZING AGENTS.
Hazardous Decomposition Products:
COMBUSTION MAY PRODUCE CARBON MONOXIDE & CARBON DIOXIDE & REACTIVE HYDROCARBONS.; MAY ALSO PRODUCE OXIDES OF SULFUR, H2S
Hazardous Polymerization Indicator: NO
Conditions to Avoid Polymerization:
NONE SPECIFIED BY MANUFACTURER.

Section 11 - Toxicological Information
RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6

Toxicological Information:
N/P

Section 12 - Ecological Information
RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6

Ecological Information:
N/P

Section 13 - Disposal Considerations
RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6

Waste Disposal Methods:
DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

UNUSED/UNCONTAMINATED PRODUCT IS NOT AN EPA/RCRA WASTE; HOWEVER, IF MIXED WITH OTHER MATERIALS OR HAZARDOUS WASTE, THE PRODUCT MAY B ECOME REGULATED AS SUCH.

Section 14 - MSDS Transport Information
RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6

Transport Information:
N/P

Section 15 - Regulatory Information
RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6

SARA Title III Information:
N/P
Federal Regulatory Information:
N/P
State Regulatory Information:
N/P

Section 16 - Other Information
RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6

Other Information:
N/P
HMIS Transportation Information
Product Identification: RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6
Transporation ID Number: 117415
Responsible Party CAGE: 0BF86
Date MSDS Prepared: 10/01/1993
Date MSDS Reviewed: 09/02/1994
MFN: 09/02/1994
Submitter: D DG
Status Code: C

Container Information

Unit of Issue: GL

Container Quantity: X

Type of Container: BULK

Net Unit Weight: UNKNOWN

Article without MSDS: N
Technical Entry NOS Shipping Number: CONTAINS RESIDUAL FUEL OIL
Radioactivity: N/R
Form:
Net Explosive Weight: N/R

Coast Guard Ammunition Code: N/R
Magnetism: N/P
AF MMAC Code:
DOD Exemption Number: N/R
Limited Quantity Indicator:
Multiple Kit Number: 0
Kit Indicator: N
Kit Part Indicator: N
Review Indicator: Y
Additional Data:

Department of Transportation Information
DOT Proper Shipping Name: FUEL OIL
DOT PSN Code: GOD
Symbols: D
DOT PSN Modifier: (NO. 1, 2, 4, 5 OR 6)
Hazard Class: 3
UN ID Number: NA1993
DOT Packaging Group: III
Label: FLAMMABLE LIQUID
Special Provision(s): B1
Packaging Exception: 150
Non Bulk Packaging: 203
Bulk Packaging: 242
Maximimum Quanity in Passenger Area: 60 L
Maximimum Quanity in Cargo Area: 220 L
Stow in Vessel Requirements: A
Requirements Water/Sp/Other:
IMO Detail Information
IMO Proper Shipping Name: FLAMMABLE LIQUID, N.O.S. o
IMO PSN Code: HIA
IMO PSN Modifier:
IMDG Page Number: 3345
UN Number: 1993
UN Hazard Class: 3.3
IMO Packaging Group: III
Subsidiary Risk Label: -
EMS Number: 3-07
Medical First Aid Guide Number: T
IATA Detail Information
IATA Proper Shipping Name: FLAMMABLE LIQUID, N.O.S. *
IATA PSN Code: MCA
IATA PSN Modifier:
IATA UN Id Number: 1993
IATA UN Class: 3
Subsidiary Risk Class:
UN Packaging Group: III
IATA Label: FLAMMABLE LIQUID
Packaging Note for Passengers: 309
Maximum Quantity for Passengers: 60L

Packaging Note for Cargo: 310
Maximum Quantity for Cargo: 220L
Exceptions:
AFI Detail Information
AFI Proper Shipping Name: GAS OIL OR DIESEL FUEL OR HEATING OIL, LIGHT
AFI Symbols:
AFI PSN Code: MTX
AFI PSN Modifier:
AFI UN Id Number: UN1202
AFI Hazard Class: 3
AFI Packing Group: III
AFI Label:
Special Provisions: P5
Back Pack Reference: A7.3
HAZCOM Label Information
Product Identification: RESIDUAL FUEL OIL, BUNKER C, FUEL OIL NO.4/5/6
CAGE: 0BF86
Assigned Individual: N
Company Name: BP NORTH AMERICA PETROLEUM INC
Company PO Box:
Company Street Address1: 550 WESTLAKE PARK BLVD SUITE 1800
Company Street Address2: HOUSTON, TX 77079-2608 US
Health Emergency Telephone: 800-321-8642/CHEMTREC 800-424-9300
Label Required Indicator: Y
Date Label Reviewed: 09/02/1994
Status Code: C
Manufacturer's Label Number: N/R
Date of Label: 09/02/1994
Year Procured: 1994
Organization Code: G
Chronic Hazard Indicator: Y
Eye Protection Indicator: YES
Skin Protection Indicator: YES
Respiratory Protection Indicator: YES
Signal Word: WARNING
Health Hazard: Moderate
Contact Hazard: Slight
Fire Hazard: Moderate
Reactivity Hazard: None

Material Safety Data Sheet

Section1: Product Identification and Use			
Product Identifier: **Deep Treat**			
Product Use: Nutrient Solution for Bacteria			
Manufacturers Name: Niaski, Inc.		Supplier's Name: Niaski, Inc.	
Street: PMB 445, 11445 E. Via Linda, #2		Street: PMB 445, 11445 E. Via Linda, #2	
City: Scottsdale	State: Arizona	City: Scottsdale	State: Arizona
ZIP: 85259	Emergency Contact: EDMUNDO URIBE 1-480-451-9799	ZIP: 85259	Emergency Contact: EDMUNDO URIBE 1-480-451-9799

Section 2: Hazardous Ingredients			
		Exposure Limits	
Chemical Name/Case Number	%	PEL	TLV
Hydrogen Peroxide (7722-84-1)	40-60	1 ppm	1 ppm

Diluted Deep Treat has a much lower concentration of Hydrogen Peroxide than 40-60% and poses no threat at all.

Section 3: Physical Data

Physical State:	Liquid
Odor and Appearance:	Clear. Odor is same as antiseptic hydrogen peroxide solution.
Odor Threshold:	N/A
Vapor Pressure:	N/A
Vapor Density:	N/A
Evaporation Rate:	Approximately Same as Water
Boiling Point:	100^0 C
Freezing Point:	-1^0 C
PH:	6.7
Specific Gravity:	1.33
Density:	1.33g/cm^3

Coefficient of Water/Oil Distribution:	N/A
UN:	N/A

Section 4: Fire and Explosion Data

Flammability:	Inflammable
Means of Extinguishment:	Non Flammable
Flashpoint:	N/A
Upper Flammable Limit:	N/A
Lower Flammable Limit:	N/A
Auto-ignition Temperature:	N/A
Hazardous Combustion Products:	None

Section 5: Reactivity Data

Chemical Stability:	Stable
Incompatibility with Other Substances:	None
Reactivity:	None (water based)
Hazardous Decomposition Products:	None

Section 6: Toxicological Properties

Route of Entry:	Skin Contact, and Eye Contact, Ingestion
Effects of Acute Exposure:	Eye irritant if product is not diluted.
Effects of Chronic Exposure:	Not determined.
Exposure Limits:	N/A
Irritancy of Product:	Will bleach or irritate skin surface if contact is made with pure product.
Sensitization to Product:	None
Carcinogenicity:	Not Indicated
Teratogenicity:	Not Indicated
Reproductive Toxicity:	Not Indicated
Mutagenicity:	Not Indicated
Synergistic Products:	Not Known

Section 7: Preventative Measures

Personal Protective Equipment

Respirator:	Not necessary, but avoid or ventilate area if entire contents of drum are spilled.
Gloves:	Wear Rubber Gloves During Dilution. Diluted product poses no hazard of any kind.
Eye Protection:	Wear goggles during dilution. Not required for handling of diluted product.
Clothing:	Gloves and goggles. Avoid splashing into eyes.
Footwear:	Rubber or plastic, but not necessary.
Handling Procedures:	Wear rubber gloves and goggles when handling undiluted product.
Leak/Spill:	Avoid contact with material, wear suitable protective clothing if dealing with undiluted product. Stop spill at source. Dilute product if it is not already diluted and recover. If recovery not possible, flush spills to sewer with water.
Waste Disposal:	Dispose in any drain following dilution.
Storage:	Recommend keeping in ventilated area but not necessary and at room temperature.

Additional Information:

If drum is left open, loss of strength will occur.
Conforms To OSHA Regulations

Section 8: First Aid

Ingestion:	Get medical attention. Do not induce vomiting.
Inhalation:	Ventilate the area, or remove person to a ventilated area.
Skin Contact:	Rinse with water.
Eye Contact:	Rinse with water for 15 minutes. Get medical attention.

Section 9 Preparation and Information Update

Prepared By: EDMUNDO URIBE
Niaski, Inc.
Bio-Remediation Division
1-480-451-9799
April 2000

Material Safety Data Sheet

Section1: Product Identification and Use			
Product Identifier: **Desorb A**			
Product Use: Biosurfactant (Wetting Agent)			
Manufacturers Name: Niaski, Inc.		Supplier's Name: Niaski, Inc.	
Street: PMB 445, 11445 E. Via Linda, #2		Street: PMB 445, 11445 E. Via Linda, #2	
City: Scottsdale	State: Arizona	City: Scottsdale	State: Arizona
ZIP: 85259	Emergency Contact: EDMUNDO URIBE 1-480-451-9799	ZIP: 85259	Emergency Contact: EDMUNDO URIBE 1-480-451-9799

Section 2: Hazardous Ingredients

None

Section 3: Physical Data

Physical State:	Liquid
Odor and Appearance:	Odorless. Light pink high-viscosity liquid concentrate.
Odor Threshold:	N/A
Vapor Pressure:	N/A
Vapor Density:	N/A
Evaporation Rate:	Same as Water
Boiling Point:	112^0 C
Freezing Point:	0^0 C
PH:	3.9
Specific Gravity:	1.01
Density:	$1.01 g/cm^3$
Coefficient of Water/Oil Distribution:	N/A
UN:	N/A

Section 4: Fire and Explosion Data

Flammability:	Non Flammable
Means of Extinguishment:	Non Flammable
Flashpoint:	N/A
Upper Flammable Limit:	N/A
Lower Flammable Limit:	N/A
Auto-ignition Temperature:	N/A Extinguishes Fires
Hazardous Combustion Products:	None

Section 5: Reactivity Data

Chemical Stability:	Stable
Incompatibility With Other Substances:	None
Reactivity:	Polymerization with hydrocarbons at 49^0 C
Hazardous Decomposition Products:	None

Section 6: Toxicological Properties

Route of Entry:	Skin Contact, Eye Contact, Ingestion
Effects of Acute Exposure:	None
Effects of Chronic Exposure:	None
Exposure Limits:	N/A
Irritancy of Product:	None
Sensitization to Product:	None
Carcinogenicity:	Not Indicated
Teratogenicity:	Not Indicated
Reproductive Toxicity:	Not Indicated
Mutagenicity:	Not Indicated
Synergistic Products:	Not Known

Section 7: Preventative Measures

Personal Protective Equipment

Respiratory Protection:	None
Skin Protection:	None
Eye Protection:	None
Leak/Spill:	Ventilate any closed area if spilled. Stop spill at source. Dilute product if it is not already diluted and recover.
Waste Disposal:	Dispose in any drain following dilution. Can dispose of diluted product down any drain. Will help purify water and clean plumbing lines.
Storage:	Recommend keeping in ventilated area but not necessary and at room temperature.

Additional Information:

If storage drum is left open, loss of strength will occur.
Conforms to OSHA Regulations

Section 8: First Aid

Ingestion:	Get medical attention. Do not induce vomiting.
Inhalation:	No inhalation hazards.
Skin Contact:	Not a hazard but rinse with water.
Eye Contact:	Rinse with water for 15 minutes. Get medical follow-up.

Section 9: Preparation and Information Update

Prepared By:

EDMUNDO URIBE
Niaski, Inc.
Bio-Remediation Division
1-480-451-9799
April 2000

Section1: Product Identification and Use			
Product Identifier: Meta-Boost			
Product Use: Metabolic Stimulator for Bacteria			
Manufacturers Name: Niaski, Inc		Suppliers' Name: : Niaski, Inc	
Street: PMB 445, 11445 E. Via Linda, # 2		Street: PMB 445, 11445 E. Via Linda, # 2	
City: Scottsdale	State: Arizona	City: Scottsdale	State: Arizona
ZIP: 85259	Emergency Contact: EDMUNDO URIBE 1-480-451-9799	ZIP: 85259	Emergency Contact: EDMUNDO URIBE 1-480- 451-9799

Section 2: Hazardous Ingredients

None: Biological Product

Section 3: Physical Data

Physical State:	Liquid
Odor and Appearance:	Clear liquid with pleasant odor
Odor Threshold:	N/A
Vapor Pressure:	N/A
Vapor Density:	N/A
Evaporation Rate:	Same as Water
Boiling Point:	100^0C
Freezing Point:	- 1^0C
PH:	8.8
Specific Gravity:	1.00
Density:	1.00g/cm^3
Coefficient of Water/Oil Distribution:	N/A
UN:	N/A

Section 4: Fire and Explosion Data

Flammability:	Inflammable
Means of Extinguishment:	Non Flammable
Flashpoint:	N/A
Upper Flammable Limit:	N/A
Lower Flammable Limit:	N/A
Auto-ignition Temperature:	N/A
Hazardous Combustion Products:	None

Section 5: Reactivity Data

Chemical Stability:	Stable
Incompatibility With Other Substances:	None
Reactivity:	None
Hazardous Decomposition Products:	None

Section 6: Toxicological Properties

Route of Entry:	Skin Contact, and Eye Contact, Ingestion
Effects of Acute Exposure:	None
Effects of Chronic Exposure:	None
Exposure Limits:	N/A
Irritancy of Product:	None
Sensitization to Product:	None
Carcinogenicity:	Not Indicated
Teratogenicity:	Not Indicated
Reproductive Toxicity:	Not Indicated
Mutagenicity:	Not Indicated
Synergistic Products:	Not Known

Section 7: Preventative Measures

Respiratory Protection:	None
Skin Protection:	None
Eye Protection:	None
Leak/Spill:	Ventilate any closed area if spilled. Stop spill at source. Dilute product if it is not already diluted and recover.
Waste Disposal:	Dispose in any drain following dilution. Can dispose of diluted product down any drain. Will help purify water and clean plumbing lines.
Storage:	Recommend keeping in ventilated area but not necessary and at room temperature.

Additional Information:

If storage drum is left open, loss of strength will occur.
Conforms To OSHA Regulations.

Section 8: First Aid

Ingestion:	Get medical attention. Do not induce vomiting.
Inhalation:	No inhalation hazards.
Skin Contact:	Rinse with water but not necessary.
Eye Contact:	Rinse with water for 15 minutes but not necessary.

Section 9: Preparation and Information Update

Prepared By: EDMUNDO URIBE
Niaski, Inc.
Bio-Remediation Division
1-480-451-9799
April 2000

Material Safety Data Sheet

Section1: Product Identification and Use			
Product Identifier: **Nitro-Boost**			
Product Use: Nutrient Solution for Bacteria			
Manufacturers Name: Niaski, Inc.		Supplier's Name: Niaski, Inc.	
Street: PMB 445, 11445 E. Via Linda, # 2		Street: PMB 445, 11445 E. Via Linda, # 2 4	
City: Scottsdale	State: Arizona	City: Scottsdale	State: Arizona
ZIP: 85259	Emergency Contact: EDMUNDO URIBE 1-480-451-9799	ZIP: 85259	Emergency Contact: EDMUNDO URIBE 1-480-451-9799

Section 2: Hazardous Ingredients				
		Exposure Limit (ACGIH)		
Name	CAS #	TLV-TWA mg/m^3 TLV-TWA ppm	STEL mg/m STEL ppm	% by weight
Ammonium Nitrate	6484-52-2	10		98.8
Toxicological Data On Ingredients	Ammonium Nitrate: Oral(LD50) Acute: 4500mg/kg (Rat) Dermal(LD50) Acute: 3000mg/kg (Rabbit)			

Section 3: Physical Data

Physical State:	Liquid
Odor and Appearance:	Clear, Odorless
Odor Threshold:	N/A
Vapor Pressure:	N/A
Vapor Density:	N/A
Evaporation Rate:	Approximately Same as Water
Boiling Point:	111 C
Freezing Point:	- 15 C
PH:	4.1
Specific Gravity:	1.6 - 1.8
Density:	1.6-1.8g/cm^3

Coefficient of Water/Oil Distribution:	N/A
UN:	N/A

Section 4: Fire and Explosion Data

Flammability:	Inflammable
Means of Extinguishment:	Non Flammable
Flashpoint:	N/A
Upper Flammable Limit:	N/A
Lower Flammable Limit:	N/A
Auto-ignition Temperature:	N/A
Hazardous Combustion Products:	None

Section 5: Reactivity Data

Chemical Stability:	Stable
Incompatibility with Other Substances:	None
Reactivity:	None
Hazardous Decomposition Products:	None

Section 6: Toxicological Properties

Route of Entry:	Skin Contact, and Eye Contact, Ingestion
Effects of Acute Exposure:	Eye and Skin Irritant Prior to Dilution
Effects of Chronic Exposure:	None
Exposure Limits:	N/A
Irritancy of Product:	Mild Irritant (irritant similar to sea water)
Sensitization to Product:	None
Carcinogenicity:	Not Indicated
Teratogenicity:	Not Indicated
Reproductive Toxicity:	Not Indicated
Mutagenicity:	Not Indicated
Synergistic Products:	Not Known

Section 7: Preventative Measures

Personal Protective Equipment

Respirator:	No inhalation hazards.
Gloves:	Wear Rubber Gloves During Dilution. Not required for diluted product.
Eye Protection:	Wear goggles during dilution. Not required for handling of diluted product.
Clothing:	Gloves and goggles. Avoid splashing into eyes.
Footwear:	Rubber or plastic.
Handling Procedures:	Wear rubber gloves when handling undiluted product.
Leak/Spill:	Avoid contact with material, wear suitable protective clothing if dealing with undiluted product. Stop spill at source. Dilute product if it is not already diluted and recover.
Waste Disposal:	Dispose in any drain following dilution.
Storage:	Recommend keeping in ventilated area but not necessary and at room temperature.

Additional Information:

Will crystallize if drum of concentrate is left and excessive evaporation is allowed to occur. Jelling may occur prior to crystallization. Concentrate corrosive to metal.

Conforms To OSHA Regulations

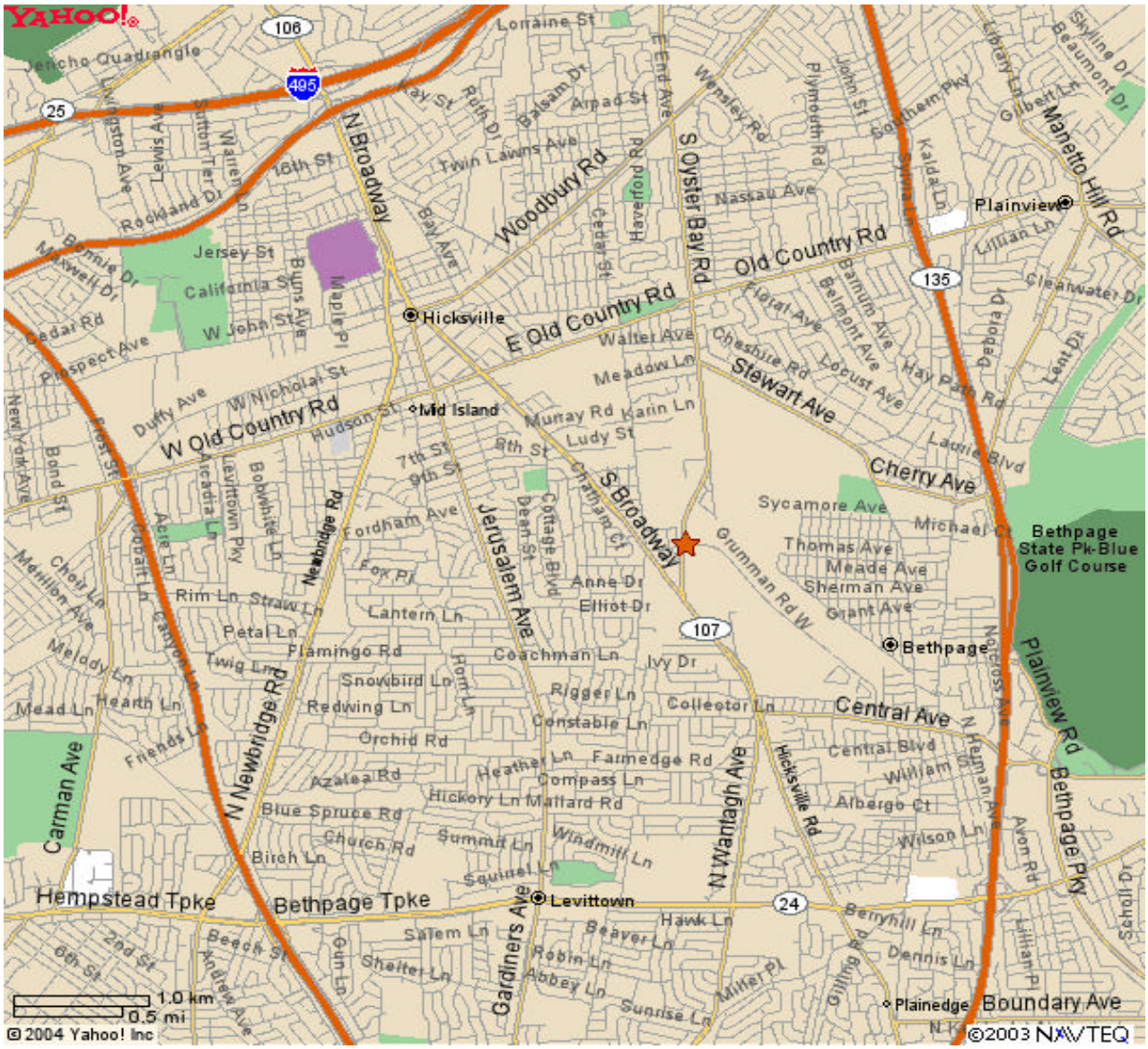
Section 8: First Aid

Ingestion:	Get medical attention. Do not induce vomiting.
Inhalation:	No inhalation hazards.
Skin Contact:	Rinse with water.
Eye Contact:	Rinse with water for 15 minutes. Get medical follow-up.

Section 9 Preparation and Information Update

Prepared By:

EDMUNDO URIBE
Niaski, Inc.
Bio-Remediation Division
1-480-451-9799
April 2000

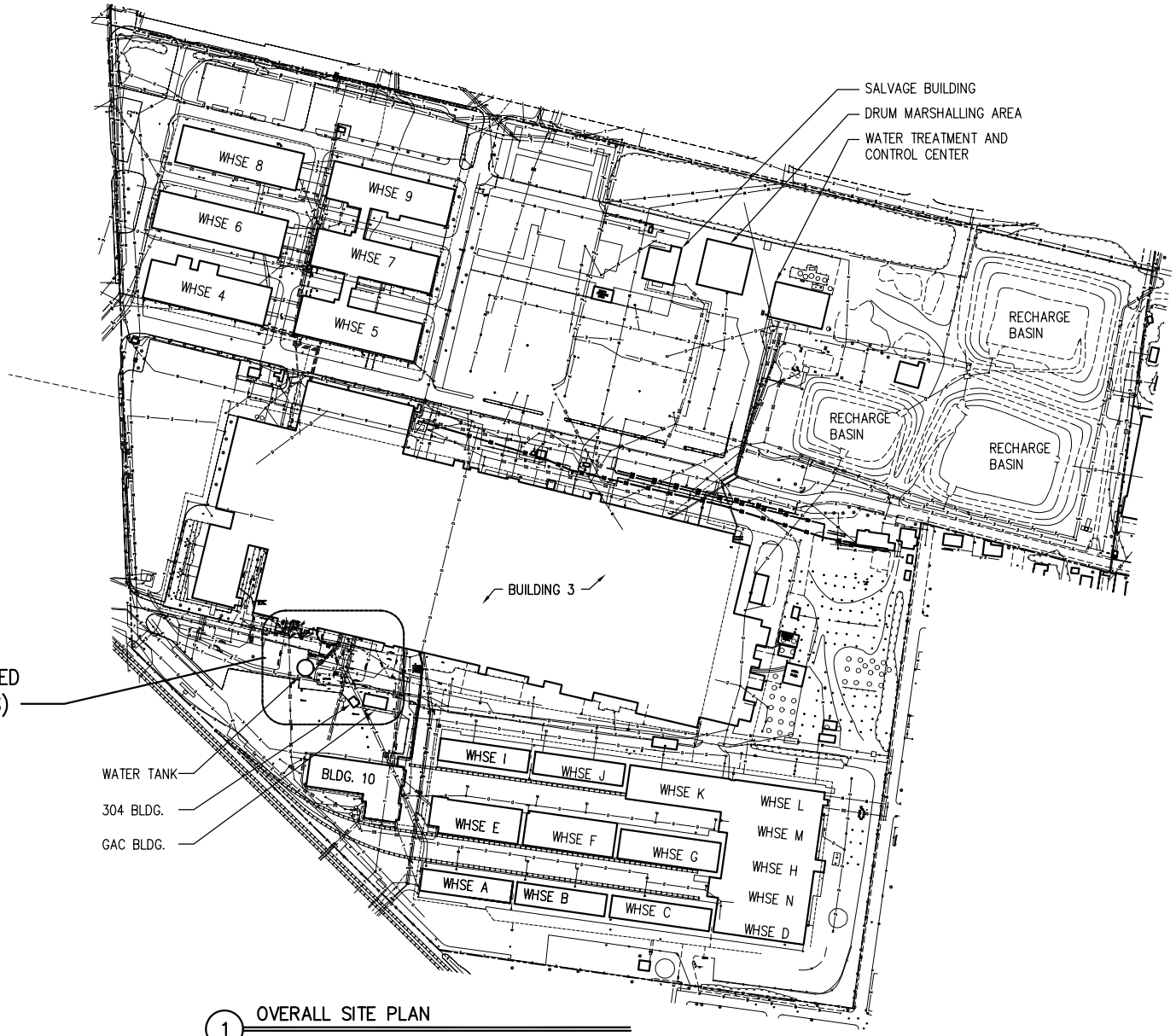


SITE VICINITY MAP

PREPARED FOR

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NEW YORK

Locus TECHNOLOGIES	999 SOUTH OYSTER BAY ROAD BETHPAGE, NEW YORK, 11714
	12-Apr-04
Prepared by; GRG	FIGURE 1



1 OVERALL SITE PLAN
SCALE: NONE

NORTH
0 50' 400' 400'
SCALE: 1"=200'-0"

FIGURE 2

ARUSI
AR UTILITY SPECIALIST INC.
2840 S. 36TH STREET
BUILDING 'E', SUITE '5'
PHOENIX, AZ 85034-7238
TEL: (602) 431-2175
FAX: (602) 431-2163
WWW.ARUSI.NET

CONSULTANTS
LOCUS TECHNOLOGIES
LOCUS TECHNOLOGIES, INC.
668 N. 44TH ST.
PHOENIX, AZ 85008-6547
TEL:(602) 685-1173
FAX:(602) 685-5709
WWW.LOCUSTEC.COM

PROJECT DESCRIPTION
CLOSED-LOOP BIOREMEDIATION PILOT DEMONSTRATION PLANT 3, AREA OF CONCERN 22
999 S. OYSTER BAY RD.
BETHPAGE, NY 11714

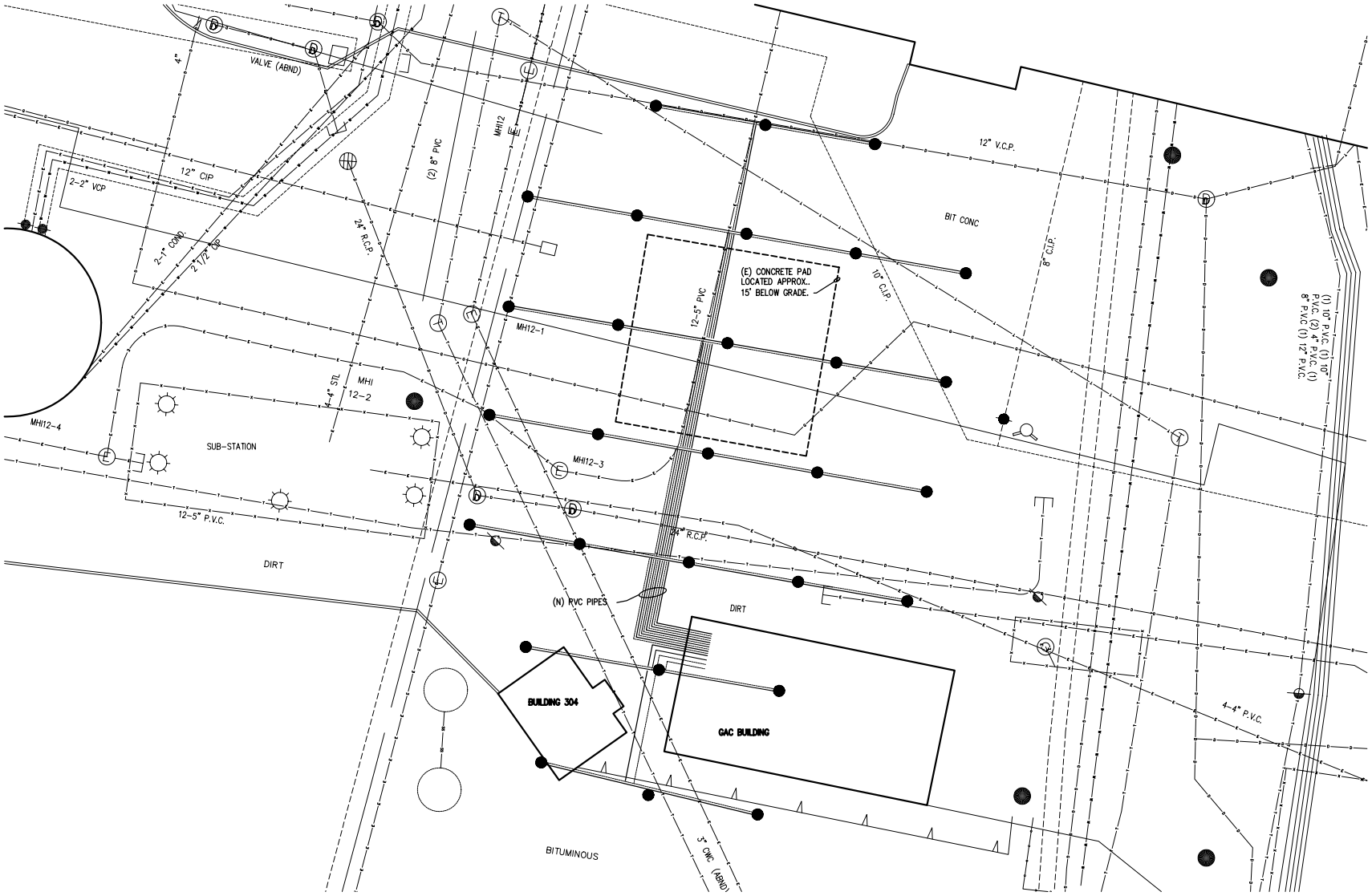
REVISIONS

NO.	DATE	DESCRIPTION	BY
A	3/26/04	ISSUED FOR SUBMITTAL	JE

PROJECT NO: N62472-04-C-XXX
DRAWN BY: JERRY E.
CHECKED BY: DAN L.
CAD DWG FILE:N62472-04-C-XXX
SIZE "D" IF SHEET IS LESS THAN "22x36" IT IS A REDUCED PRINT. SCALE REQUIRED REDUCED ACCORDINGLY

SHEET TITLE
OVERALL SITE PLAN

A1.0
SHEET 2 OF 7



1 ENLARGED SITE PLAN

SCALE: 3/32"=1'-0"

NORTH

0 10' 20' 40'

SCALE: 1"=20'-0"

FIGURE 3

ARUSI
AR UTILITY SPECIALIST INC.
2840 S. 36TH STREET
BUILDING 'E', SUITE '5'
PHOENIX, AZ 85034-7238
TEL: (602) 431-2175
FAX: (602) 431-2163
WWW.ARUSI.NET

CONSULTANTS

LOCUS TECHNOLOGIES
LOCUS TECHNOLOGIES, INC.
668 N. 44TH ST.
PHOENIX, AZ 85008-6547
TEL:(602) 685-1173
FAX:(602) 685-5709
WWW.LOCUSTEC.COM

PROJECT DESCRIPTION

CLOSED-LOOP
BIOREMEDIATION
PILOT DEMONSTRATION
PLANT 3, AREA OF
CONCERN 22

999 S. OYSTER BAY RD.
BETHPAGE, NY 11714

REVISIONS

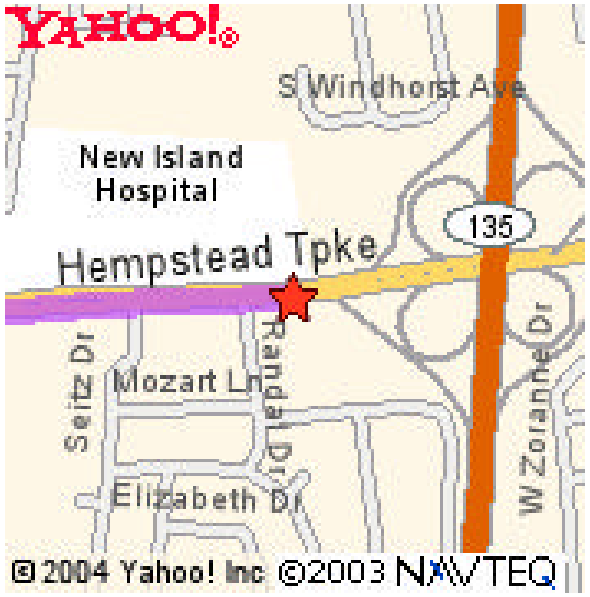
NO.	DATE	DESCRIPTION	BY
A	3/26/04	ISSUED FOR SUBMITTAL	J.E

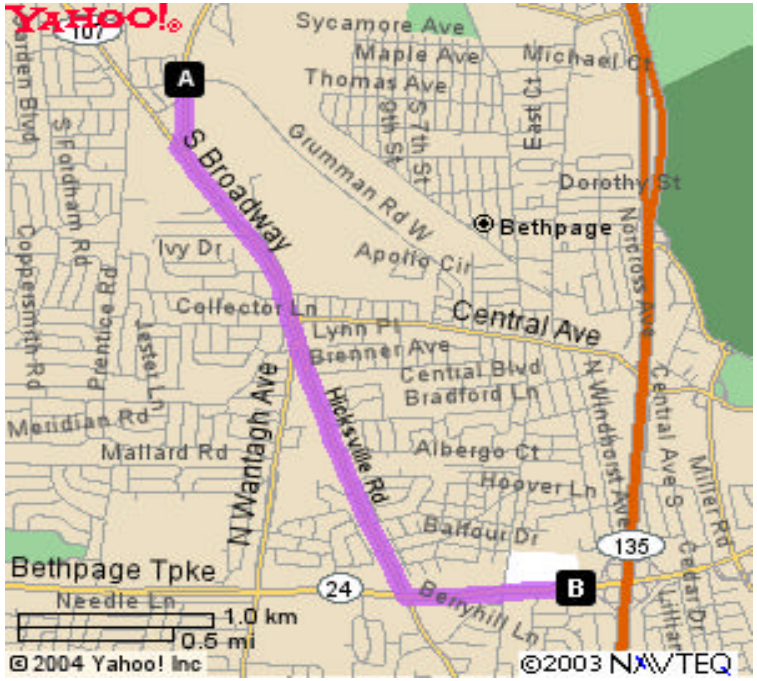
PROJECT NO: N62472-04-C-XXX
DRAWN BY: JERRY E
CHECKED BY: DAN L.
CAD DWG FILE:DRAWING NUMBER
SIZE "D" IF SHEET IS LESS THAN "22x36" IT IS A REDUCED PRINT. SCALE REQUIRED REDUCED ACCORDINGLY

SHEET TITLE
ENLARGED SITE PLAN

A2.0
SHEET 3 OF 7

Mar 29, 2004 - 8:35am - jerrya - \\Pwnas04\Document Control\F. Architectual CAD\B. Drawings\Environmental\New York\Bethpage\a-Pre Design\pdf\BETHPAGE A02.dwg





Directions to New Island Hospital:

Start at 999 South Oyster Bay Road, going towards Grumman Road /West, Hazel Street and go about 0.2 mile. Turn Left onto Hicksville Road/South Broadway and go 0.5 mile.

Continue on Hicksville Road and go less than 0.1 mile.

Continue on Hicksville Road/Hicksville-Massapequa Road and go 1.1 mile.

Continue on Hicksville Road go 0.2 mile.

Turn Left onto Bethpage Tpke/Hempstead Tpke and go 0.6 mile.

Arrive at New Island Hospital.

EMERGENCY ROUTE T0 MEDICAL CENTER

PREPARED FOR

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK

Locus TECHNOLOGIES	**NEW ISLAND HOSPITAL** **4295 HEMPSTEAD TPKE, OYSTER BAY TOWN, NY**
	516.579.6000 14-Apr-04
Prepared by; GRG	**FIGURE 4**

LOCUS TECHNOLOGIES

SITE SAFETY ACKNOWLEDGE FORM

Site:	Project No.:	Date & Time:
Work Activities:		
I have been **informed**, **understand**, and will **abide** by the procedures set forth in the Health and Safety Plan, amendments, addendums, and safety meetings for **ALL** the work activities at the site.		

ATTENDEES

Print Name	Signature	Representing	Date

Safety Meeting Headlines

Job Hazard Analysis:

Work Zones and PPE:

Control Measures:

Hazard Communication:

General Site Safety, Work Rules, and Buddy System:

Confined Space and Entry Permits:

Emergency Communication, Coordination, and Medical Center:

In the event someone encounters what may be considered contaminatiated soil, ground water, material, and/or ANY other type of contamination, ALL the work activities MUST be stopped and the workers must leave the immediate area in question until the situation can be evaluated by Locus Technologies safety team.

Comments: