TRANSMITTAL SHEET

ENVIRONMENTAL PROTECTION

95 APR 10 AM 11:13

US Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento CA 95814 2922

DATE: 7 APRIL 1995

TO: SCOTT SEERY
ALAMEDA COUNTY
DEPARTMENT OF ENVIRONMENTAL HEALTH
1131 HARBOR BAY PARKWAY, ROOM 250
ALAMEDA, CA 94502
510-567-6700

THE ENCLOSED DOCUMENTS ARE BEING TRANSMITTED TO YOU FOR:

[X] REVIEW

DOCUMENTS ENCLOSED:

PROJECT WORK PLAN
REMOVAL OF UNDERGROUND/ABOVEGROUND STORAGE TANKS AND TRANSFORMERS
IN NORTHERN CALIFORNIA

DELIVERY ORDER 5
CON/HTW REMOVAL
NIKE BATTERY 31

FEBRUARY 20, 1995

REMARKS:

PLEASE REVIEW AND PROVIDE COMMENTS (VIA MAIL OR FAX) BY 28 APRIL 1995.

If enclosures are not as listed, please notify us at once.

FROM: BRENDA PEDERSEN
CESPK-ED-E

TEL: (916) 557-6771
FAX: (916) 557-7865

C K Y incorporated
Environmental Services

Indefinite Delivery Contract
For The Removal of
Underground / Aboveground Storage Tanks
&
Transformers in Northern California

Project Work Plan

Contract No. DACA05-94-D-0012

Delivery Order No.0005
Containerized Hazardous Waste
and/or Toxic Waste Removal
Nike Battery 31, San Leandro, California 94577

February 20, 1995

Prepared For:

[redacted]
U.S. Army Corps of Engineers
Sacramento District, Valley Resident Office
P.O. Box 935
West Sacramento, CA 95961-0935

3480 Torrance Blvd., Suite 100, Torrance, CA 90503 • Telephone 310-792-3728 • Fax 310-792-3726

C K Y incorporated
Environmental Services

February 20, 1995

U.S. Army Corps of Engineers
Sacramento District, Valley Resident Office
P.O. Box 935
West Sacramento, CA 95961-0935

Attn: [redacted]

Re: Indefinite Delivery Type Contract for Removal of Aboveground / Underground Storage Tanks and Transformers in Northern California.
Contract No. DACA05-94-D-0012

Subj: Delivery Order No. 0005
Containerized Hazardous and / or Toxic Waste Removal
Nike Battery 31, San Leandro, California

Dear [redacted]

Attached please find eight copies of CKY's Project Work Plan for the above referenced project.

Please call me at (310) 792-3728 if you have any questions.

Sincerely,

Peggy Hall

For Dan Schottlander
Project Manager
CKY, Inc. Environmental Services

3480 Torrance Blvd., Suite 100, Torrance, CA 90503 • Telephone 310-792-3728 • Fax 310-792-3726

C K Y incorporated
Environmental Services

Indefinite Delivery Contract
For The Removal of
Underground / Aboveground Storage Tanks
&
Transformers in Northern California

Project Work Plan

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Containerized Hazardous Waste
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Section A
Summary of Work

Section A
Summary of Work

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SECTION A
SUMMARY OF WORK

The following describes the planned activities at the Nike Battery 31, in San Leandro, California. Included below is a brief site background, an overview of the work to be performed, and specific descriptions of these activities. A substantial portion of the work to be performed is described within the General Management Plan (GMP) for the Indefinite Delivery Contract (IDC), specifically within the Chemical Data Quality Management Plan (CDQMP) section.

A1.0 Background

The work at the Nike Battery 31 site is located on property owned by the East Bay Regional Parks District in San Leandro, California. The work area consists of two sites, the Facilities Area and the Launcher Area. The Park District is using the Facilities Area for administration offices and the Launcher Area as a maintenance facility and storage yard. The missile vaults are not being used. The work includes work on two missile vaults. The missile vaults hydraulic lines will be drained and flushed of any hydraulic fluid. An underground storage tank (UST) and piping and an aboveground storage tank (AST) saddle will also be removed. Contaminated soils will be overexcavated for treatment and disposal at the direction of the COR.

The USTs will be removed and the sites closed in accordance with California Water Quality Control Board and Alameda County regulations and guidelines.

A1.1 Scope of Work

The Delivery Order requires the following tasks be performed:

- At the Facilities Area, remove the CMU block wall and the flue, remove one concrete AST saddle (no tank), and excavate and remove the contaminated soil within the limits of the AST concrete block enclosure. Take two samples as directed by the COR.

- At the Launcher Area, remove a concrete pump vault located approximately 15 feet north of the old power house. (The cover of the pump vault is galvanized sheet metal). Characterize the contents, liquid and sludge, of the UST. Excavate and remove the 6,000 gallon diesel UST located beneath the vault. Remove and dispose of approximately 25 linear feet of underground piping. Take two samples for analysis from the bottom of the excavation and four samples from the excavation sidewalls. Take all samples as directed by the COR. There are two electrical wire bundles in the pump vault. CKY will check to ensure that the electrical wires are not live.

- At the Launcher Area, remove and dispose/recycle in accordance with all Federal, State, and local regulations the hydraulic fluid/water from the hydraulic system in each of the two missile vaults, and clean the hydraulic systems by flushing the system. Also clean the hydraulic fluids that leaked onto the floor.

- Provide a security fence around all open excavations.

- Sampling and analysis shall be as directed by the COR. The types of tests are as listed in the bid schedule. The Laboratory test results shall be provided to the COR.

- All contaminated soil shall be taken to a fixed treatment facility for treatment and disposal. A certificate of destruction shall be obtained for all contaminated soil and copies provided to the COR.

- Backfill excavations with uncontaminated stockpiled soil and imported clean fill material. Contaminated soils shall not be used as backfill material.

- All existing utilities will be protected. If disturbed or damaged, the utilities shall be repaired or replaced in kind.

- Access: Access to the sites will be coordinated through the COR.

A2.0 Overview

The scope of this contract is removal of Underground /Aboveground Storage Tanks and Transformers in Northern California. This Delivery Order covers work to be performed at the Nike Battery 31 in San Leandro, California. One UST and the associated piping and appurtenances, one AST saddle and CMU block wall will be removed and disposed of. Any hydraulic fluid remaining in the two missile vault hydraulic systems will be drained, and the systems flushed. Contaminated soils will be overexcavated for treatment and disposal at the direction of the COR.

CKY has teamed with Remedial Constructors, Inc. (RCI) on this IDC contract. RCI will perform field activities, as well as some administrative activities as the main subcontractor to CKY on this IDC contract. As prime contractor CKY is responsible for all activities performed by itself and its subcontractors. When CKY is referenced herein it shall mean "CKY and its subcontractors". Key personnel for the project are anticipated to be the same as those listed in the GMP. Should scheduling with other delivery orders conflict with this delivery order, then alternate personnel may be required to perform simultaneous delivery orders. If such an occurrence does arise, then alternate personnel will be submitted to the COR prior to beginning any on site activities. An Organizational Chart of planned key project personnel and their lines of authority is attached.

The following sections describe the specific activities to be performed under the delivery order.

A3.0 Schedule

Following approval of this PWP, CKY will commence project scheduling and mobilization activities immediately. All required permits and fees will be submitted to the appropriate regulatory agencies. Work will not commence until permits are approved. The first tasks to be performed include mobilization of

equipment to the site, setup of the initial decontamination area for the site, a preliminary locating and staking of the tank and piping and utility location.

Activities will be performed concurrently at the Launcher Area and the Facilities Area. Activities at the Launcher Area will proceed as follows: Following exposure of the piping and the tank, the piping contents, if any, will be drained into the tank. The piping will then be flushed with water from a high pressure washer. The tank contents will then be sampled for disposal characterization and the tank contents then pumped into trucks and transported to a recycling facility.

At that time, the piping and tank will be removed and hauled away. Sampling of the tank excavation will follow tank removal, and then overexcavation of contaminated soil, if necessary. Finally, site restoration, including backfill, compaction, and resurfacing (as specified in the Delivery Order) will be accomplished prior to demobilization of equipment and personnel from the site.

During the initial locating activities, the missile vaults will be inspected and if liquids are found in the vault, the liquids will be sampled as required. Flushing of the hydraulic lines, will be conducted concurrently with the tank removal.

Activities at the Facilities Area will proceed as follows: The AST saddle and CMU wall will be broken up and disposed of. Contaminated soils will then be overexcavated at the direction of the COR. Soil samples will be taken in accordance with the scope of work and at the direction of the COR. The excavation will then be backfilled with clean fill material.

A4.0 Permits and Inspections

The following agencies were contacted regarding permits required for this project:

- San Leandro Fire Protection District
- Alameda County Department of Environmental Health

- California Regional Water Quality Control Board, Central Valley Region
- Air Quality Monitoring District
- Cal-OSHA

The County of Alameda requires a Tank Closure Permit. CKY will be responsible for obtaining the permit and paying the application fees.

San Leandro Fire Protection District and Alameda County Department of Environmental Health require notification prior to the actual tank removal. CKY will be responsible for giving the County advance notice of tank removal and testing.

CKY will notify the Corps of Engineers representative prior to initiating removal activities.

A5.0 Locating Tanks, Piping, and Utilities

Prior to initiating removal operations, the tank and any associated piping will be located using electronic locating equipment and by correlating site reconnaissance and the supplied maps of the sites. The tank location and its piping will be evaluated to determine what measures, if any, are to be taken to prevent damage to existing structures, appurtenances, monitoring wells, or utilities. Before any excavation commences, the surface area above the tanks will be cleared of any surface debris.

Underground Services Alert (USA) will be notified and the tank location, dimensions, and ancillary equipment will be identified by using marking paint. Any underground utilities not associated with the tanks will be identified by USA using marking paint. Excavation will not performed without prior approval from the COR. Site personnel will be notified of underground utility and tank locations prior to excavation.

A6.0 Exposing Tanks and Piping, Gravity Draining Piping

CKY will expose all known openings in the tank. Concrete and asphalt surfaces will be saw cut as required. The tank will be exposed using a track-mounted excavator or wheeled backhoe until sufficient area is available for purging and inerting the tank. All piping will be uncovered until sufficiently exposed that the piping can be removed.

A7.0 Removal and Disposal of Piping and Piping Contents

The exposed piping will be gravity drained into the tanks by lifting the piping section farthest from the tank first and draining any liquids in the farthest section to sections of piping closer to the tank. Draining will proceed by lifting sections of the piping closer and closer to the tank. The piping will then be flushed with water from a high pressure washer and drained in the same manner as described above. The flushing will remove any residual product, residue and/or solids in the pipeline. The piping will then be disassembled at the joints.

If visual inspection of the piping indicates that the integrity of the piping may be suspect, the flushing will take place in a 30 foot by 10 foot bermed area. The flushing area, located within the exclusion zone, will be lined with 20 ml plastic sheeting.

The atmosphere in the pipe will be monitored for combustible vapors. The instrument probe will be inserted into the ends of the piping without touching the walls of the piping. The piping will be flushed until the flammable vapor concentration is less than 10% of the lower explosion limit. The piping will then be transported to Erickson's facility in Richmond, California where it will be cleaned and cut up for scrap.

Handling and transportation of the tanks and appurtenances will be in accordance with all Federal, State, and local requirements. Erickson, Inc. is a licensed hazardous waste hauler, holding EPA ID No. CAD009466392. Copies

of Erickson's certifications as a hauler and handler of wastes are attached to the GMP. Manifesting of the piping off site will be accomplished according to the procedure described below.

Care will be taken to avoid spillage of any residual liquids onto the ground. If a spill occurs, cleanup will be effected immediately and contaminated soil will be stockpiled along with the other contaminated soil generated during the tank and pipeline excavation activities. Any contaminated soils generated due to the fault of CKY will be stockpiled separately and will be disposed of at CKY's expense. The Spill and Discharge Plan contains complete information regarding prevention and mitigation procedures.

Upon removal, the piping and soil beneath the piping will be inspected for signs of leakage. The inspection will be documented in field notes and photographs. If at any time during tank removal a leak is identified, CKY will notify the COR.

The drained pipeline liquids will be removed from the tanks by a vacuum truck, in accordance with the procedures described below.

A8.0 Sampling, Removal, and Disposal of Tank Contents

The tank contents will be sampled to provide information on proper handling and disposal requirements for the liquid in the tank. The sampling procedure is described in the CDQMP.

A vacuum truck will be used for the removal of liquid and residues from the tanks. The truck is fitted with hoses and a stinger of sufficient size to allow access to the entire tank bottom and its contents. The truck will be grounded during the pumping of flammable liquids by connecting the frame of the truck to a buried ground rod. The vacuum truck will be fitted with a measuring device, either a manual stick or an automatic flow gauge, to allow measurement of the pumped fluids. If feasible, the vacuum truck will be located upwind from the tank and outside the probable path of vapor dispersion. Monitoring for contamination in the area where the vacuum truck is operating will be performed if deemed necessary by the Site Safety Officer. Personal protective

equipment during removal of the tank contents will be sufficient to prevent excess liquids from contacting workers skin and clothing, i.e. modified Level D consisting of coveralls and gloves.

The liquids will be pumped and transported by Erickson for disposal to Gibson Environmental, Redwood City , California. Handling and transportation of the liquids will be in accordance with all Federal, State, and local requirements. Gibson is a permitted Hazardous Waste Facility, holding EPA ID No. CAD043260702. A copy of Gibson's certification is attached to the GMP.

Uniform Hazardous Waste Manifests for the liquids, as well as the tanks and piping, will be filled out by CKY personnel and signed by the COR or if so directed by the COR, the facility's representative. CKY will notify the Contracting Officer 48 hours prior to manifesting materials off site.

A9.0 Tank Inerting Procedures

All appurtenances will be removed and capped, except those necessary to purge the tank. The tank will be inerted by using at least 20 pounds of dry ice per 1,000 gallons of tank volume. Following introduction of the dry ice, the total area of all openings will be limited to ten square inches.

Remote venting of tank vapors will be performed during purging. The remote vent system will consist of piping extending to at least 12 feet above the ground surface. During tank purging, the atmosphere at ground level will be tested periodically while purging is in progress to be sure the vapors are being vented effectively into the upper atmosphere and are not collecting on the ground at unsafe concentrations. If unsafe conditions are encountered then the area will be evacuated and the vapors allowed to disperse.

The tank atmosphere will be continuously monitored for combustible vapors and oxygen deficiency. CKY will demonstrate to the County or Fire District representative that the flammable vapor concentration inside of each tank does not exceed 10% of the Lower Explosive Limit (LEL). The atmosphere inside each tank will be checked at the top and bottom of the tank. Additionally, the

oxygen content inside each tank will be determined to ensure that the tanks have been adequately inerted. An oxygen level of <5% will be required to continue with removal operations.

If initial efforts to inert the tank are ineffective, the tank will be inspected to ensure that all liquids and sludge have been removed. If liquid still remains in the bottom of the tank, it will be removed. Additional dry ice may be added to the tank and the tank atmosphere will be monitored for combustible vapors and oxygen deficiency.

A10.0 Tank Excavation

Excavation of the tank will be accomplished using a track-mounted excavator and / or a wheeled backhoe. CKY will excavate around the perimeter of the tank in a manner that minimizes the area of excavation and limits the amount of potentially contaminated soil mixed with previously uncontaminated soil. Soil from above, below and around the tank will be field screened and stored in separate clean and contaminated stockpiles. Contaminated soil will be separated from clean soil based on visual inspection and field screening techniques. A photoionization detector (PID) will be used as a semi-quantitative field screening method. A photoionization detector (PID) will be used as a semi-quantitative field screening method. During excavation soils that have a strong organic or chemical odor, are visibly stained, or display a high organic vapor reading on the PID (greater than 10 ppm) will be stockpiled separately. Soil with these characteristics are most likely to be contaminated with hydrocarbons. Final determination of contamination will be based on sample analysis. Soil suspected to be contaminated (based on field screening) will stored on and will be covered with plastic. Please see Sampling and Analysis Plan for specific sampling requirements. Note: A palm tree will most likely have to be removed in order to remove the UST. During the site walk it was indicated that the COR would notify CKY if the Park District wished to relocate the tree prior to removal by CKY during the UST removal. CKY will coordinate with the COR prior to removal of the palm tree.

CKY will maintain the minimum size of the excavation around the tank to allow ample room to perform the work, but also protect workers from sliding and / or cave-ins. The tank will be removed without a worker entering the base of the excavation. Excavation wall sloping will be performed in accordance to USACE guidelines, with the maximum slope being no more than 1-1/2 horizontal to 1 vertical. In the event an excavation may compromise the integrity of a nearby structure, CKY will submit an excavation plan to the COR for approval. All surface water will be diverted via earthen berms to protect direct entry to excavations. Dewatering of excavations will be limited to that necessary to assure a safe excavation.

For the work to be performed in the bus maintenance facility, if actual site conditions warrant it, then a shoring plan will be submitted to the COR.

A11.0 Tank Removal

Removal of the tank will be accomplished using an appropriately sized crane. Upon approval from the COR, the Fire Protection representative and Alameda County Department of Environmental Management, the tank will be removed from it's excavation and loaded onto Erickson's truck for removal from the site. After removal from the ground, all loose dirt will be removed so that it will not be inadvertently lost during transport and to allow close inspection. Each tank will be visually inspected for excessive corrosion or holes that would indicate a possible leak. If a leak is discovered, the COR will be immediately notified.

After the tank is removed from the ground, and the soil is determined by the CO to be contaminated, CKY will excavate an additional 2 feet below the invert of the tank. The soil will be sampled and tested to determine if contamination exists at this depth. If contamination is still present, the CO will provide direction to the Contractor concerning further site remediation activities.

A12.0 Tank Disposal

The tank will be hauled from the site under Uniform Hazardous Waste Manifest by Erickson, Inc.. Manifesting of the tanks off site will be accomplished according to the procedure described above. Except for the vent holes, the tank openings will remain capped during transport to Erickson. Prior to leaving the site, each tank will be labeled in a minimum of 2-inch lettering with the following:

- Former contents
- Present vapor state, including method of freeing and date of removal
- "NOT SUITABLE FOR STORAGE OF FOOD OR LIQUIDS INTENDED FOR HUMAN OR ANIMAL CONSUMPTION"
- If the tank contained leaded gasoline, "TANK HAS CONTAINED LEADED GASOLINE. LEAD VAPORS MAY BE RELEASED IF HEAT IS APPLIED TO THE SHELL OF THIS TANK".

The tank will be transported to Erickson's facility in Richmond where they will be cleaned and cut up for scrap. A certificate of destruction for each tank scrapped by Erickson, Inc. will be provided to the COR upon its receipt by CKY.

A13.0 Soil Stockpile

As stated previously, all excavated soil will be stored in separate clean and contaminated stockpiles at each excavation. Following receipt of laboratory test results, soil determined to be contaminated will be transferred to a permitted fixed treatment facility. Alameda County has not informed CKY of a action level for hydrocarbon contaminated soils for this project. Alameda County considers each site on a case by case basis. Alameda County also requires that it review all sample analysis prior to backfilling or disposal of excavated soils. Therefore, final determination of status of soil will be determined by Alameda

County Department of Environmental Health and the COR. No soils will be hauled offsite or used as backfill without permission from the COR. It is anticipated that the levels of contamination encountered at the site will be sufficiently low to allow disposal at Forward Landfill, in Stockton, California. Copies of Forward's permits are attached to the GMP.

A perimeter fence will be constructed around the excavation and stockpile per the IDC. Specifically, the fence will be constructed of either safety plastic or chain-link, a minimum of five feet high, and installed continuously around the stockpile so it is taut and free of sags. If used fencing materials are used, they will be in serviceable condition without sharp, unsafe ends. Lighted barricades, operating from dusk to dawn, will be installed at the fence.

Soil samples will be collected from the stockpiled of suspected contaminated soil at each excavation. The samples shall be from widely spaced locations. Sampling procedures will be as described in the CDQMP. The type of analyses performed will be as specified in the Sampling and Analysis Plan, Section B of this PWP. Prior to collecting soil samples from the contaminated soil stockpiles, the sampling methodology and frequencies will be discussed with the COR. Soil samples will then be taken as directed by the COR.

A14.0 Aboveground Tank Saddle Removal

The tank saddle, CMU wall and flue will be disassembled where possible and then removed with the aid of a backhoe. The saddle, wall and flue will be disposed of in a Class III landfill.

Sampling of the soil under the saddle will be performed after removal of the contaminated soils.

A15.0 Missile Vaults

This phase of work is intended to protect the groundwater in the future from potential contamination due to hydraulic fluid from the missile operating

systems leaking into the groundwater. The missile vaults contain several hydraulic systems which previously moved missiles into position, opened doors, etc.

The hydraulic systems will be drained of any fluids by dismantling the piping at joints and draining to the lowest point. Fluid will be collected in drums or small portable tanks. The piping will then be flushed with a dilute (30 to 1) solution of Penetone and water. Refer to the Site Specific Safety and Health Plan for information on Penetone. Flushing solution will be collected in drums or small portable tanks. Any spills or stains will be cleaned up with the Penetone solution and the absorbent material disposed of in accordance with all local, State, and Federal regulations.

Liquids generated during draining and flushing will be pumped and transported by Erickson for disposal at Gibson Environmental, Redwood City California using the same procedures described above for the tank contents.

A16.0 Site Restoration

Following completion of soil removal and sampling activities, and upon notice to proceed from the COR, CKY will close the tank and piping, and contaminated soil excavations. Stockpiled material subjected to chemical testing will be used as backfill if it is found to conform to the requirements of clean fill, i.e. it is found to be not contaminated according to the criteria described above.

Surfaces of sites verified to be clean will be restored to their original condition. If the site is not clean and requires further remediation, the site will be restored to original grade, but the Site Closure Report will note that further remediation is still required .

Backfill material will be obtained from a local supplier and will consist of all required material. The backfill will be compacted in accordance with the IDC.

A17.0 Miscellaneous

A Site Closure Report will be prepared after completion of work according to the outline in the IDC. The report will include a cover letter certifying that all services have been performed in accordance with the terms and specifications of the contract, a narrative report describing the condition and contents of the UST, signs of leaks, results of monitoring, quantities of materials treated or removed, results of laboratory analysis of the tank contents and soil, sampling locations, materials and methods used to backfill excavations, depth to groundwater if encountered, copies of all analyses performed for disposal and manifests, copies of all disposal certifications, one line drawings of the site, progress photographs, and a tank closure certificate. Similar information on the hydraulic lifts will be provided.

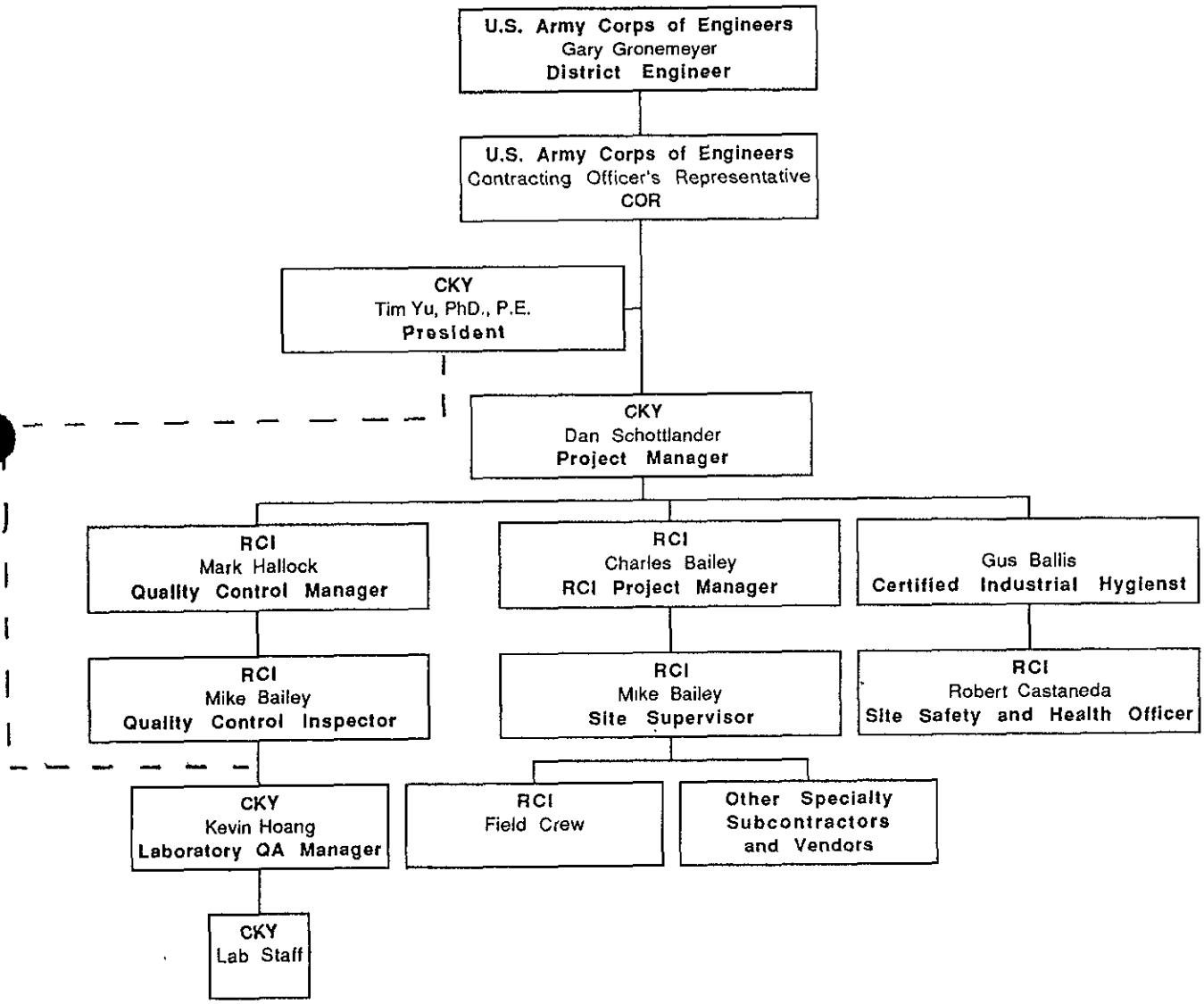
ORGANIZATIONAL CHART

Organizational Chart

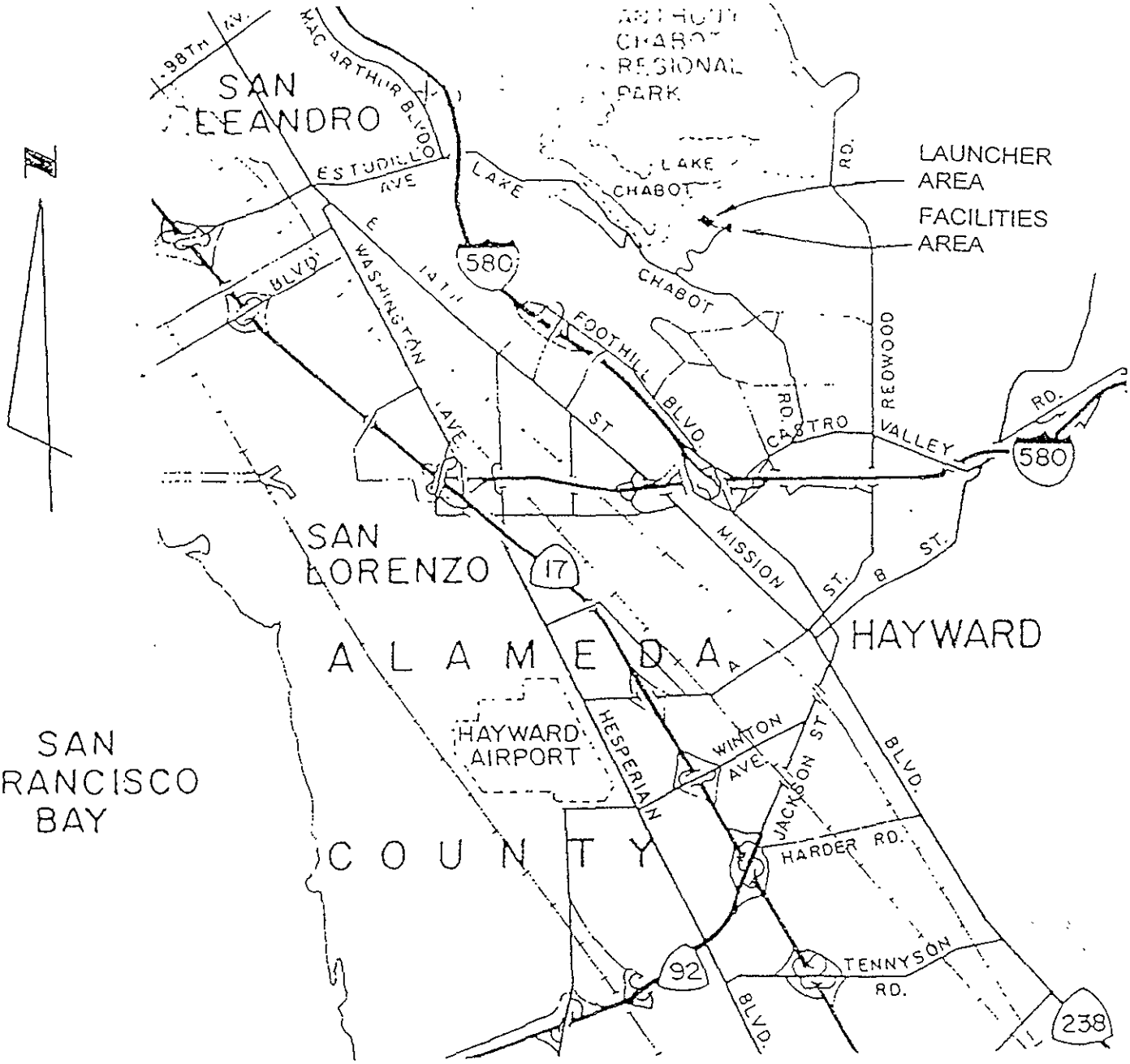
Indefinite Delivery Contract for Removal of Underground / Aboveground Storage Tanks and Transformers in Northern California

Contract No. DACA05-94-D-0012

Nike Battery 31
San Leandro, California
Delivery Order No. 0005

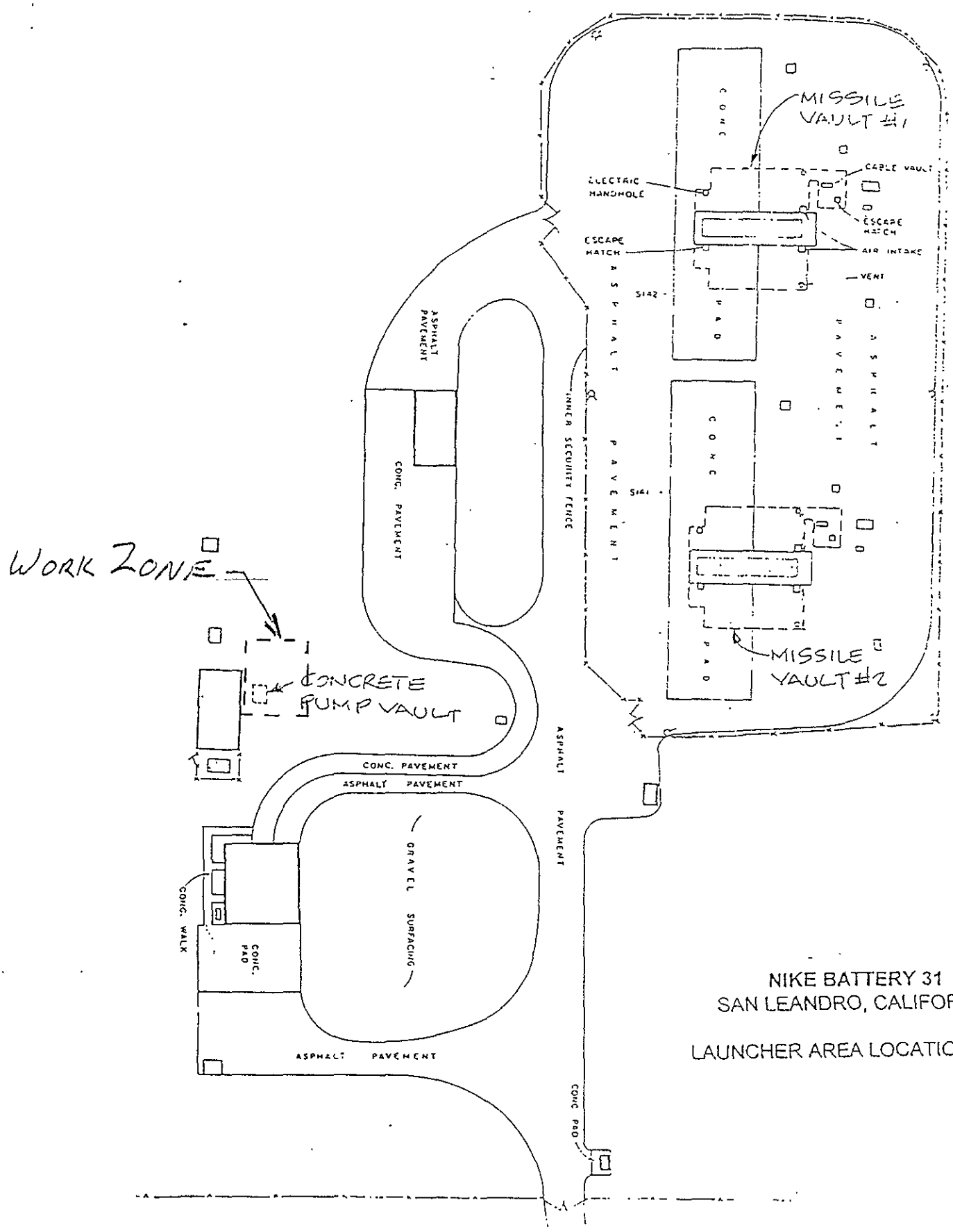


SITE MAP



NIKE BATTERY 31
SAN LEANDRO, CALIFORNIA

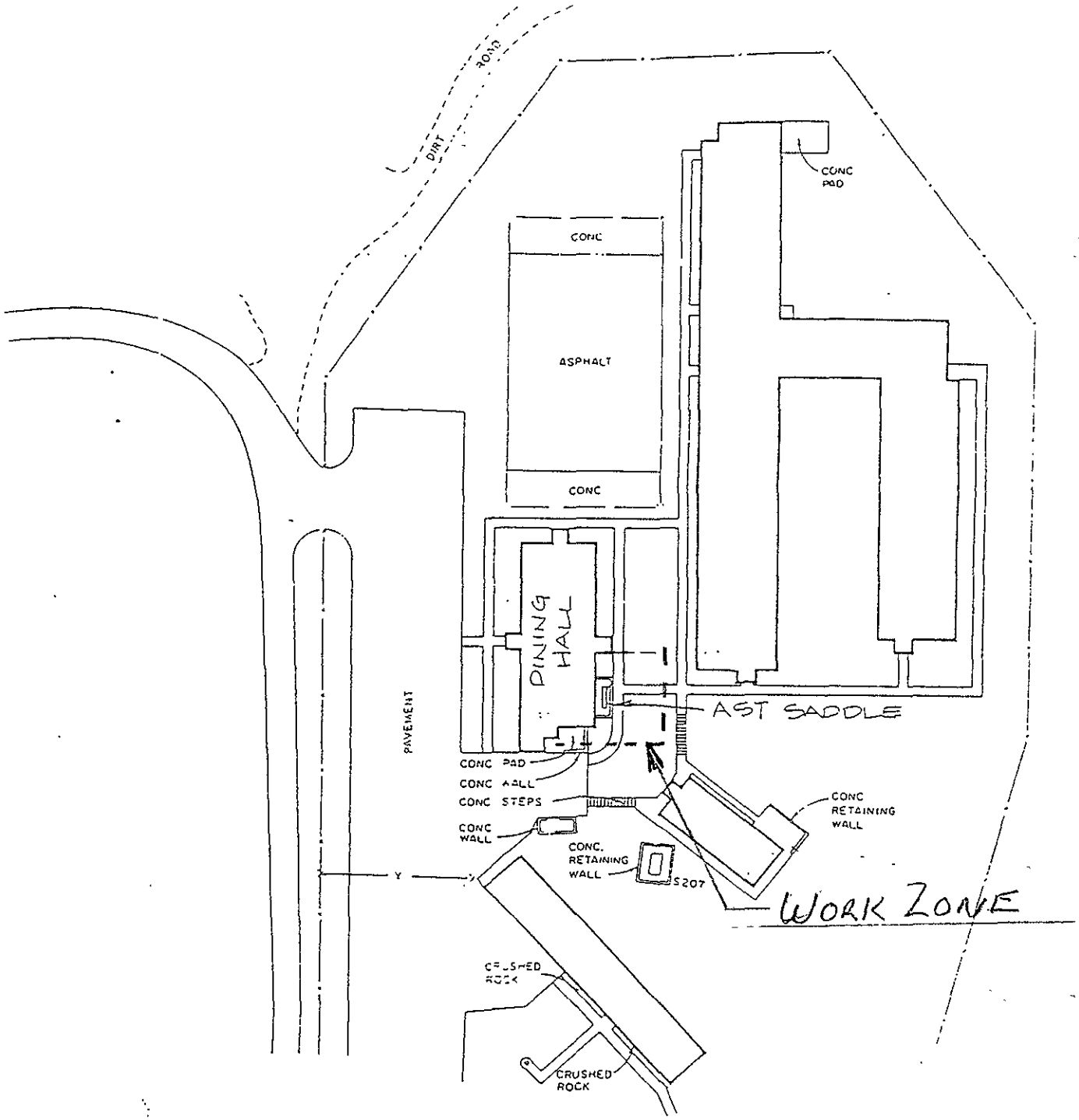
AREA MAP



NIKE BATTERY 31
SAN LEANDRO, CALIFORNIA

LAUNCHER AREA LOCATION MAP

ATTACHMENT 3



NIKE BATTERY 31
SAN LEANDRO, CALIFORNIA

FACILITIES AREA LOCATION MAP

ATTACHMENT 2

Section B
Sampling and Analysis Plan

Section B
Sampling and Analysis Plan

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SECTION B
SAMPLING AND ANALYSIS PLAN

This Sampling and Analysis Plan describes the sampling locations and procedures to be used by CKY during work activities at the Nike Battery 31 in San Leandro, California. These activities will be performed in accordance with Indefinite Delivery Contract (IDC) No. DACA05-94-D-0012, as well as Delivery Order No. 0005 of the IDC. The Sampling and Analysis Plan (SAP) is submitted as part of the comprehensive site-specific Project Workplan (PWP) required under the IDC. Note that most of the information normally included in a SAP has been presented in the Chemical Data Quality Management Plan (CDQMP) submitted as part of the General Management Plan (GMP). It is therefore recommended that the reader have available a copy of the GMP for reference.

This Delivery Order covers work to be performed at the Nike Battery 31 in San Leandro, California. One UST and the associated piping and appurtenances, one AST saddle and CMU block wall will be removed and disposed of. Any hydraulic fluid remaining in the two missile vault hydraulic systems will be drained, and the systems flushed. Contaminated soils will be overexcavated for treatment and disposal at the direction of the COR.

Section A of the PWP details the planned closure and removal of one 6,000 gallon diesel UST, piping and ancillary equipment and one AST saddle. Any hydraulic fluid remaining in the two missile vaults systems will be drained, and the system flushed.

B1.0 Sampling Locations

Soil samples will be collected from the tank and piping, and AST excavations and from the excavated backfill in accordance with California Water Quality Control Board and Solano County regulations and guidelines. Based on information from other nearby sites, groundwater is not expected to be encountered in the excavations. Samples of the liquids remaining in the tanks, piping (drained into tanks) and vaults will be collected.

B1.1 Pipeline Sampling

A minimum of one soil sample will be collected along the invert area of the excavated pipelines at 20 foot intervals. Additional soil samples will be collected at obvious areas of contamination. The samples will be taken from undisturbed soil from directly below the pipeline. The intervals may also be adjusted so the sample is collected at a pipe joint. The joints are the locations where leaks are most likely to occur. Prior to taking soil samples, the proposed locations will be discussed with the COR and the County representative. Samples will then be collected as directed by the COR.

B1.2 UST Excavation / AST Saddle Excavation Sampling

A minimum of two soil samples will be taken under each end of the 6,000 gallon diesel UST. In addition, one soil sample will be taken from each sidewall for a total of four samples. The soil samples taken in the AST saddle excavation will as described for the UST. Two samples will be taken from the excavation bottom and one from each sidewall. Samples are normally taken 2 feet into native soil. If groundwater is encountered, the same number of samples shall be taken 6 inches above the soil/groundwater interface. One sample of the groundwater shall also be collected. Additional soil samples will be collected at the direction of the COR.

B1.3 Stockpile Sampling

Excavated soil from above, below and around each tank and pipeline and for the AST excavation will be field screened and stored in separate clean and contaminated stockpiles at each excavation. Contaminated soil will be separated from clean soil based on visual inspection and field screening results. A photoionization detector will be used as a semi-quantitative field screening method. During the excavation soils that have a strong organic or chemical odor, are visibly stained, or display a high organic vapor reading on the PID (greater than 10 ppm) will be stockpiled separately.

Samples of stockpiled soils that are suspected to be contaminated will be collected to determine if the excavated soil is contaminated or may be used as backfill. CKY suggests that a composite stockpile sample (4:1) be collected for every 50 cubic yards of excavated soil. The samples will be taken at least one foot below the surface of the stockpile in regularly spaced intervals. Prior to collecting soil samples from the contaminated soil stockpiles, the sampling methodology and frequencies will be discussed with the COR. Soil samples will then be taken as directed by the COR.

B1.4 Sampling of Liquids

A sample of residual liquids in each tank will be collected to properly characterize the liquids for disposal. The samples will be collected after the piping has been drained and flushed into the tank. Additionally a grab sample of sludge will be collected from the tank.

B1.5 Additional Samples

One each QA and QC samples will also be collected for every ten samples taken or as directed by the COR.

Additional samples will be collected as directed by the COR or the County's representative.

B2.0 Sampling Methods

The methods used to obtain soil and groundwater samples are described fully in the GMP. None of the sampling methods will require personnel to enter any excavation over four feet deep.

Sampling of the tank liquids will be accomplished using a pre-cleaned, inert disposable bailer. A new bailer will be used to sample each tank. The bailer will be lowered into the tank via a clean string until full, then removed. Insertion of a disposable transfer tube (a new tube comes with each bailer, pre-cleaned) allows the liquid to be transferred to sample containers with little disturbance.

Sampling of the transformer dielectric fluids will be collected using a long nose plastic aspirator. After confirming the transformer has been de-energized, the lid will be unclamped/unbolted. Once opened, the sample will be collected with the aspirator and placed into a clean, glass sample container. A new aspirator will be used for each sampling event.

B3.0 Sample Handling and Transportation

All samples collected as part of this Delivery Order will be handled and transported as described in the CDQMP. The CDQMP details labeling, custody, logging, packing, and shipping procedures.

B4.0 Sample Analysis

All samples will be shipped to CKY, Inc., Torrance, California for analysis. Table B-1 summarizes the sample parameters, analytical methods, and other pertinent information for soil samples to be collected.

TABLE B-1

Tank Size (gallons)	Contents	Minimum Number Soil Samples	Analytical Methods
6,000	diesel	6	TPH-d EPA 8010 EPA 8020
AST Saddle Excavation	Diesel	6	TPH-d EPA 8010 EPA 8020
Contaminated Soil Stockpiles	Diesel	As Directed by COR	TPH-d EPA 8010 EPA 8020

Samples from beneath all tanks and piping, AST saddle excavation, and contaminated soil stockpiles will be analyzed for total petroleum hydrocarbons for Diesel (TPH-d) by CA DHS LUFT Method for TPH-Diesel, volatiles by EPA Method 8010, and for benzene, toluene, ethylbenzene, and xylene (BTEX) by EPA Method 8020. Groundwater samples (if collected) will be analyzed for TPH-d by CA DHS LUFT Method for TPH-Diesel, for volatiles by EPA Method 8010, and for BTEX by EPA Method 8020.

CKY will collect one liquid sample from the 6,000 gallon UST rinsate. The sample will be analyzed for total petroleum hydrocarbons for Diesel (TPH-d) by CA DHS LUFT Method for TPH-Diesel, volatiles by EPA Method 8010, and for benzene, toluene, ethylbenzene, and xylene (BTEX) by EPA Method 8020.

More complete information is presented in the CDQMP, including specific method procedures, calculations, data reduction, QA/ QC, etc.

B5.0 Sample Quality Assurance / Quality Control

One each QA and QC samples will also be collected for every ten samples taken or as directed by the COR. Comprehensive and detailed information

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regarding sampling and analysis quality assurance and quality control (QA / QC) is presented throughout the CDQMP.

The QC samples will be sent to CKY, Inc., Torrance, California for analysis.

The QA samples will be sent to:

U.S. Army Corps of Engineers, South Pacific Division Laboratory
Environmental Section
25 Liberty Ship Way
Sausalito, CA 94965
Attn: Mr. Gordon Liu
Telephone: (415) 332-9693
FAX: (415) 332-9697

CKY will notify the Corps QA Laboratory POC, Mr. Gordon Liu, 24 hours prior to shipment of QA samples to the Corps laboratory.

B6.0 Contract Laboratory

CKY, Inc. of Torrance, California is the approved laboratory under the IDC. The GMP details the qualifications and necessary approvals to act in this capacity. The GMP contains a copy of CKY's certification from the Corps of Engineers.

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Site Specific Safety and Health Plan

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Attachments

SECTION C
SITE SPECIFIC SAFETY AND HEALTH PLAN

This Safety and Health Plan has been formulated to set forth the guidelines for Safety and Health issues and appropriate procedures to be followed during the removal of one underground storage tank and one aboveground storage tank saddle, removal of overexcavated contaminated soils and the removal of hydraulic fluid in the vaults at the Nike Battery 31 in San Leandro, California.

C1.0 CKY Corporate Safety and Health Program

CKY Inc. maintains a comprehensive Safety and Health Program consistent with the guidelines and requirements presented in the following documents:

- OSHA Safety and Health Standards, 29 CFR 1910/1926, US Department of Labor, Occupational Safety and Health Administration.
- OSHA Standard, 29 CFR 1926.65, Hazardous Waste Operations and Emergency Response.
- Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, NIOSH/OSHA/EPA/USCG, DHHS (NIOSH) Publication No. 85-115, 1985.
- US Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1.
- USACE, Appendix B, Safety and Occupational Health Document Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities, ER 385-1-92.
- American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values and Biological Exposure Indices for 1994-1995.
- CAL-OSHA, 8 CCR Chapter 4, Subchapter 7, General Safety Orders.

- CAL-OSHA, 8 CCR Chapter 4, Subchapter 4, Construction Safety Orders.

C2.0 Key Personnel and Organization

The Safety and Health designees and their general responsibilities are presented below.

Project Manager:

Mr. Schottlander is responsible for all site activities including:

- Ensuring that Safety and Health requirements are met,
- Briefing field team on specific duties,
- Controlling site access, and
- Providing liaison with public officials.

Safety and Health Officer:

As the project Safety and Health Officer and Certified Industrial Hygienist, Mr. Ballis is responsible for assisting in the development of this Safety and Health Plan in compliance with OSHA standards and CKY safety and health policies. Additional responsibilities include:

- Modifying and/or developing new safety and health procedures as necessary.
- Ensuring all onsite personnel have been medically certified and trained in accordance with applicable OSHA standards in order to perform field activities.
- Reviewing medical surveillance procedures as outlined in CKY's Health and Safety Plan.
- Conduct initial site-specific training.
- Be available for consulting on first day of removal activities and for emergencies.
- Review accident reports, air monitoring reports, and daily inspection reports,
- Select respiratory protection, personal protective equipment, and levels of protection.

- Authorizing a stop-work order if he determines, in consultation with the Site Safety Officer, that a safety hazard or potentially dangerous situation exists.

Site Safety and Health Officer

Mr. Robert Castaneda will act as Site Safety and Health Officer (SHO). Mr. Castaneda has over 16 years experience in the construction industry and over 7 years in hazardous waste operations. He has extensive experience in the removal and installation of underground storage tank systems; underground construction, including utilities, concrete vaults, and retaining walls; projects involving poured-in-place concrete; and demolition.

Onsite safety and health concerns will be the responsibility of Mr. Castaneda. Specific responsibilities include:

- Selecting the proper level of personal protective equipment (PPE) and respiratory protection in accordance with this Site Safety and Health Plan, and ensuring its use by all onsite employees.
- Regularly inspecting all PPE and providing proper maintenance and storage of PPE.
- Monitoring all onsite workers for signs of stress (e.g., heat stress, cold exposure, toxic exposure, and general fatigue).
- Participating in the preparation of the Site Safety and Health Plan and ensuring its implementation on site.
- Conducting safety briefings for onsite personnel.
- Implementing evacuation procedures and coordinating emergency onsite medical care and services, when necessary.
- Keep the Safety and Health Officer apprised of any conditions not covered in this site-specific Safety and Health Plan.

Project Personnel

CKY and subcontractor personnel who constitute the field team will have the following individual and collective responsibilities:

- Read and be thoroughly familiar with all aspects of the Site Safety and Health Plan.
- Complete all assigned tasks in compliance with the Site Safety and Health Plan.
- Notify the Site Safety Officer of any potentially unsafe conditions.
- Attend all onsite safety meetings.
- The field team will include at least two individuals with current CPR and First-Aid training.

C3.0 Scope of Work

The objective of this project is to perform the sampling, analysis, removal, and disposal of one underground storage tanks (UST), pipes, appurtenances, and contents; removal and disposal of one aboveground tank (AST) saddle; the sampling, removal and disposal of contaminated soils; and the removal of hydraulic fluids (if present), cleaning the hydraulic system (if hydraulic fluids are present). The work at the Nike Battery 31 site is located on property owned by the East Bay Regional Parks District in San Leandro, California. The work area consists of two sites, the Facilities Area and the Launcher Area. The Park District is using the Facilities Area for administration offices and the Launcher Area as a maintenance facility and storage yard. The missile vaults are not being used. The Delivery Order requires the following tasks be performed:

- At the Facilities Area, remove the CMU block wall and the flue, remove one concrete AST saddle (no tank), and excavate and remove the contaminated soil within the limits of the AST concrete block enclosure. Take two samples as directed by the COR.

- At the Launcher Area, remove a concrete pump vault located approximately 15 feet north of the old power house. (The cover of the pump vault is galvanized

sheet metal). Characterize the contents, liquid and sludge, of the UST. Excavate and remove the 6,000 gallon diesel UST located beneath the vault. Remove and dispose of approximately 25 linear feet of underground piping. Take two samples for analysis from the bottom of the excavation and four samples form the excavation sidewalls. Take all samples as directed by the COR. There are two electrical wire bundles in the pump vault. CKY will check to ensure that the electrical wires are not live.

- At the Launcher Area, remove and dispose/recycle in accordance with all Federal, State, and local regulations the hydraulic fluid/water from the hydraulic system in each of the two missile vaults, and clean the hydraulic systems by flushing the system. Also clean the hydraulic fluids that leaked onto the floor.

C4.0 Potential Health and Safety Hazards

C4.1 Public Health and Safety

The site activities pose minimal risk, if any, to the public. Potential risks to public Safety and Health are limited to physical injury and exposure to chemical contaminants during site work and hauling of excavated materials. To avoid this risk, the project site will be partitioned off to prevent unauthorized access, and warning signs will be posted at regularly spaced intervals. Designated trucking route will be established and adhered too during the hauling of any materials. A security fence will placed around all open excavations.

C4.2 Worker Health and Safety

Potential hazards at the site include chemical hazards associated with the removal and excavation of contaminated soil and physical hazards from lifting, tripping, equipment operations, falling and excessive noise levels. This Site Specific Safety and Health Plan describes CKY's standard procedures for ensuring worker safety at the project site. This plan describes potential hazards to safety and health, the measures to be taken by CKY personnel and subcontractors to minimize those risks, and procedures to be followed in the event of an emergency onsite. See also the attached Hazard Analysis and Chemical Hazards.

C4.2.1 Chemical Hazards

Diesel fuel and hydraulic fluid are the chemicals of concern at the project site. Diesel fuel and hydraulic fluid are petroleum products which are complex mixtures of light to middle petroleum based hydrocarbons. They may have extremely low levels of additives that could be carcinogenic and inhalation of their vapors should be avoided. Acute toxicity associated with exposure to these materials is anticipated to be very low. Some degree of skin irritation is possible with prolonged contact to unprotected skin.

Diesel Fuel

Includes a wide variety of petroleum compounds which are generally found in the light hydrocarbon range. Acute exposure to these substances may result in skin, eye, and lung irritation. These substances are less volatile than gasoline, but are potentially combustible.

Exposure Routes: Inhalation and ingestion

Exposure Limits: OSHA PEL = None Published

ACGIH TLV = None Publish

Hydraulic Fluid

Includes a wide variety of used petroleum compounds which are generally found in the light hydrocarbon range. Acute exposure to these substances may result in skin, eye, and lung irritation. These substances are less volatile than gasoline and diesel fuel, but are potentially hazardous.

Exposure Routes: Inhalation and ingestion

Exposure Limits: OSHA PEL = None Published

ACGIH TLV= None Publish

Dust

Inhalation of dust particulates can result in mild irritation of the respiratory tract

Exposure Routes: Inhalation and ingestion

Exposure Limits: OSHA PEL = 10 mg/m3 (TOTAL Dust)

ACGIH TLV= 10 mg/m3 (TOTAL Dust)

C4.2.2 Physical Hazards

Physical hazards are inherently present during field operations. Physical hazards present at the project site will include the mechanical hazards and noise exposure associated with the operation of heavy equipment, slip-trip-fall hazards associated with operations conducted in a field environment, and skeletal-musculature injury hazards resulting from activities performed outdoors. The typical physical hazards present on the site and methods to prevent injury due to these hazards are described below.

Heavy Equipment Operation

The safety hazards associated with the operation of heavy equipment can be effectively eliminated by the employee if a constant awareness of these hazards is maintained. Constant visual or verbal contact with the equipment operator will facilitate such awareness.

Slip, Trip & Fall Hazards

While it is difficult to prevent slip-trip-fall hazards, risk of injury will be minimized by implementing proper site control measures such as daily safety meetings, proper footwear, and by keeping the work area free of obstructions.

Lifting Hazards

Field operations often require that heavy physical labor tasks be performed. All employees will be instructed in proper lifting techniques. Additionally, employees will be instructed to not attempt to lift large or heavy objects without assistance.

Tool and Equipment Hazards

Safety hazards present during the use of tools and equipment are generally associated with improper tool handling and inadequate maintenance. Management of these hazards involve rigorous maintenance of tools and equipment and effective training of employees in the proper use of these tools.

Confined Space Entry

The missile vaults are considered to be permit required confined spaces. As such, the attached procedure for confined spaces will be strictly followed. As a minimum, the oxygen level will be measured before each entry and hourly during entry. Any odors or other serious hazards will be immediately reported to the Safety and Health Officer so that safety precautions can be determined. Any downgrade to a non-permit required confined space can only be approved by the Safety and Health Officer. All job set-ups for entry into any confined space must be reviewed by the Safety and Health Officer.

Tank Removal

The removal of underground storage tanks presents two serious hazards: explosion of the tank and dropping the tank during removal from the excavation or loading onto the truck. Explosion will be prevented by removing as much combustible liquid as possible. Dry ice will be added at the rate of 20 pounds per 1,000 gallons capacity. All openings will be sealed with the exception of a 10-inch square opening. Excavation, removal, and transportation of a tank will not be initiated until the lover explosion limit reading is less than 10% and the oxygen reading is less than 5%. A worker may need to stand on the top of the tank, if it is safe, to take the measurements of the atmosphere inside the tank, and add dry ice to the tank, or to secure the tank prior to removal. See the attached procedure for removal of USTs.

Steam Cleaner/Power Washer

The use of a power washer or steam cleaner presents the potential hazard of being burned. The attached procedure for use of a steam cleaner or pressure washer must be followed.

Open Excavation

Open excavations will be present during the removal actions at the project site. However, no personnel will enter the base of the excavation. Excavations will be maintained in compliance with appropriate OSHA regulations. Nevertheless, constant employee safety awareness while working near excavations will lessen the associated hazards. A security fence will be provided around all open excavations. All excavations greater than four feet deep will have a maximum slope of 1-1/2 horizontal to 1 vertical.

Noise Levels

Whenever feasible, noise levels, identified as exceeding 85 decibels per 8 hour day, will be reduced by means of engineering controls. These controls will include isolation, enclosure and application of noise reduction materials. Hearing protection shall be worn at all times when noise levels are suspected of being equal to or exceeding 85 decibels per 8 hour day (i.e.: sawcutting and backhoe operation). Use of portable "walkman-type" radios are prohibited on the site. A copy of the OSHA Occupational Noise Standard, 29 CFR 1910.95, shall be available and copies shall be made available to employees upon request. CKY Inc. maintains a hearing conservation program in accordance with 29 CFR Part 1910.95.

Weather

The weather condition is an important consideration in planning and conducting site operations. Extremely hot or cold weather can cause physical discomfort, loss of efficiency and personal injury. Of particular importance is heat stress, which often results when protective clothing decreases the body's natural ventilation process. The Cold Stress and Heat Stress procedures are attached.

C5.0 Hazard Control

Control of potential onsite hazards involves understanding as well as application of the following topics: Training Requirements, General Work Practices, Contaminant Monitoring, Personal Protective Equipment, Decontamination, and Emergency Procedures. These topics are discussed below.

C5.1 Training Requirements

All field personnel are required to complete a basic training course before assignment to any field activities. Basic training includes a minimum of 40 hours of instruction in accordance with OSHA 29 CFR 1910.120. Topics covered include: recognition, evaluation and control of chemical and physical hazards; personal protective clothing and equipment; respiratory protection; environmental monitoring equipment; site safety plan development; decontamination procedures; and, practical exercise in the use of personal protective equipment and monitoring instruments. In addition, a minimum of 8 hours of refresher training is required annually in order to maintain proficiency in the areas covered in the basic training course. All site workers will have received respirator fit testing prior to the start of site work and are trained in the selection, fit, use and limitations of respiratory protection equipment during the 4-hour training course. Site workers who may be required to wear Levels A or B protection also receive additional training in the specific equipment to be used. All personal training records are maintained and located in the CKY's Corporate office located in Torrance, California. Training records will also be kept onsite. See the attached Worker Certifications.

CKY employees who are responsible for directing site operations also receive and additional 8 hours of site management training which includes: management-hazardous waste site operation, site control enforcement, emergency response coordination, and community Safety and Health relations.

Prior to the start of field operations, personnel will receive site-specific briefings (including scope of work) and are required to verify that they have read and understand the Safety and Health Plan. See attached Acknowledgment of Understanding, Tail Gate Safety Meeting Sheets and Site Entry Log.

C5.2 General Work Practices

The implementation of work zones facilitates compliance with the required work practices. Therefore, exclusion, contamination reduction, and support zones will be created at the work site. An exclusion zone will be maintained around the site by placement of signs, barricades and barricade tape. The zones shall be secured by fencing. The size and shape of the exclusion zone will be determined by the conditions on the site. This area will be large enough to encompass the potentially hazardous zone around the work site. Due to the anticipated lack of significant contamination in the air at the work site, the contamination reduction zone will be reduced, but still present, and placed at the periphery of the exclusion zone. The contamination reduction zone will simply consist of a decontamination corridor and equipment drop near the exit of the exclusion zone.

The contamination reduction zone will contain:

- Plastic sheeting on which to place and segregate reusable equipment.
- Wash basins, decontamination solutions, scrub brushes and a water source for the decontamination of reusable equipment.
- Emergency response and first aid equipment, including portable eyewash, bench showers, first aid kits and fire extinguishers.
- Clearly marked trash barrels or drums with plastic liners for the placement and disposal of expendable items such as gloves and protective clothing.

The support zone will consist of the area outside of the contamination reduction zone. Workers entering the exclusion zone will be required to wear the level of protective clothing specified for the site. Workers leaving the exclusion zone will exit via the contamination reduction zone and will properly decontaminate before entering the support zone. All non-essential personnel and persons not directly involved in on-site work activities will remain in the support zone at all times. The creation of work zones will be the responsibility of the Site Safety Officer in coordination with the Safety and Health Officer and Project Manager.

The following is a listing of general work practices which must be complied with order to ensure the greatest degree of safety at the work site:

- All personnel working at the site and all visitors to the site are required to read this Site Specific Safety and Health Plan and to sign the Acknowledgment of Understanding before they may enter any exclusion zone. In addition, any person working at the site or visiting the site must sign the Site Entry Log daily. (See attached)

- Eating, smoking, drinking or chewing gum or tobacco are prohibited except in the support zone.

- Hands and face must be washed and dried before exiting the decontamination zone.
- Contact with contaminated surfaces or materials should be avoided. Personnel will avoid walking through puddles, mud, excavation piles or discolored areas and will not sit or kneel on the ground.

- Protective clothing and equipment will be worn at the work site at the protective level specified by the Safety and Health Officer.

- Facial hair which may interfere with proper respirator fit will not be allowed in the exclusion zone.

- Personnel will typically dispose of expendable Personal Protective Equipment (PPE) into approved containers immediately after removal of such items.

- All personnel must use the buddy system at all times while in the exclusion zone. Under no circumstances shall employees work alone on-site.

- Equipment will be kept in proper working order, free of accumulated lubricants, contaminants, or other hazardous or flammable substances.

- No containers of fuels or other flammables will be kept within 100 feet of any excavation and loading operations.

- Daily safety briefings will be held by the Site Safety Officer.

- Policies promulgated in this Site Specific Safety and Health Plan will be followed by all employees. Changes in any procedures or policies contained in this plan will only be implemented after approval from CKY's Safety and Health Officer.

C5.3 Contaminant Monitoring

The site will be monitored under the supervision of the Site Safety Officer during all operations in the exclusion zone. The workers' breathing zone will be screened with an Organic Vapor Analyzer (OVA) or equivalent monitoring device, and near the working area with an Explosimeter at intervals specified in the attached Chemical Hazards Analysis. The objective of this monitoring is to assess the need for and adequacy of respiratory protection, to protect personnel and the public from possible releases of toxic or hazardous substances, and to provide rationale for the selection or modification of the level of protection used at the site. Any air samples obtained for analysis will be analyzed by a laboratory that is accredited by the American Industrial Hygiene Association.

Action levels have been formulated to provide response guidance during contaminant monitoring operations (Table 1). These action levels will help determine the appropriate action levels selected for this project.

Table 1

Action Levels for Determining Level of Protection

OVA Reading	Action Taken
~1 ppm (above background)	Continue task, Level D protection, monitor every 60 min.
15 ppm - 50 ppm	Continue task, Level C protection, monitor every 15 min.
>50 ppm	Discontinue task and withdraw from area, notify Safety and Health Officer

Note: The action level is reached when any reading above those listed is noted.

The direct-reading instruments used for contaminant monitoring will be calibrated daily, and operated and maintained in accordance with the manufacturer's procedures accompanying each instrument. Contaminant monitoring and instrument calibration records will be maintained by the SHO.

To prevent the release of uncontrolled emissions from contaminated soil, all excavated soil will be segregated and covered with 6 mil visqueen, prior to disposal if lab analysis indicates contamination.

Any offsite release or suspected offsite release of hazardous substance will be immediately reported to CKY's Safety and Health Officer and the COR. Any suspected exposure to hazardous substances resulting from PPE failure, accident or any other reason will be reported to CKY's Safety and Health Officer in writing within 24 hours.

When prevailing conditions or operations result in the production of dust, dust suppression measures will be implemented including the application of water. Working up wind will also be utilized where possible. The onsite contaminants (petroleum hydrocarbons) are suspected to be present in the soil. Therefore, Level C protection will be required when dusty conditions prevail.

C5.4 Personal Protective Equipment

The hazards anticipated to be present during the described remedial tasks will probably require limited levels of protection. Level D protection will be worn by field personnel during the excavation and loading of the contaminated material. As conditions warrant, protection levels may be upgraded. The Site Safety Officer in conjunction with the Safety and Health Officer will determine the appropriate personal protection. Based upon present and historic knowledge of the site, Level A or B protection will not be required for the operations detailed in this work plan.

The equipment necessary for each level of protection is detailed below.

LEVEL D - Level D consists of the basic work uniform which includes:

- Hard hat

- Safety Glasses
- Steel-toed, steel-shank rubber boots
- Tyvek coveralls with hood (when working with USTs, piping and contaminated soil)
- Nitrile or neoprene gloves
- Cloth and/or leather gloves for equipment operators
- An immediately available half-face, air-purifying respirator with NIOSH-approved combination organic vapor/high efficiency particulate (HEPA) cartridges.

LEVEL C - Level C consists of the below listed protective equipment:

- Respirator with organic vapor/HEPA cartridges
- Tyvek coveralls with hood
- Hard Hat
- Safety Glasses
- Steel-toed, steel-shank rubber boots
- Nitrile or neoprene gloves

C5.5 Decontamination Procedures

All equipment will be steam cleaned, pressure washed or otherwise decontaminated onsite, within the contamination reduction zone. Water from the decontamination process will be collected, analyzed and disposed of in accordance with analytical results. All employees must thoroughly decontaminate their PPE before exiting the exclusion zone.

The following general decontamination methods will be used:

- All equipment used in the exclusion zone (sampling containers, monitoring instruments, clipboards, and safety glasses will be deposited on plastic sheets. These items may not be placed here if contaminated.

- Boots, hard hats, and tools will be washed and scrubbed with laboratory grade detergent and rinsed with water at the end of excavation. These will be hung up or otherwise placed in a decontamination shed when workers clean up.

- Disposable coveralls will be removed and disposed of in a clearly marked barrel line with plastic.

- The respirator, if used or removed from its storage bag, will be washed in a respirator sanitizing solution, then hung to air dry in a clean environment (support zone) and stored in a sealed, sterilized plastic bag.

- Gloves will be removed and disposed of in a barrel lined with plastic.

C5.6 Emergency Procedures

Situations which could occur requiring an emergency response action are listed below:

- A sudden release of hazardous vapor/combustible gases during excavation or contaminated soil handling operations.

- Damage to a natural gas line.

- Explosion of an underground storage tank during removal from the excavation.

- A heavy equipment related or personal injury accident.

A list of emergency response agencies and their telephone numbers and Route to the Hospital Map is attached. Both will be posted at the project site.

Routine emergency procedures include:

Escape Routes

A wind direction indicator (several ribbons on a post) will be positioned in the exclusion zone. In the event of an emergency, all personnel will evacuate the site upwind unless the emergency precludes evacuation in such direction. This measure may require personnel to abandon normal decontamination procedures; in this event,

decontamination should be performed in a safe location. The Site Safety Officer will utilize the Site Entry Log to ensure that all personnel have evacuated the site.

Evacuation Signals and Other Signals

Due to the small work areas anticipated during this project, creation of evacuation and other signals will not be necessary. Nevertheless, workers should be cognizant of the reduction of communication abilities in high-noise areas. In the event of withdrawal from the working area verbal notification will be given. A cellular telephone will be at the site if another telephone is not available.

First Aid

A first aid kit will be located in the contamination reduction zone. The Site Safety Officer, and another person, will be certified by the American Red Cross in first aid and CPR. If an injured individual requires further attention, the individual will be immediately transported to the nearest hospital. A map illustrating the route to the nearest emergency medical facility will be present onsite (see attached). If possible, the victim will be decontaminated prior to transport to the facility. If the injury is serious, decontamination is of secondary importance. All accidents without regard to the severity shall be reported in writing to CKY's Safety and Health Officer within 24 hours. All accidents requiring a physician's treatment shall be reported immediately to CKY's Safety and Health Officer.

C5.7 Medical Monitoring

All CKY Inc. personnel and subcontractors will have successfully completed a physical examination which meets the requirements of 29 CFR 1910.120 (F), and Title 8 CCR 1512 prior to entering work zones. CKY personnel undergo a physical examination annually which is performed by a physician Board-certified in Occupational Medicine. (See attached Worker Certifications). The physician is made familiar with the job-related duties of each employee examined.

The physical examination consists of the following, at a minimum:

- Medical and occupational history.

- Physical examination, with particular emphasis on the cardiopulmonary system, general physical fitness, skin, blood-forming system, renal and nervous systems.

- Urinalysis.

- Blood analysis.

- Additional tests as appropriate, including chest X-ray electrocardiogram stress test, pulmonary function test.

Based on this examination, the physician will certify whether the individual is capable of full participation in the program, or whether this person must work within certain restrictions.

Any person exposed to high levels of hazardous substances will be required to undergo a repeat medical examination at or before the conclusion of the project to determine the medical implications of this exposure.

All medical records are held by CKY for a period of at least 30 years after the employee's termination of employment, in accordance with OSHA regulations on confidentiality and recordkeeping.

In addition to the physical examination prior to entering the work zone, onsite medical surveillance is standard CKY procedure and includes heat stress monitoring and prevention, contaminant monitoring, and hearing conservation measures. All employee personal medical and safety training records are available in CKY's Corporate office located in Torrance, California.

C6.0 Spill and Discharge Plan

Refer to the GMP for the procedures to be followed at this site. There are no deviations or site specific requirements anticipated at this time.

EMERGENCY TELEPHONE NUMBERS

EMERGENCY TELEPHONE NUMBERS

Delivery Order 0005

Containerized Hazardous Waste and/or Toxic Waste Removal

Nike Battery 31, San Leandro, CA

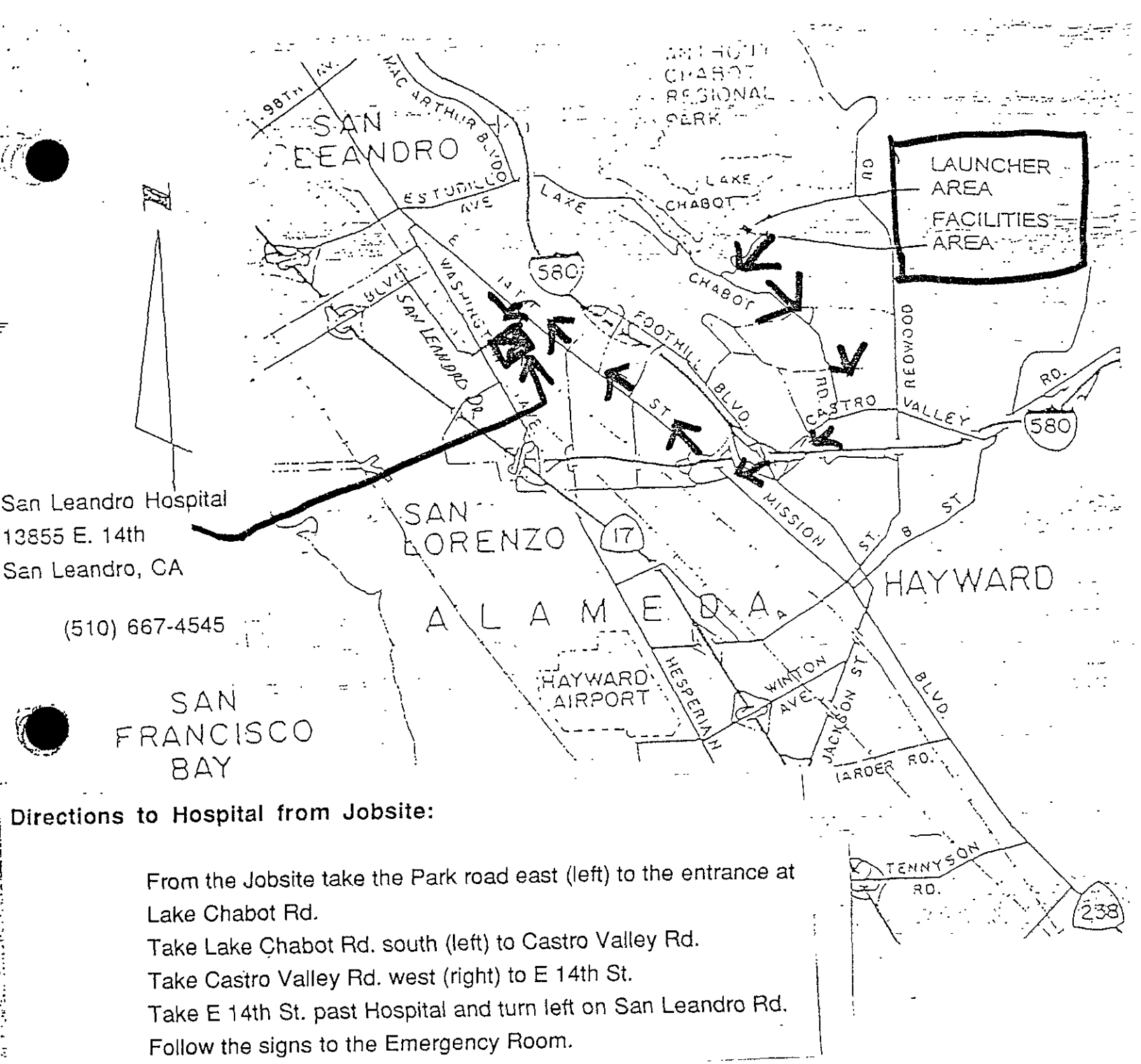
Police		911
Fire Department		911
Hospital:	San Leandro Hospital 13855 E. 14th San Leandro, CA	(510) 667-4545

Directions to Hospital from Jobsite:

From the Jobsite take the Park road east (left) to the entrance at Lake Chabot Rd.
Take Lake Chabot Rd. south (left) to Castro Valley Rd.
Take Castro Valley Rd. west (right) to E 14th St.
Take E 14th St. past Hospital and turn left on San Leandro Rd.
Follow the signs to the Emergency Room.

Poison Center	(510) 476-6600
US Environmental Protection Agency Region Nine (San Francisco)	(415) 744-1500
National Spill Response Center	(800) 424-8802
Corps of Engineers:	
Contracting Officer (William R. Cameron)	(916) 373-1617
Contracting Officers Representative (John Sisley)	(916) 373-1617 Ext. 308
CKY Corporate Office (Dan Schottlander)	(310) 792-3728
RCI Corporate Office (Charles Bailey)	(209) 537-8196
RCI Elk Grove Office (Mark Hallock)	(916) 686-6154
Health and Safety Officer (Gus Ballis)	(916) 944-2526

HOSPITAL MAP



San Leandro Hospital
13855 E. 14th
San Leandro, CA

(510) 667-4545

Directions to Hospital from Jobsite:

From the Jobsite take the Park road east (left) to the entrance at Lake Chabot Rd.
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Take E 14th St. past Hospital and turn left on San Leandro Rd.
Follow the signs to the Emergency Room.

NIKE BATTERY 31
SAN LEANDRO, CALIFORNIA

AREA MAP

HAZARD ANALYSIS

HAZARD ANALYSIS

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Containerized Hazardous and/or Toxic Waste Removal

Nike Battery 31, San Leandro, CA

The potential hazards at the site are a result of the underground tank and aboveground tank saddle removal, and the draining of the hydraulic system in the missile vaults. Therefore, this hazard analysis applies to each of the tasks discussed in Section 3. The Hazardous Analysis is a working document and will be updated and revised as necessary during the duration of the project.

1.

PRINCIPAL STEP	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
1. Mobilization / Demobilization	Lifting, pushing, pulling heavy items Heavy equipment accidents Slips, trips, and falls	Use the buddy system for items >60 lbs SHO providing traffic control Basic safety precautions PPE : None required

EQUIPMENT USED	INSPECTIONS REQUIRED	TRAINING REQUIRED
N/A	SHO oversight SHO oversight Air Monitoring - None required	Safe Lifting and Back Care Backhoe Operation

2.

PRINCIPAL STEP	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
2. Concrete Saw-cutting	Lifting, pushing, pulling heavy items Saw-cutting accidents Slips, trips, and falls	Use the buddy system for items >60 lbs SHO providing traffic control Locate and mark gas lines & u.g. piping Basic safety precautions PPE : Hearing protection Safety glasses

EQUIPMENT USED	INSPECTIONS REQUIRED	TRAINING REQUIRED
N/A	SHO oversight SHO oversight Air Monitoring - None required	Safe Lifting and Back Care Saw-cutting Operation

3.

PRINCIPAL STEP	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
3. Soil Excavation and Removal of USTs, Lift and Piping	Ingestion of soil from poor hygiene Heavy equipment accidents Dust inhalation Burns from steam cleaner or power washer Cuts	Use of proper PPE and decon SHO providing traffic control Water spray for dust control Proper use of steam cleaner PPE (as directed): Nitrile gloves Rubber boots Tyvek suit for work with contaminated materials Safety glasses Heavy neoprene gloves for steam cleaner operation

EQUIPMENT USED	INSPECTIONS REQUIRED	TRAINING REQUIRED
Hand shovel Backhoe N/A Steam cleaner	SHO to inspect crew during decon Vehicle inspection daily SHO inspect for visible dust levels Steam cleaner inspection Air Monitoring - OVA and Explosimeter / 60 min	Use of proper PPE and decon Backhoe Operation CIH to review how to assess dust levels Steam cleaner operation

4.

PRINCIPAL STEP	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
4. Confirmatory Sampling	Ingestion of soil from poor hygiene Lifting heavy ice chest of samples	Use of proper PPE and decon Keep weight below 60 lbs PPE (as directed): Nitrile gloves Rubber boots Tyvek suit Safety glasses

EQUIPMENT USED	INSPECTIONS REQUIRED	TRAINING REQUIRED
Hand auger Ice chest	N/A Air Monitoring - OVA and Explosimeter / 60 min	Sampling Techniques Safe Lifting and Back Care

5.

PRINCIPAL STEP	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
5. Flush Hydraulic System in Missile Vaults	Confined Space Entry Falling during entry Chemical exposure during flushing	Follow Confined Space Entry Keep both hands free for climbing ladder/stairs Wear PPE : Nitrile gloves Rubber boots Tyvek suit Safety glasses

EQUIPMENT USED	INSPECTIONS REQUIRED	TRAINING REQUIRED
Per Site Safety and Health Plan Flushing equipment	Initially and hourly by SHO Initially and during flushing for leaks Air Monitoring -Oxygen before entry and every 60 min. during entry. Other air monitoring as required by Safety and Health Officer.	Confined Space Entry and Confined Space Rescue MSDS for chemicals used in flushing

6.

PRINCIPAL STEP	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
6. Backfilling and Compaction	Slips, trips, and falls Heavy equipment accidents Dust inhalation	Use of proper PPE SHO providing traffic control PPE : Cotton or leather gloves Steel toe boots Any suit Safety glasses

EQUIPMENT USED	INSPECTIONS REQUIRED	TRAINING REQUIRED
Hand shovel Backhoe	SHO to inspect crew during decon Vehicle inspection daily	Use of proper PPE and decon Backhoe Operation

CHEMICAL HAZARDS

CHEMICAL HAZARDS

Delivery Order 0005

Containerized Hazardous Waste and/or Toxic Waste Removal

Nike Battery 31, San Leandro, CA

All of the chemical hazards outlined in this table pertain to the possible diesel fuel, heating oil, and hydraulic fluid contamination in the soil at the Nike Battery 31 in San Leandro, California. The low vapor pressures and/or low concentrations of each of the contaminants and clearly indicates that the route of entry into the body is limited to inhalation of high levels of airborne soil dust and inhalation of contaminated steam vapor during steam cleaning or power washing activities. The ingestion route of entry is limited to hand-to-mouth activities (i.e. eating, drinking, smoking) if the worker does not wash the exposed skin before these activities are performed. Contaminated soil may be found throughout the exclusion zones under excavated USTs or piping.

Inhalation of contaminated dust is not expected to be a hazard due to the use water spraying during excavation and loading. Theoretically, the total airborne dust concentration during extremely dusty conditions can be conservatively estimated to be 100 mg/m3. Based upon a worst case assumption that the highest average soil concentration of petroleum hydrocarbons would be 500 mg/kg, the highest airborne levels of petroleum hydrocarbons that could be expected would be 0.05 mg/m3. This level is less than the OSHA PEL of 890 mg/m3 for gasoline. The concentration of petroleum hydrocarbons in any contaminated soil that is found may be high enough that it would considered prudent to wear Level C protection during all steam cleaning or power washing activities of equipment that has come in contact with contaminated soil.

CHEMICAL	EQUIPMENT CONC.	OSHA PEL	ACGIH TLV	ION. POTENTIAL	CHARACTERISTICS	TOXICOLOGY
Diesel Fuel	assumed to be high in soil	None	None	not listed	mol. wt. - N/A boil. pt - >100° C vapor press - est. 10 mm Hg LEL - est. 1%	affects nervous system, affects liver and kidneys, high levels cause dizziness, weakness or vomiting
Hydraulic Fluid	assumed to be high in soil	None	None	not listed	mol. wt. - N/A boil. pt - >200° C vapor press - est. 1 mm Hg LEL - est. 1%	affects liver and kidneys, high levels cause dizziness, weakness or vomiting

POWER CLEANER 155

POWER CLEANER 155

POWER PACKED CLEANER FOR PCB CONTAMINANTS

Methods of Use:

For general cleanup applications, POWER CLEANER 155 is usually diluted with 5 to 7 parts of water. Apply to the contaminated surface, agitate the cleaner and the contamination, and then pick up both the cleaner and the contamination by the use of an absorbent or adsorbent material. Dispose in an approved manner.

For power scrubbing, POWER CLEANER 155 is normally used at a concentration of 1 to 4 ounces per gallon of water, depending on the soil encountered. Be sure to dispose of all contamination and cleaner in an approved method.

POWER CLEANER 155 is an economical cleaner for use in other areas where PCB contamination is not encountered.

	Dilution Rate (per gallon of water)
Wax Stripping	1—4 ounces
All Purpose Cleaning	1—2 ounces
Windows	¼—½ ounce
Painted Walls	½—1 ounce
Garage Floors	2—4 ounces
Steam Cleaning	2—4 ounces
Pressure Washing	2—6 ounces
Engine Shampoo	3—8 ounces

Typical Characteristics:

Appearance	- Colorless liquid
Solubility	- Excellent in water at all proportions
Weight per Gallon	- 8.75 lbs.
pH - 10% solution	- 12.0
Specific Gravity @ 20° C	- 1.170
Flash Point (COC)	- None
Fire Point (COC)	- None
Rinsability	- Free rinsing...leaves no film deposit
Foaming Tendency	- Low foaming

Precautionary Note:

As with all alkaline cleaners, continuous or repeated contact with skin should be avoided. In case of eye contact, flush immediately with copious amounts of water. Do not take internally.

PROPER METHOD OF THE REMOVAL OF P.C.B.'s USING POWER CLEANER 155

In the successful removal of P.C.B. contaminated oil, the surface on which the contaminant lies must be taken thoroughly into consideration.

High absorbent materials, such as sand, sawdust, dirt and vegetation should be removed and containerized in the prescribed methods.

On hard surfaces, however, such as:

- CONCRETE
- ASPHALT
- MACADAM
- PAINTED SURFACES
- BRICK
- CINDER BLOCK
- ALL METAL SURFACES

the removal of the P.C.B. contaminated oil is easy, safe and inexpensive utilizing Power Cleaner 155.

The following prescribed method of removal will bring the contamination of P.C.B.'s down to an acceptable level, eliminate the use of Kerosene, Naptha or 1,1,1 Trichloroethane and eliminate the further penetration of the P.C.B. by solvent action. The following steps should be taken:

1) Use an absorbent material, such as sawdust or grease absorbent type material. Sprinkle lightly on the oil contaminated with P.C.B.'s. Using a stiff broom and shovel, pick up the mixture and place into an open top recovery receptacle.

2) Build a retaining wall with the absorbent type material approximately 3 inches high and 4 inches wide around the spill. This will encompass the entire circumference of the spill.

3) Pour Power Cleaner 155 directly into the center of the contaminated area inside the retaining wall. Agitate the Power Cleaner 155 and the P.C.B.'s with a stiff broom or wire brush for approximately 2-3 minutes. Let the solution of Power Cleaner 155 and P.C.B. sit for approximately 5-10 minutes. Agitate at the end of this time with a stiff broom or wire brush.

P1330 (481)

POWER PACKED CLEANER DESIGNED FOR PCB CLEANUP

ECONOMICAL....DILUTES WITH WATER ■ NONFLAMMABLE ■
BIODEGRADABLE ■ EASY TO USE ■ SAFE ON MOST SURFACES

Description:

POWER CLEANER 155 is a highly concentrated, low foaming, liquid alkaline cleaner formulated for fast penetration and removal of polychlorinated biphenyl contaminants from a wide variety of surfaces.

Features & Benefits:

■ *HIGHLY CONCENTRATED*

POWER CLEANER 155 is economical to use. When diluted with 5 to 7 parts of water, it provides outstanding cleanup at costs far less than commonly used solvents.

■ *DIVERSIFIED APPLICATIONS*

POWER CLEANER 155 can be applied manually, through power scrubbers, power sprayers and steam cleaners. Its versatility makes it the "all-around" cleaner.

■ *SAFER TO USE THAN SOLVENTS*

POWER CLEANER 155 contains no solvents. It has no flash or fire point and is completely biodegradable.

■ *RAPID SOIL PENETRATION — FREE RINSING*

POWER CLEANER 155 rapidly attacks soils, holds them in suspension and then rinses freely, leaving no dull streaks.

■ *WIDE VARIETY OF SURFACE APPLICATIONS*

POWER CLEANER 155 when used as directed is safe to use on the following surfaces:

aluminum	chromium	magnesium
asphalt	concrete	nickel
brass	copper	plastic
bronze	iron	rubber
ceramic	lead	steel

PENETONE CORPORATION ● A Subsidiary of West Chemical Products, Inc.
GENERAL OFFICES: 74 HUDSON AVENUE, TENAFLY, NEW JERSEY 07670 ● (201) 567-3000
OTHER LOCATIONS IN PRINCIPAL CITIES

P-243 (980)

MATERIAL SAFETY DATA SHEET

Penetone® Corporation, 74 Hudson Ave , Tenafly, NJ 07670

POWER CLEANER™ 155

Date Prepared: May 17, 1994
MSDS No.: 1870-405L

SECTION 1 PRODUCT IDENTIFICATION & EMERGENCY INFORMATION

PRODUCT NAME: POWER CLEANER 155
GENERAL USE: Cleaner, degreaser
PRODUCT DESCRIPTION: Liquid alkaline cleaner
GENERIC INGREDIENTS: Water, builders, surfactants, chelate

EMERGENCY TELEPHONE NUMBERS: PENETONE 201-567-3000
CHEMTREC 800-424-9300

SECTION 2 HAZARDOUS INGREDIENT SECTION

This product is nonhazardous as defined in 29 CFR1910 1200.

OSHA HAZARDOUS INGREDIENTS

		EXPOSURE LIMITS 8 hrs. TWA (mg/m³)		
	CAS#	OSHA PEL	ACGIH TLV	Supplier
Contains no hazardous ingredients				

SECTION 3 HEALTH INFORMATION & PROTECTION

EMERGENCY OVERVIEW:
Clear liquid with mild odor
Can be irritating to skin and eyes.

POTENTIAL HEALTH EFFECTS:

EYE CONTACT:
Irritating to the eyes on contact only.

SKIN CONTACT:
Frequent or prolonged contact may irritate or dry the skin and cause dermatitis. Skin contact may aggravate an existing dermatitis condition.

INHALATION:
Inhalation of spray mist may cause irritation to the respiratory tract.

INGESTION:
Ingestion may cause irritation to the digestive tract and diarrhea.

FIRST AID MEASURES:

EYE CONTACT:
Flush eyes with large amounts of water. See physician immediately.

SKIN CONTACT:
Flush skin with large amounts of water. Remove contaminated clothing and launder before reuse. If skin irritation develops or persists, consult physician.

INHALATION:
Remove person to fresh air. Administer oxygen or artificial respiration as needed. Call a physician immediately.

INGESTION:
If swallowed, give plenty of water or milk. Call a physician immediately.

WORKPLACE EXPOSURE CONTROLS:

PERSONAL PROTECTION:
Splash proof goggles are recommended for all workplace conditions. Rubber gloves are recommended. When spraying this product, rubber boots, aprons, gauntlets, or rain gear should be worn depending on operations.

VENTILATION:
None needed under normal use conditions. If the product is being sprayed, a dust mask or particle respirator is recommended.

SECTION 4 FIRE & EXPLOSION HAZARDS

FLASHPOINT: None to boiling point (TCC, COC)
FLAMMABLE LIMITS: Not applicable
AUTOIGNITION TEMPERATURE: Not determined

GENERAL HAZARD:
This is a water based product and presents no unusual hazards in a fire.

FIRE FIGHTING:
Cool containers with water.

HAZARDOUS COMBUSTION PRODUCTS:
Smoke, fumes, and oxides of carbon and nitrogen.

SECTION 5 SPILL CONTROL MEASURES

LAND SPILL:
For small spills, use absorbent material such as towels or absorbent powders. Put all material into proper waste disposal container with lid tightly covered. For larger spills, dike spill, recover free liquid, and use absorbent material to dry area. Rinse area with water. Put all material into appropriate waste containers.

WATER SPILL:
Product is water based and water dilutable. Surfactants used in this product are biodegradable. Localized high concentration of product may cause fish kills, but no persistant or long term effects will result. Check with local environmental regulatory agencies for reporting requirements.

SECTION 6 HANDLING & STORAGE

STORAGE TEMPERATURE, °F: ambient DO NOT STORE ABOVE 120° F KEEP FROM FREEZING.

GENERAL: Do not store near strong acids

SECTION 7 TYPICAL PHYSICAL & CHEMICAL PROPERTIES

BOILING POINT, °F:
about 212

EVAPORATION RATE, Acetone = 1:
equal to water

SOLUBILITY IN WATER:
soluble

SPECIFIC GRAVITY at 75°F:
1.14

ODOR AND APPEARANCE:
Clear liquid with mild odor

VAPOR PRESSURE, mm Hg at 20°C:
equal to water

VAPOR DENSITY (Air = 1):
equal to water

WT% ORGANIC VOLATILES:
0

pH:
12.4-12.6

SECTION 8 REACTIVITY DATA

GENERAL:
This product is stable and hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:
Strong acids.

SECTION 9 REGULATORY INFORMATION

DEPARTMENT OF TRANSPORTATION (DOT):
PROPER SHIPPING NAME:
Non hazardous (nonregulated) material
HAZARD CLASS: none
IDENTIFICATION NUMBER: none PACKING GROUP: not applicable
LABEL: not required

FLASHPOINT: None-to-boil pH: 12.4-12.6

TSCA: The ingredients in this product are listed on the TSCA inventory

CERCLA:
This product contains no reportable CERCLA materials. Contact local authorities to determine if there may be other local reporting requirements.

RCRA HAZARD CLASS:
Nonhazardous waste

SARA TITLE III:

311/312 HAZARD CATEGORIES:

Acute health

313 REPORTABLE INGREDIENTS:

None

NEW JERSEY RIGHT-TO-KNOW INFORMATION:

This product contains water (CAS 7732-18-5), sodium xylene sulfonate (CAS 1300-72-7), tripotassium phosphate (CAS 7778-53-2), tetrapotassium pyrophosphate (CAS 7320-34-5), and trisodium n-hydroxyethylethylenediamine triacetate.

CALIFORNIA PROPOSITION 65 INFORMATION:

This product does not contain any chemicals recognized by the state of California to cause cancer and/or birth defects or reproductive harm.

SCAQMD INFORMATION:

Is there a photochemically reactive material present? No
What is the % by volume of photochemically reactive material? 0
What is the VOC content? 0
What is the vapor pressure of VOC's? 0

SECTION 10 NOTES

HAZARD RATING SYSTEMS:

	HMIS	NFPA
HEALTH	1	1
FLAMMABILITY	0	0
REACTIVITY	0	0

KEY
4 = Severe
3 = Serious
2 = Moderate
1 = Slight
0 = Minimal

REVISION SUMMARY:

Change in Sections 7 and 9

SUPERCEDES ISSUE DATE:

October 28, 1993

FOR ADDITIONAL PRODUCT INFORMATION, CONTACT YOUR SALES ENGINEER
FOR ADDITIONAL HEALTH/SAFETY INFORMATION, CALL 201-447-3000

TRAINING CERTIFICATES

EMC Environmental Training

Certificate of Completion

This Is To Certify That

Dan Schottlander

Has Successfully Completed The Couse of

8-Hour Hazardous Waste Refresher Training 29 CFR 1910.120

F. McDonnell

102282	Nov. 20, 1994	
Certificate Number	Completion Date	Frank McDonnell, Director

EMC Environmental Training

Certificate of Completion

This Is To Certify That

Shane Kim

Has Successfully Completed The Couse of

8-Hour Hazardous Waste Refresher Training 29 CFR 1910.120

F. McDonnell

102281
Certificate Number

Nov. 20, 1994
Completion Date

Frank McDonnell, Director

Certificate of

8 Hour Hazardous Waste Operations and Emergency Response Refresher Training

Charles E. Bailey
has met the requirements under OSHA Standard.
29CFR 1910.120

ACI Instructor

October 15, 1991

Certificate of

8 Hour Hazardous Waste Operations and Emergency Response Refresher Training

Mike Bailey
has met the requirements under OSHA Standard.
29CFR 1910.120

HAI Instructor

October 15, 1994

Certificate of

8 Hour Hazardous Waste Operations and Emergency Response Refresher Training

Robert Castaneda
has met the requirements under OSHA Standard.
29CFR 1910.120

HAZ Instructor

October 15, 1994

Certificate of

8 Hour Hazardous Waste Operations and Emergency Response Refresher Training

Mark Hallock
has met the requirements under OSHA Standard.
29CFR 1910.120

ROI Instructor

October 15, 1994

EMC ENVIRONMENTAL TRAINING

Certificate of Completion

This is to Certify that

Jay Knight

Has Completed the Course of

[illegible]

102280	November 20, 1994
Certificate Number	Completion Date

Certificate of Completion

40-HOUR HAZARDOUS [illegible] COURSE

JAY KNIGHT

NAME

14L011590BW	January 19, 1990
CERTIFICATE NUMBER	DATE OF COMPLETION

Susan Patmore (signature)

TRAINING DIRECTOR

Susan Patmore

IRSCOM

THIS ACKNOWLEDGES THAT Jay Knight

HAS RECEIVED INSTRUCTION IN:

___ "Standard First Aid" Course

___ "H_2S Protection" Course with Smoke House

✓ "Respiratory Protection" Course (~~including fit test~~)

___ "Confined Space Entry"

11/19/95 — Date

11/19/95 — Expiration Date

R.D. Browne (signature) — Instructor

American Red Cross

This certifies that

Jay Knight

has completed the requirements for

ADULT CPR

sponsored by

Los Angeles Chapter

Date completed

11/19/94

American Red Cross

This certifies that

Jay Knight

has completed the requirements for

STANDARD FIRST AID

sponsored by

Los Angeles Chapter

Date completed

11/19/94

American Red Cross

HEALTH AND SAFETY
INSTRUCTOR AUTHORIZATION

ROBERT CASTANEDA
is authorized as an instructor in

STANDARD FIRST AID
by the

STANISLAUS COUNTY CHAPTER
This authorization expires

December 31, 1997

EXTENDED AUTHORIZATIONS

Name of Unit — Signature, Unit Rep.

1. STANISLAUS Ca. [signature]

2.

Signature of Unit Representative

Robert Castaneda

Signature of Authorized Instructor

[signature]

Norman R. Augustine, Chairman, American Red Cross

Cert. 3005 (Rev. 10-91)

American Red Cross

This certifies that

Jay Knight

has completed the requirements for

STANDARD FIRST AID

sponsored by

Los Angeles Chapter

Date completed

11/19/94

American Red Cross

This certifies that

Jay Knight

has completed the requirements for

ADULT CPR

sponsored by

Los Angeles Chapter

Date completed

11/19/94

American Red Cross

This certifies that

Shane Kim

has completed the requirements for

STANDARD FIRST AID

sponsored by

Los Angeles Chapter

Date completed

11/19/94

American Red Cross

This certifies that

Shane Kim

has completed the requirements for

ADULT CPR

sponsored by

Los Angeles Chapter

Date completed

11/19/94

EMC ENVIRONMENTAL TRAINING

Certificate of Completion

This is to Certify that

Shane Kim

Has Completed the Course of

192231 — Certificate Number

November 29, 1994 — Completion Date

American Red Cross

This certifies that

Shane Kim

has completed the requirements for

ADULT CPR

sponsored by

Los Angeles Chapter

Date completed

11/19/94

American Red Cross

This certifies that

Shane Kim

has completed the requirements for

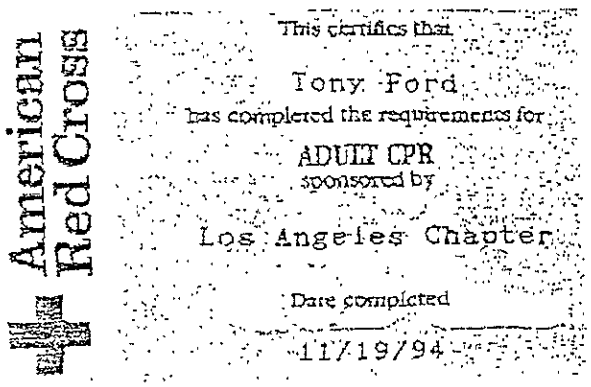
STANDARD FIRST AID

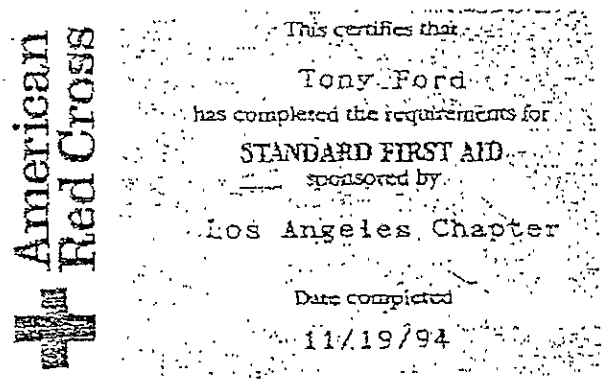
sponsored by

Los Angeles Chapter

Date completed

11/19/94


American Red Cross
This certifies that
Tony Ford
has completed the requirements for
ADULT CPR
sponsored by
Los Angeles Chapter
Date completed
11/19/94


American Red Cross
This certifies that
Tony Ford
has completed the requirements for
STANDARD FIRST AID
sponsored by
Los Angeles Chapter
Date completed
11/19/94

MEDICAL EXAMINER'S CERTIFICATE

I certify that I have examined

Dan Schottlander

NAME (PRINT)

IN ACCORDANCE WITH OSHA REGULATIONS WE FIND HIM QUALIFIED UNDER THE REGULATIONS TO WEAR RESPIRATORY PROTECTIVE EQUIPMENT.

A COMPLETED EXAMINATION FORM FOR THIS PERSON IS ON FILE IN MY OFFICE AT 1103 S. ANAHEIM BOULEVARD.

7-15-94

DATE OF EXAMINATION

Greeney Med. Group

NAME OF EXAMINING DOCTOR (PRINT)

[signature] (D)

SIGNATURE

SIGNATURE OF EXAMINING DOCTOR

24 916 Singingwood Dr. Lake Forest

ADDRESS

American Red Cross

This certifies that

Dan Schottlander

has completed the requirements for

STANDARD FIRST AID

sponsored by

Los Angeles Chapter

Date completed

11/19/94

American Red Cross

This certifies that

Dan Schottlander

has completed the requirements for

ADULT CPR

sponsored by

Los Angeles Chapter

Date completed

11/19/94

EMC ENVIRONMENTAL TRAINING

Certificate of Completion

This is to Certify that

Dan Schottlander

Has Completed the Course of

[illegible]

102292 — Certificate Number

November 20, 1994 — Completion Date

THIS ACKNOWLEDGES THAT Dan Schottlander

HAS RECEIVED INSTRUCTION IN:

___ "Standard First Aid" Course

___ "H_2S Protection" Course with Smoke House

X "Respiratory Protection" Course ([illegible])

___ "Confined Space Entry"

11/19/94 — Date

11/19/95 — Expiration Date

R. J. [illegible] — Instructor

American Red Cross

Tan Phung

has completed the requirements for

STANDARD FIRST AID

sponsored by

Los Angeles Chapter

Date completed

11/19/94

American Red Cross

Dan Schottlander

has completed the requirements for

STANDARD FIRST AID

sponsored by

Los Angeles Chapter

Date completed

11/19/94

American Red Cross

This certifies that

Tan Phung

has completed the requirements for

ADULT CPR

sponsored by

Los Angeles Chapter

Date completed

11/19/94

American Red Cross

This certifies that

Dan Schottlander

has completed the requirements for

ADULT CPR

sponsored by

Los Angeles Chapter

Date completed

11/19/94

American Red Cross

This certifies that

Jay Knight

has completed the requirements for

STANDARD FIRST AID

sponsored by

Los Angeles Chapter

Date completed

11/19/94

American Red Cross

This certifies that

Shane Kim

has completed the requirements for

STANDARD FIRST AID

sponsored by

Los Angeles Chapter

Date completed

11/19/94

American Red Cross

This certifies that

Jay Knight

has completed the requirements for

ADULT CPR

sponsored by

Los Angeles Chapter

Date completed

11/19/94

American Red Cross

This certifies that

Shane Kim

has completed the requirements for

ADULT CPR

sponsored by

Los Angeles Chapter

Date completed

11/19/94

ReadiCare™
Medical Center

Date:
Time In:

Date: 7 P6:42
Time Out:

PRE-PLACEMENT REPORT

Employee: Michael Bailey

Employer: RCI

Position Applying For: _____

✓ QUALIFIED WITHOUT RESTRICTIONS

___ QUALIFIED WITH RESTRICTIONS

_____

_____

___ HOLD FOR FURTHER TESTING

___ CANDIDATE RETURNED TO EMPLOYER — JOB DESCRIPTION NOT AVAILABLE

T. [illegible]
Physician

ReadiCare
2101 Tenaya Drive
Modesto, CA 95354
(209) 527-0080
Center

Phone Number

Form C-105A (Rev. 5/92)

WHITE — Patient's File • YELLOW — Employer's File

ReadiCare™
Medical Center

Date:
Time In:

91 OCT -5 P5:54
Date:
Time Out:

PRE-PLACEMENT REPORT

Employee: Pablo Bautista

Employer: Radical Education

Position Applying For: _____

✓ QUALIFIED WITHOUT RESTRICTIONS

____ QUALIFIED WITH RESTRICTIONS

_____

_____

____ HOLD FOR FURTHER TESTING

____ CANDIDATE RETURNED TO EMPLOYER — JOB DESCRIPTION NOT AVAILABLE

_____
Physician

ReadiCare
2101 Tenaya Drive
Modesto, CA 95354
(209) 527-0080
Center

_____
Phone Number

Form C-105A (Rev 5/92)

WHITE — Patient's File • YELLOW — Employer's File

ReadiCare™
Medical Center

Date:
Time In:

Date:
Time Out:

'94 OCT 12 P5:05

PRE-PLACEMENT REPORT

Employee: Robert Castaneda

Employer: Remedial Contractors

Position Applying For: ______

✓ QUALIFIED WITHOUT RESTRICTIONS

____ QUALIFIED WITH RESTRICTIONS

____

____

____ HOLD FOR FURTHER TESTING

____ CANDIDATE RETURNED TO EMPLOYER — JOB DESCRIPTION NOT AVAILABLE

[signature]
Physician

ReadiCare
2101 Tenaya Drive
Modesto, CA 95354
(209) 527-0080

Center

Phone Number

Form C-105A (Rev. 5/92)

WHITE — Patient's File • YELLOW — Employer's File

MEDICAL EXAMINER'S CERTIFICATE

I certify that I have examined

[illegible]

(NAME PRINT)

IN ACCORDANCE WITH OSHA REGULATIONS WE FIND HIM QUALIFIED UNDER THE REGULATIONS TO WEAR RESPIRATORY PROTECTIVE EQUIPMENT

A COMPLETED EXAMINATION FORM FOR THIS PERSON IS ON FILE IN [illegible] AT 103 [illegible] BOULEVARD

[illegible] Greater [illegible] Med. Group

DATE OF EXAMINATION [illegible] (PRINT)

[illegible]

SIGNATURE [illegible] DOCTOR

[illegible] VIA VISTA DR. [illegible] CA [illegible]

[illegible] ADDRESS

AFFIRMATION, SITE ENTRY LOG &TAILGATE SAFETY MEETING SHEETS

Contract No. DACA05-94-D-0012

Indefinite Delivery Contract For The Removal of Underground / Aboveground Storage Tanks & Transformers in Northern California

I have read and full understand all of the foregoing Nike Battery 31, San Leandro, CA - Site Specific Health and Safety Plan. Any questions regarding the hazards on the job-site and the protective measures to be followed have been explained to my satisfaction.

Print Your Name - Signature - Date

REMEDIAL CONSTRUCTORS, INC.

Tailgate Safety Meeting

Job Name: _____ Meeting Date: _____

Job Number: _____

Accidents Since Last Meeting:

Hazards Discussed:

Main Topic of Discussion:

Supervisor: _____ Safety Rep: _____

Personnel in Attendence (Please Print Name)

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

Note: Additional names and comments on reverse side.

Comments:

Number of Personnel Absent: _____

Project Manager/Supervisor Signature: _____

SITE ENTRY LOG

Print Your Name	Date	Time In	Time Out

ENVIROMENTAL PROTECTION PLAN

ENVIRONMENTAL PROTECTION PLAN

Delivery Order No. 0005

Containerized Hazardous and/or Toxic Waste Removal

Nike Battery 31

San Leandro, California

1.0 Introduction

The purpose of this Plan is to make provisions for the prevention of environmental pollution and damage by the presence of "chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic, cultural and/or historical purpose." Areas of consideration are air, water, soil, including land formations, biotic components of the remediation area, noise, solid waste and other pollutants.

1.1 Site Location:

Nike Battery 31
San Leandro, California
Alameda County

2.0 Air Contaminants

Prior to the onset of project activities, the work area will be inspected. The site will be monitored under the supervision of the Site Safety and Health Officer during the initial phases of work operations and when conditions at the site change. Direct reading instruments (DRI) will be used to detect the presence of organic vapors and explosive/oxygen-deficient atmospheres during pumping and excavation operations. For complete details refer to the Contaminant Monitoring section of the Site-Specific Safety and Health Plan.

2.1 Dust Abatement

The release of particulate matter may occur during excavation and backfilling operations. The amount of particulate matter generated is anticipated to be minimal. Care will be taken to avoid dusty conditions resulting from work activities. Motorized equipment will be operated at speeds that will not cause undue release of particulate matter. Water sprinkling of construction zones, along haul routes, in equipment parking areas, and in waste areas will be implemented if necessary. All disturbed excavation areas, upon completion of work, shall be sprayed with water for dust suppression at a rate sufficient to inhibit generation of airborne particulate matter.

2.2 Exhaust

All vehicular exhaust will be controlled by standard engineering devices.

2.3 Burning of Rubbish and Debris

Open burning of rubbish and debris will not be permitted on the site.

3.0 Protection of Soil and Land Resources

3.1 Land Resources

All land resources within the project boundaries will be preserved in their present condition or restored to a condition after completion of the project that will appear to be natural and not detract from the appearance of the site.

Prior to construction, CKY will identify all areas and land resources to be observed within the general work area(s). This includes, but is not limited to, the marking of utility lines, vegetation of environmental concern, land formations, nesting, hunting or otherwise inhabited areas of protected species. Marking methods will include flagging, fencing or other delineation in such a manner as to be identified as a protected source. Upon written approval of the COR, those land resources that will impede the construction required for soil remediation will be removed. Replacement

of these resources will take place upon completion of the project. All vehicle traffic is limited to the construction area and established roads.

3.2 Vegetation

Existing trees and shrubs will not be used to anchor cables, ropes or guys. Vegetation that is damaged during construction and deemed salvageable will be treated as soon as possible in a manner that is botanically correct and approved by the COR. Vegetation, both woody and herbaceous, that is near the UST excavation areas will be identified with caution tape, and discussed with the COR prior to beginning excavation activities. A palm tree will most likely have to be removed in order to remove the UST. During the site walk it was indicated that the COR would notify CKY if the Park District wished to relocate the tree prior to removal by CKY during the UST removal. CKY will coordinate with the COR prior to removal of the palm tree. All other vegetation will be protected and saved unless permission for removal is given by the COR. Vegetation that is damaged during construction, that is unsalvageable, will be replaced with nursery grown specimens that are of the same species, at the expense of CKY. Trees will be replaced by specimens that are also of equal size.

3.3 Animal Habitats

Nike Battery 31 contains open fields, hills and administration and maintenance facilities. CKY personnel and its subcontractors will be instructed not to feed, chase, or otherwise harm any animals found in or around any of the work areas. Any nests, animal habitats found near or within the UST excavation areas will be identified and the COR will be notified. CKY and its subcontractors will not disturb any such animal habitats.

3.4 Cultural and Historical

There are no known sites of historical or cultural significance in the work areas. In the event that skeletons or artifacts are found during construction activities, the contracting officer will be notified in writing, specifying location and nature of discovery. Work will not resume until authorized by the COR.

4.0 Water Resources

4.1 Run-off Contamination

Previous excavations have indicated that CKY will not encounter high levels of ground water but may experience periods of rainy weather during this project. Run-on off water will be prevented from entering and/or leaving the trenches. Any trenches that are created for the purpose of the project will be graded to prevent unnecessary run-off water pollution. Berms will also be placed around the trenches to prevent run-off or run-in of any water. During rainy weather, CKY will periodically monitor the site to ensure that run-off conditions are not occurring. Additional measures, such as pumping of water in trenches, covering trenches with visqueen, and building additional berms to divert rain water may be utilized.

Stockpiles will be bermed to prevent the run-off or run-on of any water. The berm will be a minimum of twelve inches in height. The stockpile area shall have a visqueen liner as a base and a visqueen covering placed over the soils. The stockpile area shall be sized to completely contain the quantity of contaminated soils generated placed a maximum of four feet high.

4.2 Chemical Degradation

Fuels, oils, bitumen, calcium chloride, acids, bases and other methods of chemical degradation of surface and ground waters will be prevented by the storage and disposal of the above listed sources in a method that is approved by the EPA and the State of California at the expense of CKY. Water that is used in the decontamination or hydraulic line flushing process will be disposed of with liquids removed from the USTs.

5.0 Waste Disposal

Waste materials generated by construction activities or construction personnel will be removed and disposed of properly. The site will be restored to conditions that existed prior to construction at the expense of CKY. The specific Hazardous Waste Disposal Sites are addressed in the PWP.

5.1 Sewage Disposal

Raw sewage generated on site by construction activities will be disposed of through the use of an approved service contractor on a regular schedule that will provide for sanitary conditions.

5.2 Municipal Waste

Municipal waste that is generated on site will be disposed of at a Class III landfill via dumpster or CKY truck. It is understood that this method is in accordance with regulations established by the EPA and State of California.

5.3 UST Liquids

Liquids removed from the UST will be disposed of in accordance with EPA and State of California regulations. Specific disposal / recycling facilities are addressed in the Materials Handing Plan.

5.4 Personal Protective Equipment

The personal protective equipment, plastic sheeting and trash generated inside the exclusion zone will be removed to an approved offsite facility in accordance with EPA and State of California regulations.

6.0 *Traffic Control*

Nike Battery 31 is located on property owned by the East Bay Regional Parks District in San Leandro, California. Traffic in the work areas is limited to that of Park personnel. CKY will coordinate with the COR regarding access and prior to any deliveries by vendors or mobilization onsite by CKY subcontractors.

6.1 Work Areas

Excavations and the stockpiles will be enclosed by a chain link or fabric fence any time the site is left unattended by the Contractor until such time as the excavation hole is backfilled to the original surface elevation. In addition to installing fencing at all excavations, lighted barricades will be used at the fences. The barricades shall be operated from dusk to dawn.

Only authorized personnel will be allowed in the restricted area (contamination reduction zone and the exclusion zone). Personal vehicles will not be allowed in the restricted area. Only equipment required for the project will be allowed into the exclusion zone and will not be removed until that specific piece of equipment is no longer needed. Equipment and vehicles will be decontaminated prior to removal from the exclusion zone.

7.0 Odor

Odor pollution will most likely result from sanitary concerns. Odor will be controlled by regular servicing of sewage sites and disposal of municipal refuse.

8.0 Noise

Whenever feasible, engineering control will be implemented to maintain noise levels below 85 decibels. These controls will include isolation, enclosure and application of noise reduction materials. In the event that these methods are not feasible or effective, affected site personnel will be given personal hearing protection.

9.0 Quality Control/Quality Assurance

Prior to construction activities, the Site Safety and Health Officer and Quality Control Inspector will inspect and monitor the remediation area for background air contamination levels, soils impacted by previous site activities, existing surface waters, areas that may pose erosion or water run-off difficulties and previously damaged

vegetation. All items of note will be documented in the quality control log using qualitative and quantitative form of measurements, maps and other useful types of documentation. The Site Safety and Health Officer will continue monitoring all items during preliminary activities, construction activities, and will assist the Quality Control Inspector during post construction activities to assure that the site meets all restoration standards and is not compromised ecologically or aesthetically.

10.0 Inspections and Reports

Each day the Site Safety and Health Officer will conduct visual inspections of the work area. Inspections for fugitive releases of oil, fuel and hydraulic fluid from the equipment as well as any fugitive release from the sanitary facilities will be conducted in the morning. Inspection for vegetation damage and unapproved methods of waste disposal in or near the work area will be completed at the end of each work day. The date and time of the performance of any sanitary services received will be documented. Upon the discovery of any violation of the Environmental Protection Plan by the Site Safety and Health Officer, a notice of the violation will be given to the Quality Control Manager and Project Manager immediately. These violations will be recorded in the Quality Control Inspector's log. Upon conclusion of the remediation activities, the Site Safety and Health Officer will make a final assessment of the unscheduled impact on the area by the construction activities, and will make a written report to the Quality Control Manager.

STANDARD OPERATING PROCEDURES

COLD STRESS & HEAT STRESS PROCEDURES
OPERATING PROCEDURES NO. HS-102

HEAT STRESS

102.1 PURPOSE

The purpose of HS-102 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 (77F 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 is a possibility, a heat stress monitoring device, such as the Wibget Heat Stress Monitor (Reuter Stokes) can be utilized.

The WBGT shall be compared to the Threshold Limit Values (TLV) outlined by the ACGIH TLV guides, and a work-rest regiment can be established in accordance with the WBGT. Note that 5 degrees 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 RCI medical surveillance program, on-site medical monitoring of personnel should be performed by qualified medical personnel for projects where heat stress is a major concern. Blood pressure, pulse, body temperature (oral), and body weight loss should be taken and recorded.

Heart Rate: Count the radial pulse during a 30-second period as early as possible in the rest period. If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the same. If the heart rate still exceeds 110 beats per minute at the next rest cycle, shorten the following work cycle by one-third.

Oral Temperature: Use a clinical thermometer or similar device to measure the oral temperature at the end of the work period (before drinking liquids). If the oral temperature exceeds 99.6F (37.6C), shorten the next work cycle by one-third without changing the rest period. If the oral temperature still exceeds 99.6F (37.6C) at the beginning of the next rest period, shorten the following work cycle by one-third.

Do not permit a worker to wear a semi-permeable or impermeable garment if his/her oral temperature exceeds 100.6F (38.1C).

Body Water Bosq: Measure body weight on a scale accurate to +0.25 pounds at the beginning and end of each work day (also lunch break, if possible) to see if enough fluids are being taken to prevent dehydration. Weights should be taken while the employee wears similar clothing or, ideally, nude. The body water loss should not exceed 1.5 percent total body weight loss in a work day.

Portable water and Gatorade or other electrolyte replacement fluid should be available. Workers should be encouraged to drink fluids during rest periods.

Physiological Monitoring: Initially, the frequency of physiological monitoring depends on the air temperature adjusted for solar radiation and the level of physical work. The length of the work cycle will be governed by the frequency of the required physiological monitoring.

102.7 REFERENCES

American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Chemical Substances in the Work Environment, 1984-1988.

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.

COLD STRESS

103.1 PURPOSE

The purpose of this section is to establish procedures for the implementation, operation, and monitoring of a cold stress prevention, evaluation, and response program. The cold stress OP also describes the signs and symptoms which characterize excessive exposure of work site personnel to cold environments. Recognition of these signs and symptoms necessitates prompt corrective action to prevent permanent injury or death.

103.2 REQUIREMENTS

The American Conference of Governmental Industrial Hygienists (ACGIH) has developed tentative Cold Stress Threshold Limit Values (TLVs) that are intended to protect workers from the severest effects of cold stress (hypothermia) and cold injury. The TLVs are also intended to describe exposures to cold working conditions under which it is believed that nearly all workers can be repeatedly exposed without adverse health effects. The TLV objective is to prevent the deep body core temperature from falling below 36°C (96.8°F) and to prevent cold injury to body extremities. Deep body temperature is the core temperature of the body as determined by rectal temperature measurements. For a single, occasional exposure to a cold environment a drop in core temperature of no lower than 35°C (95°) should be permitted. In addition to provisions for total body protection, the TLV objective is to protect all parts of the body with emphasis on hands, feet, and head from cold injury.

103.3 TYPES OF COLD STRESS

Two factors influence the development of a cold injury: ambient temperature and the velocity of the wind. Wind chill (Table HS-103-1) is used to describe the chilling effect of moving air in combination with low temperature. For instance, 10°F with a wind of 15 mph is equivalent in chilling effect to still air at -18 F.

As a general rule, the greatest incremental increase in wind chill occurs when a wind of 5 mph increases to 10 mph. Additionally, water conducts heat 240 times faster than

air. Thus, the body cools suddenly when chemical-protective equipment is removed if the clothing underneath is soaked with perspiration.

Persons working outdoors in temperatures at or below freezing may experience frostbite. Extreme cold for a short time may cause severe injury to the surface of the body. Areas of the body that have a high surface area to volume ratio, such as fingers, toes, and ears, are the most susceptible.

103.3.1 Frostbite

Local tissue damage caused by exposure to low temperature environmental conditions is included in the generic term frostbite. There are several degrees of damage and severe occurrence may lead to deep tissue damage, gangrene and loss of the affected parts. Frostbite of the extremities can be categorized into:

- Frost nip or incident frostbite - the condition is characterized by sudden blanching or whitening of skin.
- Superficial frostbite - skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient.
- Deep frostbite - tissues are cold, pale, and solid; extremely serious injury.

103.3.1 Hypothermia

Hypothermia is the lowering of the bodies core temperature due to exposure to cold. Authorities agree that there are degrees of hypothermia which are characterized as "moderate" and "severe." A victim of moderate hypothermia may exhibit the first seven signs listed below, is still conscious but often confused. Severe hypothermia is determined by extreme skin coldness, loss of consciousness, faint pulse and shallow, infrequent or apparently absent respiration. Severe hypothermia may result in death of the victim. Practically, the onset of severe shivering signals danger to personnel and exposure to cold shall be immediately terminated for any severely shivering worker.

Signs of Hypothermia are as follows:

1. Severe shivering
2. Abnormal behavior
3. Slowing
4. Stumbling
5. Weakness
6. Repeated falling
7. Inability to walk
8. Collapse
9. Stupor
10. Unconsciousness

103.4 METHODS OF CONTROLLING COLD STRESS

103.4.1 Personal Protective Equipment

Since prolonged exposure to cold air, or to immersion in cold water, at temperatures well above freezing can lead to dangerous hypothermia, whole body protection must be provided as follows:

- Adequate insulating clothing to maintain core temperatures above 97°F must be provided to workers if work is performed in air temperatures below 40°F. Wind chill or the cooling power of the air is a critical factor. The higher the wind speed and the lower the temperature in the work area, the greater the insulation value of the protective clothing required. An equivalent chill temperature chart relating the actual dry bulb air temperature and the wind velocity is presented in Table HS-103-1. The equivalent chill temperature must be used when estimating the combined cooling effect of wind and low air temperatures on exposed skin or when determining clothing insulation requirements to maintain the deep body core temperature.

- Older workers or workers with circulatory problems require special precautionary protection against cold injury. The use of extra insulating clothing and/or a reduction in the duration of the exposure period are among the special precautions

which shall be considered. The precautionary actions to be taken will depend upon the physical condition of the work and shall be determined with the advice of a physician with knowledge of the cold stress factors and the medical condition of the worker.

- Special protection of the hands is required to maintain manual dexterity as follows:

  - If fine work is to be performed with bare hands for more than 10-20 minutes in an environment below 60°F, special provisions shall be established for keeping the worker's hands warm. For this purpose, warm air jets, radiant heaters (fuel burner or electric radiator), or contact warm plates may be utilized. Metal handles of tools and control bars shall be covered by thermal insulating material at temperatures below 30°F.

  - If the air temperature falls below 60°F for sedentary, 40°F for light, or 20°F for moderate work and fine manual dexterity is not required, then gloves shall be used by the workers.

- To prevent contact frostbite, the workers must wear anti-contact gloves and follow the provisions shown below:

  - When cold surfaces below 20°F are within reach, a warning should be given to each worker by his supervisor to prevent inadvertent contact by bare skin.

  - If the air temperature is 0°F or less, the hands should be protected by mittens. Machine controls and tools for use in cold conditions should be designed so that they can be handled without removing the mittens.

- Provisions for additional total body protection is required if work is performed in an environment at or below 40°F. The workers shall wear cold protective clothing appropriate for the level of cold and physical activity:

  - If the air velocity at the job site is increased by wind, draft, or artificial ventilating equipment, the cooling effect of the wind shall be reduced by shielding the work area, or be wearing an easily removable outer windbreak garment.

- If only light work is involved and if the clothing on the worker may become wet on the job site, the outer layer of the clothing in use shall be of a type impermeable to water. The outer garments must include provisions for easy ventilation in order to prevent wetting of inner layers by sweat. If work is done at normal temperatures or in a hot environment before entering the cold area, the employee shall make sure that his clothing is not wet as a consequence of sweating. If his clothing is wet, the employee shall change into dry clothes before entering the cold area. The workers shall change socks and any removable felt insoles at regular daily intervals or use vapor barrier boots. The optimal frequency of change shall be determined empirically and will vary individually and according to the type of shoe worn and how much the individual's feet sweat.

- If extremities, ears, toes, and nose, cannot be protected sufficiently to prevent sensation of excessive cold or frostbite by handwear, footwear, and face masks, these protective items shall be supplied in auxiliary heated versions.

- If the available clothing does not give adequate protection to prevent hypothermia or frostbite, work shall be modified or suspended until adequate clothing is made available or until weather conditions improve.

- Workers handling evaporative liquid (gasoline, alcohol, or cleaning fluids) at air temperatures below 40°F shall take special precautions to avoid soaking of clothing or gloves with the liquids because of the added danger of cold injury due to evaporative cooling. Special note should be taken of the particularly acute effects of splashes of "cryogenic fluids" or those liquids with a boiling point just above ambient temperatures.

103.4.2 Work-Warming Regimen

If work is performed continuously in the cold at an ECT of 20°F or below, heated warming shelters shall be made available for use by employees during warm-up breaks. A work-warming regimen will be established using Table HS-103-2. This table assumes that all workers are properly clothed for periods of work at temperatures below freezing.

When entering the heated shelter the outer layer of clothing shall be removed and the remainder of the clothing loosened to permit sweat evaporation or a change of dry work clothing provided. A change of dry work clothing shall be provided as necessary to prevent workers from returning to their work with wet clothing. Dehydration, or the loss of body fluids, occurs insidiously in the cold environment and may increase the susceptibility of the worker to cold injury due to a significant change in blood flow to the extremities. Warm sweet drinks and soups should be provided at the work site to provide caloric intake and fluid volume. The intake of coffee shall not be permitted because of a diuretic and circulatory effect.

For work practices at or below 10°F ECT the following shall apply:

1. The worker shall be under constant protective observation (buddy system or other direct supervision).

2. The work rate should not be so high as to cause sweating that will result in wet clothing; if heavy work must be done, all rest periods must be taken in heated shelters and the opportunity for changing into dry clothing shall be provided.

3. Provision shall be made to make sure employees shall become accustomed to the working conditions and required protective clothing.

4. The weight and bulkiness of clothing shall be included in estimating the required work performance and weights to be lifted by the worker.

5. The work shall be arranged in such a way that sitting still or standing still for long periods is minimized.

6. Unprotected metal chair seats shall not be used. The worker should be protected from drafts to the greatest extent possible.

7. The workers shall be instructed in cold weather procedures. The training program shall include as a minimum instruction in:

   a. Proper rewarming procedures and appropriate first aid treatment.
   b. Proper clothing practices.

c. Proper eating and drinking habits.

d. Recognition of impending frostbite.

e. Recognition of signs and symptoms of impending hypothermia or excessive cooling of the body even when shivering does not occur.

f. Safe work practices.

103.5 MONITORING

Monitoring is required as follows:

1. A thermometer accurate to 1°F shall be assigned at any work place where the environmental temperature is known or expected to be below 60°F to enable overall compliance with the requirements of this policy.

2. Whenever the air temperature at a work place falls to 30°F or below, the dry-bulb temperature and wind speed shall be measured and recorded at least every 4 hours.

3. The equivalent chill temperature shall be obtained from Table HS-103-1 in all cases where air movement measurements are required, and shall be recorded with the other data in the site log together with a record of the length of time spent working and resting.

103.6 EMERGENCY ACTION

1. Remove the victim form the hypothermia/frostbite producing environment.

2. Seek expert medical help immediately.

3. Reduce handling to a minimum. Do not rub or massage the victim.

4. Prevent further body heat loss by covering the victim lightly with blankets. Plastic may be used for further insulation. Do not cover the victim's face.

5. If the victim is still conscious administer hot drinks; encourage activity, such as walking while wrapped in a blanket; do not administer any form of sedative, tranquilizer or analgesic (pain reliever), because these may facilitate further heat loss and convert moderate hypothermia into a severe case.

103.7 REFERENCES

American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Chemical Substances in the Work Environment, 1989-1990.

TABLE 1. Cooling Power of Wind on Exposed Flesh Expressed as Equivalent Temperature (under calm conditions)*

Estimated Wind Speed (in mph)	Actual Temperature Reading (°F)										
	50	40	30	20	10	0	−10	−20	−30	−40	−50
	Equivalent Chill Temperature (°F)										
calm	50	40	30	20	10	0	−10	−20	−30	−40	−50
5	48	37	27	16	6	−5	−15	−26	−36	−47	−57
10	40	28	16	4	−9	−24	−33	−46	−58	−70	−83
15	36	22	9	−5	−18	−32	−45	−58	−72	−85	−99
20	32	18	4	−10	−25	−39	−53	−67	−82	−96	−110
25	30	16	0	−15	−29	−44	−59	−74	−88	−104	−118
30	28	13	−2	−18	−33	−48	−63	−79	−94	−109	−125
35	27	11	−4	−20	−35	−51	−67	−82	−98	−113	−129
40	26	10	−6	−21	−37	−53	−69	−85	−100	−116	−132
(Wind speeds greater than 40 mph have little additional effect.)	*LITTLE DANGER* In < hr with dry skin. Maximum danger of false sense of security				*INCREASING DANGER* Danger from freezing of exposed flesh within one minute.				*GREAT DANGER* Flesh may freeze w 30 seconds.		
	Trenchfoot and immersion foot may occur at any point on this chart.										

Developed by U.S. Army Research Institute of Environmental Medicine, Natick, MA.

TABLE 2. Threshold Limit Values Work/Warm-up Schedule for Four-Hour Shift*

Air Temperature—Sunny Sky		No NoticeableWind		5 mph Wind		10 mph Wind		15 mph Wind		20 mph Win	
°C (approx.)	°F (approx.)	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No Bre
−26° to −28°	−15° to −19°	(Norm. Breaks) 1		(Norm. Breaks) 1		75 min	2	55 min	3	40 min	
−29° to −31°	−20° to −24°	(Norm. Breaks) 1		75min	2	55 min	3	40 min	4	30 min	
−32° to −34°	−25° to −29°	75 min	2	55 min	3	40 min	4	30 min	5	Non-emerge work should	
−35° to −37°	−30° to −34°	55 min	3	40 min	4	30 min	5	Non-emergency work should cease			
−38° to −39°	−35° to −39°	40 min	4	30 min	5	Non-emergency work should cease					
−40° to −42°	−40° to −44°	30 min	5	Non-emergency work should cease							
−43° & below	−45° & below	Non-emergency work should cease									

OPERATING PROCEDURE NO. HS-513

REMOVAL OF UNDERGROUND STORAGE TANKS

513.1 PURPOSE

Operating Procedure No. HS-513 has been developed to provide guidance for the safe and efficient removal of underground storage tanks (USTs). Although site conditions may vary from project to project, this procedure provides general guidelines that can be followed on a variety of UST removal projects. This procedure must be used as an attachment to site specific work plans and health and safety plans that detail unique site conditions and requirements, as well as potential physical and chemical hazards at each site.

513.2 APPLICABILITY

This procedure applies to all projects that involve the excavation, purging, cleansing, removal, and disposal of USTs. Portions of Operating Procedure No. 512, Excavation and Trenching, may also apply to these projects.

513.3 TANK CONTENTS SAMPLING

USTs are used to store a variety of materials such as gasoline, diesel, aviation gas, jet fuel, solvents, mineral spirits, and waste oil. Accurate records concerning the contents of USTs may or may not be available. Older tanks that have been abandoned for many years with no security to prevent dumping are often not documented or may contain unknown materials.

Sampling and analysis of the tank contents must be performed to determine the hazards associated with the materials, and to evaluate options for disposal. When possible, sampling and analysis of the tank contents will be performed prior to the initiation of field work to allow inclusion of site specific hazard evaluations and requirements into the site health and safety plan. Samples will be collected from tank outlets, if possible, or siphoned from inlet ports.

513.4 EXPOSING, PURGING, AND DISPOSAL OF TANK CONTENTS

513.4.1 Exposing the Tank

All known openings in the tank will be expose utilizing both power tools and hand tools. The tank will be exposed until sufficient area is available for purging and inerting the tank. In order to minimize the risk of explosions, power tools will not be allowed to come into contact with the tanks. Non-sparking hand tools will be used to finish exposing the tanks.

513.4.2 Tank Contents Removal

Remaining tank contents will be removed by pumping the contents into a storage unit. If the tank contents have not been previously characterized, samples will be collected and analyzed to determine the identity of the material and appropriate disposal alternatives.

513.4.3 Disposal of Tank Contents

The laboratory test results will be used to insure the contents of the tank are temporarily stored and/or disposed in accordance with all Federal, State, and local requirements. If the tank contents are determined to be a Federal, State, or local hazardous waste, they will be transported and disposed as hazardous/toxic special classified waste in accordance with all local, State, and Federal Environmental Protection Agency (EPA) solid waste laws and regulations, specifically Resource Conservation and Recovery Act (RCRA). Additional sampling and analysis for waste stream characterization will be conducted as required by the off-site treatment, storage, or disposal facility (TSDF). All remaining tank contents will be purged prior to starting tank excavation operations.

513.4.4 Associated Tank Piping and Tank Appurtenances

The above procedures also apply to all associated piping and tank appurtenances. Appurtenances include, but are not limited to pumps, valves, concrete saddles, hold-down pads, and vaults.

513.5 EXCAVATION, REMOVAL, AND INERTING OF TANKS

513.5.1 Extent of Excavation

Excavation will proceed around the perimeter of the tank in a manner that will minimize the quantity of excavation while limiting the amount of potentially contaminated soil mixed with uncontaminated soil. Contaminated and uncontaminated soil will be segregated in separate stockpiles. The minimum size of the excavation around the tank will be maintained to allow the workers ample room to complete the work. The workers will be protected from slides and/or cave-ins during excavation activities using the procedures outlined in ES-514. Shoring will be used or the slopes of the excavation will be laid back in accordance with applicable OSHA regulations. If an excavation will compromise the integrity of a nearby structure, an excavation plan will be prepared detailing the procedures that will be used to minimize the risk of damaging the structure. Surface water will be diverted away from excavations to prevent direct entry into the excavation. Dewatering of the excavations will be limited to that necessary to assure a safe excavation. All open excavations and stockpile areas will be secured from the public while awaiting verification test results.

513.5.2 Stockpiling of Excavated Material

Topsoil will be stockpiled separately from soil excavated from around and below the tank based on visual inspection and field screening techniques. As a minimum, an organic vapor analyzer (OVA) will be used to determine if excavated material is contaminated in accordance with the State or local implementing agency. Field screening for contaminants other than petroleum products will be identified in the site specific health and safety plans. The State or local implementing agency may require laboratory testing of stockpiled soil to determine if it is suitable backfill. Material which is contaminated will be stockpiled separately from clean material. In such a case, soil samples will be collected and analyzed for the appropriate contaminants. Contaminated soil may be stored temporarily at the site during field work. Temporarily stored contaminated material will be placed on an impermeable geomembrane a minimum of 30 mils thick, and covered with a minimum 10 mils sheet of geomembrane securely fastened to the ground. The local county or Air Pollution Control District (APCD) may require a permit be issued to temporarily stockpile contaminated material for more than 90 days.

Volatile organic emission controls shall be provided in conformance with the local APCD or Air Quality Management District guidelines for control of volatile organics from contaminated soil stockpiles.

513.5.3 Inerting

All appurtenances in the excavation zone will be removed and capped, except those connections necessary to purge the tank. The tank will be inerted by using at least 20 pounds of dry ice per 1,000 gallons of tank volume. The sales receipt will be filed for verification of the amount of dry ice used. The tank atmosphere will be continuously monitored for combustible vapors and oxygen deficiency.

513.5.4 Tank Removal

Under no circumstances will a tank be removed from the excavation without the approval of the project manager. The tank will not be removed until the tank atmosphere is below 20% of the Lower Explosive Limit (LED) and the oxygen content of the tank is less than 5%. Tanks will be removed using cranes or other equipment capable of lifting the load within the manufacturers specifications and limitations.

513.5.5 Inspection

State and local agency regulations may require a State or local representative be present to inspect tanks at any point during tank removal and/or oversee sampling activities. Tank removal activities will comply with all State and local inspecting requirements, and advanced notice of tank removal/testing will be given to the appropriate agency. As a minimum the Fire Protection District and the Hazardous Materials Division (HMD) will be contacted no less than 48 hours prior to any necessary test or inspection.

513.5.6 Inspection for Leaks

Upon removal, the tank and piping will be inspected for leaks. The inspection will be documented in the field notes and photographs (35 mm color prints).

513.5.7 Tank Identification

Labels will be affixed to each UST after removal from the ground and prior to transportation. The labels will contain the following information in a minimum 2 inch lettering:

- Former contents, e.g. leaded gas, unleaded gas, diesel, specific chemicals, etc.
- Present vapor state including method of vapor freeing and date of removal
- Tank shall be labeled with the following: "NOT SUITABLE FOR STORAGE OF FOOD OR LIQUIDS INTENDED FOR HUMAN OR ANIMAL CONSUMPTION."
- If the tank contained leaded gasoline, the following shall also be labeled on the tank: "TANK HAS CONTAINED LEADED GASOLINE. LEAD VAPORS MAY BE RELEASED IF HEAT IS APPLIED TO THE SHELL OF THIS TANK "

513.5.8 Tank Slab, Saddle and Tiedown Removal

Upon removal of the tank from the excavation, any concrete slab, saddle and/or tiedowns associated with the removed tank will be removed. In the event that a tank had been previously removed and the tank slab, saddle and/or tiedown still exists at the site, they will be removed and will be disposed of off-site in accordance with Federal, State, and local regulations.

513.5.9 Fencing

A plastic safety or chain-link security fencing will be placed around the excavation and stockpiles anytime the site is left unattended until such time as the excavation hole is backfilled to the original surface level. The chain-link fabric will be fabricated of 9-gauge zinc or aluminum coated steel wire woven in 2-inch mesh. The plastic safety fencing fabric will be manufactured of tough, flexible high density polyethylene. The fence height will be a minimum of 5 feet. All fencing will be installed so that it is taut and free of sags. Used materials for fencing may be used, as long as the materials are in serviceable condition without sharp unsafe ends.

Sites located in close proximity to parks, residential homes, schools or locations where the probability of children entering the site after hours is high shall have the following additional measures taken:

- Fencing will be a minimum of 7 feet high chain link as described above securely anchored by posts such that the fence cannot be knocked down by children.

- The bottom of the fence will be no higher than 2" above the ground surface.
- Sufficient warning signs shall be clearly posted on the fence.
- The fence will be properly maintained during the length of construction, including weekends.

513.5.10 Excavations at Airports or in Close Proximity to Roadways

In addition to the installation of fencing, lighted barricades will be placed at the fences at all excavations within the active air operations areas or near roadways. The barricades will be operated during the time from dusk to dawn.

513.6 CLEANSING OF TANK

Field personnel will clean and inert the tanks prior to transport to the temporary storage facility (TSD) facility using the methods and procedures described in the site work plan for that project. Sampling and analysis will be conducted to determine if the tank rinsate is a hazardous waste. The rinsate will be contained, chemically characterized, removed and disposed of in accordance with all Federal, State and local requirements. If the rinsate is determined to be a Federal, State or local hazardous waste, it will be transported and disposed of as hazardous special classified waste in accordance with all local, State, and EPA solid waste laws and regulations.

513.6.1 Tank Cleaning - Exterior

All soil will be removed from the tank exterior to eliminate soil deposition on roadways during transportation to a temporary storage area, ensure markings will adhere to the tank surface, and simplify tank cutting. Soil will be removed using non-sparking tools. Soil removal will be accomplished on a paved area adjacent to the tank removal site if available. Uncontaminated soil removed from the tank exterior will be recovered and used as backfill in the former tank excavation. Stained or discolored material, or material screened and found to be contaminated, will be removed from the exterior of the tank adjacent to the tank excavation.

Contaminated soil removed will be collected on a 30 mil impermeable geomembrane and stockpiled with other contaminated soil removed from the excavation. After removal from the excavation the tank will be placed on a level surface adjacent to the tank excavation and secured with wood blocks to prevent movement. All perforations in the tank will be plugged using boiler plugs except one single 1/8"-1/4" vent hole to prevent the tank from being subjected to differential pressures prior to transporting the tank to the temporary storage area, for interior cleaning, or to a TSD facility.

513.6.2 Tank Cleaning - Interior

The interior of the tank will be cleaned at least twice and then a final cleaning will be performed (rinsate). A sample of the final rinsate will be analyzed by a State certified laboratory to ensure the tank is clean. All rinsates will be stored in a bulk storage container until filled. Analytical results on the rinsates will be reviewed prior to disposing of any rinsates. If the laboratory results indicate rinsing procedures were not effective, the cleaning and rinsing process will be repeated.

513.6.3 Associated Tank Piping and Tank Appurtenances

The above procedures also apply to the cleansing of all associated piping and tank appurtenances. Appurtenances include, but are not limited to pumps, valves, concrete saddles, hold-down pads, and vaults.

513.7 TANK DISPOSAL

513.7.1 Tank Removal from Job Site

The Contractor is responsible for securing any Manifest will be secured as required by Federal, State, or local regulations prior to transport of the USTs from the job site. After inspection is completed and the tank is inerted and made safe, the tank and/or piping will immediately be loaded for transportation. Clean tanks will not be permitted to remain overnight on the job site.

513.7.2 Certificates of Destruction

The Certificate of Destruction for each tank will be obtained within 7 days of delivering the tanks to a TSD facility.

513.8 FIELD SAMPLING

513.8.1 Sampling

Upon completion of tank removal activities, the project manager, in consultation with the representative from the local implementing agency, will direct field personnel on the number and location of all samples for analysis. Samples will be collected in pre-cleaned containers in accordance with applicable local, State and Federal regulations. Sample handling and storage procedures are outlined in ES-507.

513.9 SITE RESTORATION

The tank and/or piping excavations will not be closed until laboratory results of soil samples have been reviewed and the local implementing agency has approved the closure activities. The excavation will be backfilled and compacted using clean excavated material or clean imported

material in accordance with applicable local, State and Federal regulations. The surface of the site will be restored to the original condition (i.e., reseeding or replacement of concrete or asphalt).

OPERATING PROCEDURES NO. HS-516

CONFINED SPACE ENTRY

516.1 PURPOSE

The purpose of this OP is to minimize the risk of bodily injury, illness and death to employees working in confined spaces. Potential hazards associated with working in confined spaces include but are not limited to oxygen deficiency, explosive or flammable atmospheres, and atmospheres containing unsafe levels of toxic substances.

Because of the extreme potential hazards associated with confined space entry, every effort should be made to design a work plan that accomplishes the project objectives without entry into confined spaces. If confined space entry is unavoidable, the procedures and controls outlined below must be strictly adhered to.

516.2 APPLICABILITY

This procedure applies to all project requiring employees to enter confined spaces. A confined space is defined as any space that, by design, has one or more of the following characteristics:

- limited means of entry or exit,
- is unsuitable for continuous occupancy,
- Contains, or has the potential to contain a hazardous atmosphere or any other recognized serious safety and health hazard,
- contains a material with the potential for engulfment of an individual,
- has an internal configuration such that an entrant could be trapped or asphyxiated by inward converging walls; or
- has a floor that slopes downward and tapers to a smaller cross-section.

Confined spaces include but are not limited to storage tanks, compartments of ships, process vessels, pits, silos, vats, degreasers, reaction vessels, boilers, ventilation and exhaust ducts, sewers, tunnels, underground utility vaults, and pipelines.

A permit is required to enter a confined space if the confined space has the potential for causing injury and illness.

516.3 RESPONSIBILITY AND AUTHORITY

The corporate health and safety officer (CHSO), a Certified Industrial Hygienist (C.I.H.), has the authority to approve or disapprove confined space entry. The CHSO will review and approve all site specific confined space entry plans, and will be responsible for determining the monitoring procedures and the level of respiratory protection required.

The site health and safety officer (SHSO) will supervise all work in confined spaces to ensure that the procedures and controls of this OP are adhered to. The SHSO will be responsible for preparing confined space permits and has the authority to stop work or remove employees from the site if the proper procedures are not followed.

All employees working in confined spaces are responsibility for complying with the procedures and controls outlined in this OP. Failure to comply will be regarded as a serious health and safety violation resulting in immediate termination.

516.4 PERMIT SYSTEM

Entry into any confined space SHALL BE BY PERMIT ONLY. An example of a confined space work permit is attached as Figure ES-516-1. The permit is an authorization and approval in writing that specifies the location and type of work to be done, certifies that all existing hazards have been evaluated by the SHSO, and details the necessary protective measures that have been taken to insure the safety of each worker. The SHSO will be responsible for preparing the permit. The permit for a confined space entry shall be posted in a conspicuous place, close to the entrance of the confined space. Copies of all permits will be retained for at least one year.

516.5 PREPARATION FOR CONFINED SPACE ENTRY

Prior to entry into a confined space, the following steps will be taken:

- All electrically powered equipment (agitators, pumps, blowers, ect.) will be locked out in the off position.
- All lines connected to the space that carry gases, liquids, or solids will be blanked/blinded, double-blocked and bled, or manually disconnected from the space in such a manner as to prevent the entry of their contents into the space.
- The atmosphere in the space will be tested to ensure that it does not meet the criteria of a hazardous atmosphere.
- All entrapment/engulfment hazards will be removed from the space, or shored or sloped to prevent their movement.

- Signs and barriers will be posted to prevent unauthorized employee entry into the confined space.
- An adequately trained attendant will be provided to assist the persons entering the space.
- An adequately trained rescue team will be available to assist the persons in the space.

516.6 TESTING AND MONITORING

Entry into any confined space is prohibited until initial testing of the atmosphere has been performed from the outside. The tests performed shall include those for oxygen content, flammability, and toxic materials. Monitoring of a confined space will be done on a frequent basis and will be monitored as determined by the CHSO.

Any type of hot work shall be prohibited when tests indicate the concentration of flammable gases in the atmosphere is greater than 10% of the lower flammability limit.

Instruments used for testing the atmosphere in a confined space shall be selected for their functional ability to measure hazardous concentrations. Instruments shall be calibrated in accordance with the manufacturer's guidelines. Each calibration shall be recorded, filed, and available for inspection for 1 year after the last calibration date.

516.7 RESPIRATORY PROTECTION

Respiratory protection will be determined by the CHSO based upon conditions and test results of the confined space, and the work activity to be performed. If the percentage of oxygen falls below 19.5%, supplied air respiratory protection will be used. In an unknown situation, self contained breathing apparatus or pressure demand airline breathing apparatus will be mandatory.

516.8 ENTRY AND RESCUE

Rescue procedures shall be specifically designed for each entry. Initially, rescue will be attempted by utilizing the harness/lifeline to extract a worker from the outside. There shall be a trained standby person assigned to each confined space, stationed outside the confined space, with a fully charged, positive pressure-demand, self-contained breathing apparatus at hand. Under no circumstances will the standby person leave their station until he or she is relieved and is assured that adequate assistance is present. The standby person will be certified to perform CPR and first-aid.

516.9 ISOLATION, LOCKING AND TAGGING PROCEDURES

The isolation procedures shall be specific for each type of confined space. The confined space shall be completely isolated from all other systems by physical disconnection, double lock and bleed, or blanking off all lines. Electrical isolation of the confined space is achieved by locking circuit breakers in the open (off) position with a key-type padlock.

516.10 SAFETY EQUIPMENT

A chest or full body harness attached to a lifeline shall be worn at all times. The combination of a body harness and/or safety belt with lifeline is required for Class A confined spaces. A lifting device is required for all top entries.

516.11 TRAINING

Personnel who are required to work in a confined space or in support of those working in a confined space shall have the following training:

1. Use of applicable respirators
2. CPR and first-aid
3. Lockout Procedures
4. Safety equipment use
5. Emergency Rescue Procedures
6. Permit systems
7. Health and physical hazards of working in a confined space
8. Duties of a standby
9. Communication methods.

Figure HS-516-1
CONFINED SPACE ENTRY PERMIT

Location of Work _____

Description of Confined Space _____

Description of Work _____

Entry Authorized From _____ to _____ Date _____

Employee Authorizing Entry _____ Date _____

Authorized Entrants _____

_____

CONFINED SPACE HAZARDS AND CONTROLS

Hazards Expected

Asphyxiation: oxygen deficiency [ ] chemical [ ] entrapment [ ]
Flammable/explosive: dust [ ] chemical (specify) _____
Toxic: chemical (specify) _____
Unauthorized Activation: mechanical _____ electrical _____
Other (specify) _____

Controls to be Used

depressurization [ ] purging and cleaning piping [ ] ventilation [ ]
lockout/tagout [ ] capping piping [ ] other (specify) _____

Communications and equipment/procedures to be used: _____

_____

The following personal protective equipment have been assigned to, and will be worn by entrants:

Respirators	_____	Gloves	_____
Chemical Resistant Clothing	_____	Chemical Resistant Boots	_____
Hard Hat	_____	Lifelines, Harness	_____
Eye Protection	_____	Other (specify)	_____

_____

Hot work [may] / [shall not] be performed in this confined space.
If hot work is permitted, the following controls will be utilized: _____

_____

Figure HS-516-1 (continued)

TESTING AND MONITORING

Monitoring will be conducted continuously [ ] or at_____ intervals.

Oxygen Content

Location	O_2 Content	Time/Date

Flammability

Location	% LEL	Time/Date

Toxic Substances in the Air

Location	Substance Tested For	Method	Results

AUTHORIZATION

The following personnel are authorized to enter the confined space to perform the scope of work presented in the site specific work plan. This approval is conditional on the adherence of the entry team and attendant to the safety procedures specified in Operating Procedure ES-516 of CKY's corporate health and safety plan.

Attendant _____

Entry Team Personnel _____

_____

_____

_____

_____

Authorizing Signature _____

Time/Date _____

OPERATING PROCEDURE NO. HS-523

OPERATION of STEAM CLEANER and POWER WASHER

523.1 PURPOSE

This procedure is intended to provide basic guidance for the safe operation of portable steam cleaners and power washers.

523.2 APPLICABILITY

This procedure applies to the operation of portable steam cleaners and power washers.

523.3 HAZARDS

A steam cleaner is capable of generating up to 200psi of internal pressure. This amount of pressure can can cause weakened components to burst and release high velocity pieces that are capable of causing puncture injuries. Steam temperatures can exceed 250°F. Contact with the pressurized steam, heating unit, gas engine, and spray nozzle can cause third degree burns. A power washer operates at considerably less pressure and much lower temperatures, but still has the capacity to cause similar injuries of lesser magnitude. Consideration should be given to the contaminants in the soil when these units are used for decontamination because the heat and/or nozzle velocity may create an airborne inhalation exposure.

523.3 SAFE PRACTICES

The manufacturer's procedure should be read until it is understood and strictly adhered to at all times. The manufacturer's operating parameters must never be deviated from during operation. Thick canvas lined neoprene gloves generally provide adequate protection from heat and site contaminants. Rubber boots, Tyvek coveralls with a hood, and safety glasses are also appropriate protection to be worn. A afce shield must also be worn for close contact work.

Section D
Materials Handling Plan

Section D
Materials Handling Plan

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SECTION D
MATERIALS HANDLING PLAN

D1.0 Introduction

The following Materials Handling Plan describes the planned program for transportation of wastes generated during underground and aboveground storage tank removal activities at the Nike Battery 31 site in San Leandro, California. These wastes will be comprised of the underground ground storage tank and piping, the liquid tank contents, the tank saddle and contaminated soils.

D2.0 Transportation and Disposal of Tanks and Piping

Erickson, Inc., Richmond, California, will transport and dispose of the tanks and any piping. Handling and transportation of these waste materials will be in accordance with all Federal, State, and local requirements. Erickson, Inc. is a licensed hazardous waste hauler, holding EPA ID No. CAD009466392. Copies of Erickson's permits are attached to the GMP.

D3.0 Transportation and Disposal of Liquids

Liquids will be pumped and hauled by Erickson as well. The liquids will be recycled by Gibson Environmental, Redwood City California. Gibson holds a Hazardous Wastes Resource Recovery Permit, EPA ID No. CAD043260702. Copies of Gibson's permits are attached to the GMP

D4.0 Transportation and Disposal of Soil

Soil that is considered a designated waste will be transported by Erickson. Erickson's certification are contained in the GMP. The soils will be transported

by Erickson and taken to Forward Landfill in Stockton, California. Copies of Forward's permits are attached to the GMP.

D5.0 Hauler Routes

The proposed haul route to Erickson is as follows: The truck will proceed from the site and head south on Lake Chabot Rd. to Castro Valley Rd. The truck will then take Castro Valley Rd. west to Interstate 580. The truck will take Interstate 580 west to Interstate 80. The truck will take Interstate 80 to Erickson's facility located in Richmond, California.

The proposed haul route Gibson Environmental is as follows: The truck will proceed from the site and head south on Lake Chabot Rd. to Castro Valley Rd. The truck will then take Castro Valley Rd. west to Interstate 580. The truck will take Interstate 580 west to Interstate 80. The truck will proceed from the site to Interstate 80, heading east until it reaches Highway 101. The truck will take Highway 101 south to Gibson's facility in Redwood City.

The proposed haul route to Forward Landfill is as follows: The truck will proceed from the site and head south on Lake Chabot Rd. to Castro Valley Rd. The truck will then take Castro Valley Rd. west to Interstate 580. The truck will then take Interstate 580 east to Interstate 205. The truck will then take Interstate 205 north to Interstate 5. The truck will then take Interstate 5 north to Forward's Facility in Stockton.

Section E
Site Specific Quantity Survey Plan

Section E
Quantity Survey Plan

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SECTION E
QUANTITY SURVEY PLAN

E1.0 Site Surveyor

All surveying performed as part of this Delivery Order will be performed by Vail Engineering Corporation, Sacramento, California, Registration number LS 5614. A copy of the surveyor's licensed follows. Surveying will locate, measure, and record the UST locations, as well as the volume of the excavations, in order to certify compliance with the Delivery Order and provide a basis for payment.

Prior to beginning excavation activities on the site, a survey will be conducted showing existing structures, assumed UST and AST saddle locations and site elevations as described in the IDC.

After the excavation activities are complete, the area will be surveyed again to establish quantities removed and accurately delineate the excavated area for the closure report.

Linear and square foot items (piping and Aggregate Base Course and Bituminous Material) will be coordinated with the COR in order to verify quantities.

A copy of the survey results, including calculations, will be submitted during the course of field activities, as soon as available. The anticipated schedule for the surveying is approximately three to four weeks following the start of work.

SURVEYOR'S LICENSE

VAIL
ENGINEERING
CORPORATION

FACSIMILE COVER SHEET

DATE: Nov. 30, 1994 WORK ORDER NO. _____

TO:

NAME: Mark Hallock

COMPANY: RCI INC.

FAX NUMBER: 686-6064

FROM:

NAME: Michael R. Perrine

VAIL ENGINEERING CORPORATION

FAX NUMBER: (916) 929-1773

TELEPHONE #: (916) 929-1325

WE ARE SENDING YOU 2 PAGES (INCLUDING THIS COVER SHEET)

Copy of License & Business Card

Thanks!

Mike

2

IF YOU DO NOT RECEIVE ALL PAGES PLEASE CALL US.

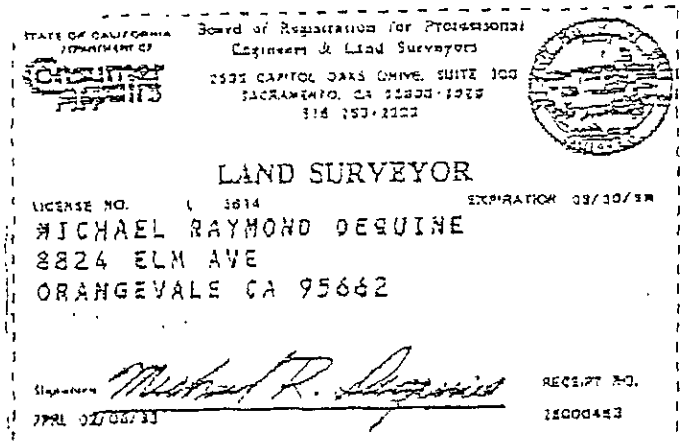
2033 Howe Avenue, Suite 220 • Sacramento, CA 95825

VAIL
ENGINEERING
CORPORATION

Formerly Raymond Vail & Associates • 40 Years of Service

Michael R. Dequine, L.S.
Director, Surveying and Mapping

3033 Howe Ave, Suite 220 • Sacramento, CA 95825
(916) 929-3321 • FAX (916) 929-1772



STATE OF CALIFORNIA
DEPARTMENT OF
Consumer Affairs

Board of Registration for Professional
Engineers & Land Surveyors
2535 CAPITOL OAKS DRIVE, SUITE 300
SACRAMENTO, CA 95833-2944
916 263-2222

LAND SURVEYOR

LICENSE NO. 5614 EXPIRATION 03/30/98

MICHAEL RAYMOND DEQUINE
8824 ELM AVE
ORANGEVALE CA 95662

Signature Michael R. Dequine

RECEIPT NO.
15000453

APPL 02/06/33

Registration Number LS 5614

Operating Engineers Local Union No. 3, AFL-CIO

This is to certify that

Michael R. Dequine

On *November* *11*, 19*94*

has successfully completed the annual 40-hour Hazardous Waste Training Program in accordance with 29 CFR 1910.120

Brian Bishop	*Instructor*	*T.J. "Tom" Stapleton,*
Director of Safety & Training	*William Schneider*	*Business Manager*

opeiu-3-afl-cio (3)

Operating Engineers Local Union No. 3, AFL-CIO

This is to certify that

Tony A. Castle

On *November 11 94*

has successfully completed the annual 40-hour Hazardous Waste Training Program in accordance with 29 CFR 1910.120

Brian Bishop
Director of Safety & Training

Instructor
William Schneider

T.J. "Tom" Slapleton,
Business Manager

opeiu-3-afl-cio (3)

Operating Engineers Local Union No. 3, AFL-CIO

This is to certify that

Michael J. O'Hagan

On *November 11* *94*

has successfully completed the annual 40-hour Hazardous Waste Training Program in accordance with 29 CFR 1910.120

Brian Bishop
Director of Safety & Training

Instructor
William Schneider

T.J. "Tom" Stapleton,
Business Manager

opeiu-3-afl-cio (3)

Operating Engineers Local Union No. 3, AFL-CIO

This is to certify that

Clark Parker

On *November 11, 94*

has successfully completed the annual 40-hour Hazardous Waste Training Program in accordance with 29 CFR 1910.120

Brian Bishop
Director of Safety & Training

Instructor
William Schneider

T.J. "Tom" Stapleton,
Business Manager

opeiu-3-afl-cio (3)

Section F
Site Specific Security Plan

Section F
Site Specific Security Plan

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SECTION F
Site Specific Security Plan

F1.0 Site Specific Security Plan

Controlling access to the site is important for a number of reasons including protection of the public, protection of Army and private property, reduction of contamination spread, and worker safety. A number of site controls will be implemented to assure these goals are met.

F2.0 Site Control

The work at the Nike Battery 31 site is located on property owned by the East Bay Regional Parks District in San Leandro, California. The work area consists of two sites, the Facilities Area and the Launcher Area. The Park District is using the Facilities Area for administration offices and the Launcher Area as a maintenance facility and storage yard. Traffic in the work areas is limited to that of the park personnel. CKY and its subcontractors will be instructed to watch for and to keep unauthorized personnel from entering the work zones. The presence of any unauthorized personnel will be immediately reported to the PM. Access to the sites will be coordinated with the COR. CKY will also coordinate with COR prior to any vendors or subcontractors entering the work sites.

The work sites will be delineated as described in the GMP and the Site Work Plan into an exclusion zone, a contamination reduction zone, and the support zone. The exclusion zone will be maintained around the work area by placement of signs, barricades, and barricade tape as necessary. The size and the shape of the exclusion zone will be determined by the conditions on the site, and will be large enough to encompass the potentially hazardous zone around each work site. All personnel working at the site will be required to sign a standard sign-in sheet. Figures for the site-specific work zones are attached to Section A.

CKY will place fencing around the excavation and stockpile anytime the site is left unattended and until the excavation is backfilled to its original surface level. The fabric height will be at least 5 feet The fencing will meet or exceed the specifications in the contract.

F3.0 Signage

At all worksites, weatherproof warning signs shall be attached to the fence in compliance with California Proposition 65 requirements.

F4.0 Lighting and Barricades

In addition to installing fencing at all excavations within the work area, lighted barricades will be utilized at the fences. The barricades will be operated during the time from dusk to dawn.

F5.0 Contractor Representatives

The following personnel can be contacted during non-work hours should security problems arise.

Dan Schottlander	714-830-4290
Chuck Bailey	209-538-0750
Mark Hallock	916-686-6949

Section G
Site Specific Quality Control Plan

Section G
Site Specific Quality Control Plan

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SECTION G
SITE SPECIFIC QUALITY CONTROL PLAN

G1.0 Quality Control Objectives

The objective of a Quality Control (CQC) Program is to provide a framework where a quality end product can be produced. All levels of the organization must be involved in the QC program. Responsibilities and lines of authority must be developed that avoid conflicts of interest. Procedures must be followed to assure uniformity, standardize jobs, and provide a standard by which comparisons can be made. Programs must be developed that allow non-conformances to be discovered and corrected. Finally, a documentation system recording all data, non-conformances, and corrective actions need to be incorporated into the QC program.

The following is a detailed description of the elements of the Site Specific Quality Control Plan for field activities conducted under Delivery Order No. 0005 at Nike Battery 31 in San Leandro, California. This plan is to be used in conjunction with the General Management Plan.

CKY's quality control is separated into three different and distinct phases, Preparatory phase, Initial phase, and Follow-up phase.

G2.0 CQC Organization

The overall QA/QC responsibility rests with the CQC Manager (QCM). The QCM will delegate specific tasks to qualified individuals within the organizational chart both on and off the project site.

Quality Control Manager

Mark Hallock is the Quality Control Manager for this project. Mr. Hallock has over 16 years of professional experience managing environmental and construction projects throughout the world. The types of environmental projects

includes site assessments, Superfund Projects, TSDF closures, refinery remediation and closures, all types of storage tank removal and replacements, PCB remediation, waste stabilization, bioremediation, soil and groundwater treatment, asbestos abatement, lead-based paint abatement, and emergency response projects. The construction projects includes construction of sewer treatment plants, storm and waste water pump stations, major pipeline projects, bridges and freeway overpasses, military housing and maintenance facilities, and government and commercial office buildings. Additional experience includes developing corporate health and safety programs, training programs, QA/QC programs, preparation and implementation of remedial action plans, site-specific health and safety plans, and standard operating procedures.

The Quality Control Manager is responsible for the quality control program for field activities, including inspections, testing, surveying, restoration, materials used, and submittals. The Quality Control Manager (QCM) will report to the principal-in-charge. Responsibilities of the QCM will include ensuring that needed information regarding QA/QC issues is supplied to the COR. The QCM will also check to ensure that proposed materials and submittals meet the requirements of the contract specifications before these items are submitted to the COR for review.

The QCM's responsibilities will include acting as a liaison between the suppliers and the project, ensuring that all materials, equipment, personnel and procedures are in compliance with the terms of the contract and in the event of a discrepancy, all matters are immediately corrected. All reports prepared by or reviewed by the Quality Control Inspector will be reviewed by the QCM prior to forwarding to the COR. The QCM is responsible for resolution of all conflicts and discrepancies.

Quality Control Inspector

Mr. Mike Bailey will act as the project Quality Control Inspector and report to the Quality Control Manager. Mr. Bailey has over 4 years of experience in general construction operations and hazardous waste management, including conducting complex underground construction, removal and installation of underground storage tanks, concrete remediation projects, projects involving

specialty shoring and excavation, and heavy equipment operations. While at RCI, Mr. Bailey has held the positions of Supervisor, Quality Control Inspector, and Site Safety Officer. Additional experience includes all types of sample collection and proper sample record keeping procedures, QA/QC sample collection and reporting requirements, and testing and record keeping procedures for general construction activities. He has received 40-hour hazardous waste worker and 8-hour supervisory training according to 29 CFR 1910.120, and maintains current updates to both. In addition, Mr. Bailey holds certifications in both Red Cross First Aid and CPR.

The Quality Control Inspector will have the same responsibilities as the Quality Control Manager and will report to the Quality Control Manager.

The QCI will complete and/or compile the Contractor Test Report, Daily Construction Quality Control Report, Preparatory Inspection Outline, Initial Phase Check List, Materials Test Summary, Daily Chemical Quality Control Reports, perform and or compile QA/QC inspection reports of Geotechnical and Materials Testing, prepare survey summary sheets, RCI Daily Report Form, prepare survey summary sheets, complete inspection checklists including "Safety Inspection Checklist for Construction Equipment" (Form 150-R), collect all information and documentation required for the completion of field reports and closure reports, maintain the photographic record of the work progress, coordinate with the laboratory, ensure submittal of and review of laboratory reports and forward the reports to the QCM.

Quality control issues relating to safety and health requirements will be the responsibility of the Site Safety and Health Officer (SHO). The SHO has authority to stop work if site conditions differ dramatically from those anticipated in the Site-Specific Safety and Health Plan, if unsafe conditions are present, if safety equipment is inoperable, and for other violations or departures from the approved Site-Specific Safety and Health Plan. Refer to the discussion on the Site Safety and Health Officer's responsibilities in Section C for more details.

G3.0 Preparatory Phase

The Preparatory Phase commences with actions in advance of construction. The purpose of the this phase is to oversee the advanced preparations and planned construction activities and make sure that they conducted within the terms of the contract and that all materials supplied to the project are of the type and quality required to achieve the desired results required on the project.

G3.1 Submittal Compliance

All materials that are to be used for this project will be approved by the QCM and the COR prior to their appearance on the project site. Proposed materials will be submitted via manufacturers data sheets, samples, shop drawings, mix designs, etc. These submittals will be reviewed by the QCM to ensure their compliance with the contract specifications. Once the submittal has been reviewed it will be marked either approved or disapproved. If the submittal has been approved it will be submitted to the COR for approval, however if it was stamped rejected it will be sent back to the source for the noted changes to be made and then resubmitted.

CKY has allotted for a minimum of time for review and approval by the COR. All submittals will be submitted on the form "Catalog Cut/Shop Drawing Transmittal and Approval".

G3.2 Utility and Equipment Location

During this phase of the project the QCI inspect the site and locate utility lines, equipment, and/or obstructions that may interfere with the removal / closure project. Once these items are located the QCI will ensure that locations are noted on the drawings prior to the start of any work. Contingencies will be made to construction activities to allow for these items, if any. Any discrepancies will be brought to the attention of the COR.

G3.3 Equipment Inspections

All equipment will be inspected, maintained and operated within the guidelines of CKY. Inspections will be performed daily on all equipment prior to and during there use to ensure the equipment is in safe operating condition and recorded on the "Equipment Inspection Log" (Form 150R). These inspections will be performed by the Project Supervisor who will report any problems to the QCI.

All preventative maintenance procedures recommended by the manufacture shall be followed. Any equipment found by the contractor or designated authority to be unsafe shall be deadlined and its use prohibited until unsafe conditions have been corrected. This will be accomplished by using a red tag to indicate the equipment will not be allowed in use until repairs are made to render it safe.

Equipment shall be operated only by designated personnel. Equipment deficiencies observed at any time that affect their safe operation shall be corrected before continuing operation.

Seats or equal protection must be provided for each person required to ride on equipment.

Getting on or off any equipment while it is in motion is prohibited.

Equipment requiring an operator shall not be permitted to run unattended.

Equipment requiring an operated in a manner that will endanger persons or property nor shall safe operating speeds or loads be exceeded.

All equipment shall be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done. Exemption: Equipment designed to be serviced while running.

When necessary, all mobile equipment and the area in which they are operated shall be adequately illuminated while work is in progress.

Mobile type equipment, operating within an off-highway job site not open to public traffic, shall have a service brake system and a parking brake system capable of stopping and holding the equipment fully loaded on the grade of operation.

Mechanized equipment shall be shut down prior to and during fueling operations. Closed systems, with automatic shut-off which will prevent spillage if connections are broken, may be used to fuel diesel powered equipment left running.

All towing devices used on any combinations of equipment shall be structurally adequate for the weight drawn and securely mounted.

Persons shall not be permitted to get between a towed and towing piece of equipment until the towing equipment has been stopped.

All equipment with windshields shall be equipped with powered wipers. Vehicles that operate under conditions that cause fogging or frosting of windshields shall be equipped with operable defogging or defrosting devices.

Whenever the equipment is parked, the parking brake shall be set. Equipment parked on incline shall have the wheels blocked or track mechanism blocked and the parking brake set.

No modifications or additions which affect the capacity or safe operation of equipment shall be made without the manufacturer's written approval. If such modifications or change are made, the capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly. In no case shall the original safety factor of the equipment be reduced.

The controls of loaders, excavators, or similar equipment with folding booms or lift arms shall not be operated from a ground position unless so designed.

Personnel shall not work or pass under the buckets or booms of loaders in operation.

Each forklift, grade-all, lift truck, bulldozer, scraper, dragline, crane, motor grader, front-end loader, mechanical shovel, backhoe, and other similar equipment shall be quipped with a least one dry chemical or carbon-dioxide fire extinguisher, having a minimum UL rating of 5-B:C

All self-propelled construction equipment, except light service trucks, panels, pick-ups, station wagons, crawler cranes, power shovels, and draglines, whether moving alone or in combination, shall be equipped with a reverse signal alarm. The alarm shall be audible and sufficiently distinct to be heard under prevailing conditions. The alarm shall operate automatically upon commencement of backward motion. Alarm may be continuous or intermittent (not to exceed 3-second intervals) and shall operate during the entire backward movement.

All belts, gears, shafts, pulley, sprockets, spindles, drums, flywheels, chains, or other reciprocating, rotating or moving parts of equipment shall be guarded when exposed to contact by persons or otherwise create a hazard. Guarding shall meet the requirements of ANSI B15.1, Safety Standards for Mechanical Power Transmission Apparatus.

All hot surfaces of equipment, including exhaust pipes of other lines, shall be guarded or insulated to prevent injury and fire.

Fuel tanks shall be located in a manner which will not allow spills or overflows to run onto engine, exhaust, or electrical equipment.

Exhaust or discharges from equipment shall be so directed that they do not endanger persons or obstruct view of operator.

Platforms, footwalks, steps, handholds, guardrails, and toeboards shall be provided on machinery and equipment to provide safe footing and accessways.

No guard, safety appliance, or device shall be removed from equipment, or made ineffective except for making immediate repairs, lubrications, or adjustments, and then, only after power has been shut off.

All guards and devices shall be replaced immediately after completion of repairs and adjustments and before power is turn on.

A warning device or signal person shall be provided where there is danger to persons from moving equipment, swinging loads, buckets, booms, etc.

Seatbelts and anchorages meeting the requirements of 49 CFR 571 (Department of Transportation Federal Motor Vehicle Safety Standards) shall be installed and worn in all motor vehicles. Two-piece seat belts and anchorages for construction equipment shall comply with applicable Federal specifications or SAE J 386a and shall be worn."

Suitable, protection against the elements, falling or flying objects, swinging loads, and similar hazards shall be provided for operators of all machinery or equipment. glass used in windshields or cabs shall be safety glass. Broken or cracked glass shall be replaced as soon as possible.

Rollover Protective Structures (ROPS) and Falling Object Protective Structures (FOPS) will be installed on all operated equipment in accordance to the manufacturer's or designer's recommendations.

G3.4 Material Compliance

Once a submittal has been approved for use, it will be ordered. When the material arrives on the project site, it will be inspected to ensure that the material matches the submittal and that there are no discrepancies between the two. Verification of the material will be accomplished by physically matching the submittal to the shipping invoice. In the event that there is a discrepancy between the two, the submittal will govern over the material and action will be taken to correct the discrepancy.

G4.0 Initial Phase

At the start of each new task the QCI will hold a briefing with the COR, project supervisor and the contractor personnel involved to go over the procedures

required to guarantee complete understanding of that task with the contract specifications. Any questions or concerns regarding this segment of work will be aired and resolved. The types of items that would be on the agenda of this meeting would be proposed methods for that task, special environmental concerns, precautions needed to ensure worker safety, etc. the minutes of this meeting will be recorded and distributed to all persons in attendance.

The CQM, QCI and SHO will verify the site safety monitoring is conducted in accordance with the site specific Health and Safety Plan. This will include verification of proper use of the equipment.

G4.1 Projected Tasks

The scope of this contract is removal of Underground /Aboveground Storage Tanks and Transformers in Northern California. This specific Delivery Order covers work to be performed at the Nike Battery 31 in San Leandro, California. One UST and the associated piping and appurtenances and one AST saddle, a CMU wall, and contaminated soils will be removed and disposed of. Any hydraulic fluid remaining in two missile vault systems will be drained, and the system flushed.

The work consists of locating the UST, AST saddle, and pipelines; providing surveys of each location referenced to known control points; removal and appropriate disposal of liquids and sludge from the tanks, pipes, and the hydraulic system; excavating, removing and disposing of the tanks, piping, and the hydraulic system, etc.; and sampling and analysis of soil underneath tanks and pipelines and after over excavation under the AST saddle. All excavations will be backfilled and compacted. Sites will be restored to the condition specified in the Delivery Order.

G4.2 Field Compliance

Before any actual removal / replacement work is started, the site will be laid out, material laydown areas will be established, and fencing and barricades and work areas will be set up. CKY will take necessary precautions to protect the surrounding areas and structures for the duration of the project.

Once the site is delineated, construction will begin. The CQC will ensure that the work is performed in accordance with the contract specifications. Daily reports will be filled out attesting to this fact. Any problems or concerns and the appropriate corrected action will also be noted, and addressed.

During this phase all material that was submitted and approved will be inspected to verify that the material matches the approved submittal. The inspections will be recorded on the daily report and submitted to the COR at the beginning of the next work day.

G5.0 Follow-up Phase

The purpose of the follow-up phase is to ensure that the levels of workmanship previously established are still being met. The CQM and QCI will ensure that the procedures utilized are in compliance with the contract specifications. The QCM and QCI will also ensure that any rework items are being corrected, and that are required inspections and testing is being performed.

Field verification of this phase of work will consist of, daily inspections on work both in progress and completed, daily inspections on the construction equipment, and daily inspections of the work in progress to insure that all safety procedures are being followed.

At the start of each work day the SHO will hold a "tailgate" safety meeting. This meeting is to update the workers on the potential hazards associated with the work, as well as any changes in the strategy from the previous day. The Health & Safety Officer will keep a diary of these meetings along with a daily sign-in sheet. These daily sheets will be collected by the PM and kept on the jobsite during the duration of the project.

G5.1 Testing

The QCM and QCI will ensure that all required testing has been conducted and passed in accordance with the project specifications and industry standards.

The QCM will keep record of all required tests. All testing results will be submitted to the COR. The QCI will list all required test on the report form "Material Test Summary". See attached. The QCI will also note any inspections, testing and their results on the Daily Quality Control Report.

G5.2 Rework

Any item of work that fails to meet testing requirements or is rejected by the QCM or QCI during inspection will be noted by the QCI on the Rework Items List form. The QCI will ensure that such items are corrected in accordance with the contract specifications. The QCI will also note the date when such items have been corrected. The Rework Item List shall be kept up to date and will be kept on the jobsite for inspection by the COR. The Rework item list will also be submitted to the COR at the end of each month.

G5.3 Final Inspection

Once the work has been completed and the site restored to its preconstruction condition, the QCI will inspect the premises to ensure that all aspects of the contract specifications have been completed, and that any rework item have been corrected. After the QCI has conducted his inspection and completed the daily inspection log, the COR will be notified and arrangements will be made to schedule the "walk through".

During the "walk through" the site will be inspected to verify that it is back to its preconstruction condition and all requirement of the contract have been satisfied. Items that need to be corrected will be added to a "punch list". These "punch list" items will be corrected. All final paperwork, such as as-built drawings, will be submitted at this time if they have not already been previously submitted.

CONTRACT REPORTING DOCUMENTS

CKY Incorporated Environmental Services

Daily Quality Control Report

Date:_____

Daily Report No.:_____
Contract No.:_____
Project Title and Location:_____
Weather:_____ Precip.:_____ in. Temp. Min.:_____ Max.:_____

1. Contract/Subcontractors and Area of Responsibility

Number	Trade	Hours	Employer	Location/Description Work

2. Operating Plant or Equipment. (not hand tools)

Plant/Equipment	Date of Arrival/Departure	Date of Safety Check	Hours Used	Hours Idle	Hours Repair

3. Work Performed Today: (Indicated location and description of work performed by prima and/or subcontractors. When network analysis is used, identify work by NAS activity number).

4. Control Activities Performed:
Preparatory Inspections: (Identify feature of work and attach minutes).
Initial Inspections: (Identify feature of work and attach minutes).
Follow-up Inspections: (List inspections performed, results of inspection compared to specification requirements, and corrective actions taken when deficiencies are noted).

5. Tests Performed and Test Results: (Identify test requirement by paragraph number in specifications and/or sheet number in plans).

6. Material Received: (Note inspection results and storage provided)

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) by Whom	(d) Action

8. Offsite Surveillance Activities, Including Action Taken:

9. Job Safety: (List items checked, results, instructions and corrective actions taken).

10. Remarks: (Instruction received or given. Conflict(s) in Plans and/or Specifications. Delays encountered.).

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

QCM Date

Preparatory Inspection Outline

(Part I)

Cantract No.: DACA05-94-D-0012 Date _____

Delivery Order No. 0005
Containerized Hazardous and/or Toxic Waste Removal
Nike Battery 31, San Leandro, CA

Title and No. of Technical Section: _____

_____

Reference Contract Drawings: _____

A. Planned Attendants:

	Name	Position	Company
1)	_____	_____	_____
2)	_____	_____	_____
3)	_____	_____	_____
4)	_____	_____	_____

B. Submittals required to begin work:

	Item	Submittal No.	Action Code
a)	_____	_____	_____
b)	_____	_____	_____
c)	_____	_____	_____
d)	_____	_____	_____

I hereby declare that the above required materials delivered to the jobsite are certified to be the same as those submitted and approved.

_____
Quality Control Representative

C. Equipment to be used in executive work:

a) _____

b) _____

c) _____

d) _____

D. Work areas examined to ascertain that all preliminary work has been completed:

_____

_____

E. Methods and procedures for performing Quality Control - including specific testing requirements:

_____

_____

The above methods and procedures outlined are certified to comply with the contract requirements and will be performed as planned and specified.

_____
Quality Control Representative

Preparatory Inspection Outline

(Part II)

A. Persons in attendance:

	Name	Position	Company
1)			
2)			
3)			
4)			
5)			
6)			

B. Items of mutual understanding developed during review of preparatory outline and Contract Requirements: (Contract items not specifically covered during the preparatory inspection conference are assumed to be in strict conformance with the contract requirements.)

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

The items noted above constitute a memorandum of mutual understanding and will Be performed as planned and specified.

_____
Contracting Officer's Representative

Initial Phase Check List

Cantract No.: DACA05-94-D-0012 Date _____

Delivery Order No. 0005
Containerized Hazardous Waste and/or Toxic Waste Removal
Nike Battery 31, San Leandro, CA

Spcelfication Paragraph or Section: _____

Description and Location of Work Inspected: _____

_____

Reference Contract Drawings: _____

A. Personel Present:

	Name	Position	Company
1)	_____	_____	_____
2)	_____	_____	_____
3)	_____	_____	_____
4)	_____	_____	_____

B. Materials being used are in strict compliance with the contract plans and specifications: Yes _____ No _____

If not, explain: _____

_____

_____

C. Procedures and/or work methods witnessed are in strict compliance with the contract specifications: Yes _____ No _____

If not, explain: _____

_____

_____

D. Workmanship is accecptable: Yes _____ No _____

State where improvement is needed: _____

_____

_____

E. Safety violations noted: Yes _____ No _____

If yes, corrective actions taken: _____

_____

_____

_____
Quality Control Representative

MATERIALS TEST SUMMARY

(See reverse for instructions)

CONTRACT NUMBER	PROJECT	DATE
DACA05-94-D-0012	PO No. 0005 NIKE 31	

ITEM/TITLE	TEST	MINIMUM TESTS (Estimated)		TOTAL TESTS (Performed)			
				CQC		QA	
		CQC	QA	PASS	FAIL	PASS	FAIL
2 N/A GRADING	A. LAB–MOISTURE DENSITY W/GRADATION & ATTERBERG LIMITS						
	B. FIELD DENSITY*						
	*(Select materials with gradation)						
2 N/A BUILDINGS	A. LAB–MOISTURE DENSITY W/GRADATION & ATTERBERG LIMITS						
	B. FIELD DENSITY*						
	*(Select materials with gradation)						
2 N/A UTILITIES SYSTEM	A. LAB–MOISTURE DENSITY W/GRADATION & ATTERBERG LIMITS						
	B. FIELD DENSITY*						
	*(Select materials with gradation)						
2 N/A DRAINAGE SYSTEM	A. LAB–MOISTURE DENSITY W/GRADATION & ATTERBERG LIMITS						
	B. FIELD DENSITY*						
	*(Select materials with gradation)						

CESAM FORM 437
1 AUG 84

(Edition of 1 Sep 83 will be used)

MATERIALS TEST SUMMARY

CONTRACT NUMBER	PROJECT	DATE
DACA05-94-D-0012	D.O. No. 0005 MIKE 31	

ITEM/TITLE	TEST	MINIMUM TESTS (Estimated)		TOTAL TESTS (Performed)			
				CQC		QA	
		CQC	QA	PASS	FAIL	PASS	FAIL
2 N/A SUBGRADE ROADWAYS	A. LAB-MOISTURE DENSITY W/GRADATION & ATTERBERG LIMITS						
	B. FIELD DENSITY W/GRADATION						
2 SUBBASE COURSE BACK FILL PAGE C-16 - 15.2	A. LAB-MOISTURE DENSITY W/GRADATION & ATTERBERG LIMITS	1					
	B. FIELD DENSITY W/GRADATION	4					
2 BASE COURSE Pg C-17 15.5	A. LAB-MOISTURE DENSITY W/GRADATION & ATTERBERG LIMITS	1					
	B. FIELD DENSITY W/GRADATION	2					
2 N/A BITUMINOUS COURSE	A. MARSHALL METHOD						
	B. EXTRACTION (HOT MIX)						
	C. GRADATION (HOT MIX)						
	D. GRADATION (HOT BINS)						
	E. FIELD COMPACTION (CORES)						

CESPK Form 457
1 AUG 84

MATERIALS TEST SUMMARY

CONTRACT NUMBER: DACA05-94-D-0012 | PROJECT: DO No. 0005 NIKE 31 | DATE:

BA/TITLE	TEST	MINIMUM TESTS (Estimated) COC	MINIMUM TESTS (Estimated) QA	TOTAL TESTS (Performed) COC PASS	TOTAL TESTS (Performed) COC FAIL	TOTAL TESTS (Performed) QA PASS	TOTAL TESTS (Performed) QA FAIL
2 N/A CONCRETE-PAVEMENT	A. *STRENGTH						
	B. SLUMP						
	C. ENTRAINED AIR						
	D. GRADATION						
*(COMPRESSIVE) *(FLEXURAL)							
2 N/A SIDEWALK, CURB, & GUTTER	A. COMPRESSIVE STRENGTH						
	B. SLUMP*						
	C. ENTRAINED AIR						
	D. GRADATION						
2							
2							

CESPK Form 457
1 AUG 88

MATERIALS TEST SUMMARY

CONTRACT NUMBER: DACA05-94-D-0012 | PROJECT: DO No. 0005 NIKE 31 | DATE:

NOM/TITLE	TEST	MINIMUM TESTS (Estimated)		TOTAL TESTS (Performed)			
				CQC		QA	
		CQC	QA	PASS	FAIL	PASS	FAIL
3 N/A CONCRETE – BUIDLING	A. COMPRESSIVE STRENGTH						
	B. SLUMP						
	C. ENTRAINED AIR						
	D. GRADATION						
3 N/A CONCRETE – LITEWEIGHT	A. COMPRESSIVE STRENGTH						
	B. SLUMP						
	C. ENTRAINED AIR						
	D. UNIT WEIGHT (PLASTIC)						
	E. UNIT WEIGHT (28 DAY–DRY)						
	F. GRADATION						
3 N/A CONCRETE – TILT UP	A. COMPRESSIVE STRENGTH						
	B. SLUMP						
	C. ENTRAINED AIR						
	D. GRADATION						
3							

CESPK Form 437
1 AUG 83