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INSTALLATION RESTORATION PROGRAM
REMOVAL ACTION MEMORANDUM, SITE 6
OCTOBER 1993

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

Commander, Atlantic Division
Naval Facilities Engineering Command
Environmental Quality Division
Norfolk, Virginia

Commanding General
Environmental Management Department
Marine Corps Base
Camp Lejeune, North Carolina

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Prepared For:
ENVIRONMENTAL MANAGEMENT DEPARTMENT
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

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NORFOLK, VIRGINIA

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I. PURPOSE

Atlantic Division, Naval Facilities Engineering Command , (LANTDIV), in conjunction with the Environmental Management Department, Marine Corps Base (MCB), Camp Lejeune has identified the need to perform a Time Critical Removal Action (TCRA) at Installation Restoration (IR) Site 6, Marine Corp Base, Camp Lejeune, North Carolina. This action memorandum substantiates the need for a removal action at Site 6 MCB Camp Lejeune, identifies the action to be taken, and explains the rationale for the removal action. The removal action to be performed was decided in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended by Superfund Amendments and Reauthorization Act (SARA) of 1986, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

1. Removal Site Evaluation

A Remedial Investigation was conducted at Site 6 (Figure 1-1) as part of the on-going CERCLA activities, under the Navy/Marine Corps IR Program at MCB Camp Lejeune. The RI focused on various areas of concern within Site 6 and the adjacent Site 9. During the RI a number of containers, which ranged in size from pint containers to 500 gallon above ground storage tanks, were identified throughout Site 6, both buried and on the surface. Many of the containers found were 55 gallon drums, some were identified as containing lubricants, petroleum products, or corrosives.

During the RI tests pits were dug to investigate past disposal practices. The test pits conducted at two areas located within Site 6 uncovered pits where containers were disposed of in the past. The tests pits located in the northwest corner of Site 6, TR (6-TP5) and TR (6-TP7), shown in Figure 1-2, contained material identified as no. 6 fuel oil. The test pits located south of lot 203, GS(1960D) and GS(1960E), contained small 5 gallon paint like pails.

The intent of this removal action is to remove the drums and containers from Site 6 which were encountered during the Remedial Investigation.

2. Physical Location

Marine Corps Base, Camp Lejeune is a training base for the U.S. Marine Corps, located in Onslow County, North Carolina. The Base covers approximately 170 square miles and includes 14 miles of coastline. MCB Camp Lejeune is bounded to the southeast by the Atlantic Ocean, to the northeast by State Route 24, and to the west by U.S. Route 17. The town of Jacksonville, North Carolina is located north of the Base.

The area of concern for the removal action is Site 6. Site 6 is located east of Holcomb Boulevard and is bounded on the north by Site 82, the east by Piney Green Road, and to the south by the fire training area. Site 6 covers an area of approximately 207 acres that incorporates Storage Lots 201 and 203, wooded area between the storage lots, a wooded area north of Lot 203, and a ravine as shown on Figure 1-1.

Storage Lot 201 is a fenced lot located in the southern portion of Site 6. It is a flat area with sparse vegetation around the fence lines. The lot is approximately 27 acres in size. It is currently being used for the storage of military vehicle and equipment, lumber, hydraulic oils and lubricants, non-PCB transformers, and other supplies.

Storage Lot 203 is a fenced lot located in the northern portion of Site 6 covering approximately 41 acres. Lot 203 is a relatively flat area with very slight elevation differences. The on-site soil is comprised of both naturally existing soil and fill material. Lot 203 is bordered by Site 82 to the north, Piney Green Road to the east, woods to the south, and by Holcomb Boulevard to the west. Lot 203 is currently inactive.

3. Site Characteristics

A Remedial Investigation was conducted at Site 6 as part of the on-going CERCLA activities, under the Navy/Marine Corps IR Program at MCB Camp Lejeune. The RI focused on various areas of concern within Site 6 and the adjacent sites 9 and 82. During the RI a number of containers, which ranged in size from pint containers to 500 gallon above ground storage tanks, were identified throughout Site 6. Many of the containers found were 55 gallon drums, some were identified as containing lubricants, petroleum products, or corrosives. The majority of the containers identified have been classified as empty by RCRA standards.

Within Lot 203 approximately forty 55-gallon drums, five above ground storage tanks, and numerous smaller containers were identified. The majority of the drums were identified as containing lubricants, petroleum products, or corrosives. Five above ground storage tanks are also located in lot 203 and were labeled as containing diesel fuel, gasoline, and kerosene. 650 pint containers were identified as containing a polish compound.

Woods and open fields surround both Storage Lots 201 and 203 make up the remaining area of Site 6. The topography of the wooded areas is relatively flat, but localized trenching and mounding is visible just north of Lot 203 and west of Piney Green Road. The wooded areas are randomly littered with various construction debris which include rusted drums. Markings were observed on a few drums located north of Lot 203. These drums were marked as "lubrication oils". Many of the drums identified were only shells of fragments of drums with the majority of the drums being empty.
In August of 1992 an interim aerial photographic investigation report was completed by the USEPA's Environmental Photographic Interpretation Center (EPIC) in Warrenton, Virginia. The aerial photographs detail operation from 1938 to 1990 at Operable Unit Number 2, which includes all of Site 6. The investigation results were used to locate and assess potential sources of contamination and to document past waste disposal and storage activities within the study areas.

The results of the EPIC study were used in conjunction with a geophysical survey conducted within Lot 203 and portions of the wooded area north of Lot 203 to investigate areas that appeared to have been excavated and backfilled as depicted on the historical aerial photographs. Using the results generated during the geophysical survey and the EPIC study, potential disposal and fill areas were located via surveying. Excavations were then performed perpendicular to the transect, to ensure trenches were properly identified. During the test pit excavation, 7 of the 28 pits were sampled at depths where contamination was suspected to be present.

4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant

The Remedial Investigation (RI) performed at Site 6 identified a number of drums scattered throughout the site which pose a potential threat to human health or the environment. The RI identified, through aerial photographic interpretation, potential areas of waste disposal where trenching activities occurred in the past. Investigatory efforts performed during the RI identified trenches GS1960D, GS1960E, 6-TP5, and 6-TP7 as trenches where waste disposal had occurred and are potential source area(s) of contamination at Site 6, Figure 1-2.

Drums

During the Remedial Investigation performed at Site 6 several hundred containers of various sizes were identified. The size and number of the containers are identified as follows:

Size of Container	Number	Description
500 gallon	1	half full
250 gallon	4	half full
55 gallon	172	127 empty
5 to 10 gallon	51	29 empty
1 pint	650	all full

During the Remedial Investigation the contents of drums/containers which contained liquid, were sampled and composited into 11 samples (6-B1 to 6-B11) based on physical and chemical characteristics. The composite samples were analyzed for RCRA characteristics and full TCLP analyses. The results of the analysis indicated that the composite samples 6-B9 and 6-B10 were classified as hazardous waste under 40 C.F.R. § 260. Composite sample, 6-B9 failed the characteristic test for corrosivity with a pH of 13. Composite sample, 6-B10 failed the characteristic tests of corrosivity with a pH of 13 and the toxicity tests for chloroform. A number of the other composite samples contained hazardous constituents below the maximum concentration of contaminants for the Toxicity Characteristic Leaching Procedure (TCLP).

Tests Pits

During the Remedial investigation 28 test pits were excavated, and 7 of the 28 test pits were sampled at depths where subsurface soil contamination was suspected to be present. All samples collected were either analyzed for RCRA characteristics and full TCLP or Contract Laboratory Program Target Compound List or Target Analyte List (CLP-TCL/TAL) analyses.

Two of the test pits, GS-1960E and GS-1960D, located south of Lot 203 (Figure 1-2), contained 1 to 5 gallon containers which were in a deteriorated condition. Two samples were collected from test pit GS-1960D and analyzed for TCLP and Characteristics Waste; Ignitability, Corrosivity, and Reactivity. One of the samples taken contained low levels of chloroform and failed the TCLP for lead with a concentration of 10 mg/L versus the TCLP maximum leachate concentration of 5 mg/L. No samples were collected from test pit GS-1960E. The organic vapor analyzer (OVA) used during the excavation showed a reading of 3.0 ppm in the 2 to 4 feet range of the test pit. Based on the visual similarity of the material encountered at GS-1960D and GS-1960E, the analytical results for GS-1960D where used to assess GS-1960E, along with the OVA results.

Excavations at test pits north of Lot 203 revealed two areas, 6-TP5 and 6-TP7, which contained containers (1/2 gallon to 5 gallon) six feet below grade. Samples were collected from both test pits at the depths where the containers were encountered and analyzed for Full CLP TCL/TAL. One sample was collected of a greenish/blue material from one of the containers and analyzed for a petroleum identification. The results of the analyses indicated that the material from the containers is probably #6 fuel oil. Trace levels (below detection limits) of tetrachloroethene were detected in the sample taken from 6-TP5 along with low concentrations of pesticides. The sample collected and analyzed from 6-TP7 also showed low levels of pesticides.

There are five discrete areas that exist at Site 6 in which the drums are not within a secured area. The specific areas are located north and south of the fenced Lot 203 Storage Area. Composite samples collected from these drums were sampled for TCLP. Containers D055, D056 and D058 failed one or more of the RCRA characteristic or toxicity tests. The potential for exposure to personnel and wildlife on MCB Camp Lejeune does exist for the substances contained in these containers.

5. NPL/Site Status

On October 4, 1989, Marine Corps Base Camp Lejeune was placed on the National Priority List (NPL), with the facility scoring 33.13 on the Hazardous Ranking System (HRS).

In 1983, an Initial Assessment Study (IAS) was conducted at MCB Camp Lejeune which identified a number of areas within the facility, including Site 6 as a potential source of contamination. As a result the DoN began further investigation at the areas of concern.

During 1984 through 1987, a Confirmation Study was conducted at Site 6 which focused on potential source areas identified in the IAS. The study consisted of collecting a limited number of environmental samples (soil, sediment, surface water, and groundwater) for purposes of constituent analysis. In general, the results detected the presence of pesticides in Lot 203, VOCs in the groundwater, and VOCs in the surface water.

A Site Assessment Report was prepared in March 1992. The report contained a summary of the previously conducted Confirmation Study, in addition to a preliminary risk evaluation for Site 6. This report recommended that a full human health and ecological risk assessment be performed at Site 6.

In 1992, the Navy conducted a Remedial Investigation (RI) at Operable Unit No. 2, which includes Site 6, to characterize potential environmental impacts and threats to human health resulting from previous storage, operational, and disposal activities. Based on the results of the various environmental investigations conducted at Site 6 during the RI, several areas of concern were identified. Various drums/containers, and above ground storage tanks were noted throughout Site 6. All drums/containers and known buried drums identified in the RI will be removed through this Time Critical Removal Action. This is to be completed prior to implementing the below listed remedial action.

The Remedial Investigation/Feasibility Study for Site 6 was recently completed in August, 1993.

A Record of Decision was signed for Operable Unit No. 2, Sites 6, 9, and 82 in September 1993. The selected remedy in the Record of Decision for Operable Unit No. 2 is a combination of remedial action alternatives for the groundwater and the soils. Overall, the major components of the selected remedy include:

•The collection of contaminated groundwater in both the shallow and deep portions of the aquifer through a series of extraction wells installed within the plume areas with the highest contaminant levels. Approximately two deep extraction wells will be installed to a depth of 110 feet and pumped at a rate of 150 gpm. In addition, three shallow extraction wells will be installed to a depth of 35 feet and pumped at a rate of 5 gpm. The extracted groundwater would be treated for organics and inorganics via physical/chemical processes. The water is expected to be discharged to nearby Wallace Creek. The area of contamination in the deep aquifer is approximately 3/4 to 1 square mile.

•In the same area an in situ treatment such as volatilization or vapor extraction would be implemented for the remediation of approximately 16,500 cubic yards of VOC-contaminated soil.

•There exist four other discrete areas located within the confines of Operable Unit No. 2 where soils are contaminated with PCBs and Pesticides. All four of these areas are located within a radius of 1/2 mile. The expected remediation is excavation and transportation off-site for disposal.

The intent of this removal action is to remove the drums and containers from Site 6 which were encountered during the Remedial Investigation. The Record of Decision discussed above will be responsible for final remediation of the soils and groundwater at Site 6.

B. U.S. Environmental Protection Agency, North Carolina Department of Environment, Health, and Natural Resources and Local Authorities' Role

The Time Critical Removal Action at Site 6 will be performed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended by Superfund Amendments and Reauthorization Act of 1986, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan. The U.S. EPA and NC-DENR will provide regulatory oversight of the activities performed under the TCRA for Site 6. In accordance with 40 C.F.R. § 300.415(b)(4)(ii) and MCB Camp Lejeune's Federal Facilities Agreement, the Sampling and Analysis Plan will be provided to U.S. EPA and NC-DENR for their review and approval. U.S. EPA and NC-DENR will be provided a copy of all other documents.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Based on an evaluation of the removal criteria listed in 40 C.F.R. § 300.415(b)(2)(i-viii), the material within the drums and trenches at Site 6 present a sufficient risk to warrant a time critical removal action. Removal criteria i, ii, iii, v, and vii listed below have indicated a significant risk to public health and the environment. The drums, which are in a deteriorated condition, and the material within the test pits should be removed from the site as soon as possible. The time frame associated with attaining a remediation at the site following the RI/FS process is substantially longer which presents the threat of further releases to the environment; exposure of the material to humans, animals or the food chain; further contamination to the surrounding environment; and small potential for a fire or explosion. Once this material is removed from the site, the final remedy selected in the September, 1993 ROD will be responsible for final remediation of the soils and groundwater at Site 6.

i. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

There are five discrete areas that exist at Site 6 in which the drums are not within a secured area. The specific areas are located in the north and south area outside of the fenced Lot 203 Storage Area. Composite samples collected from these drums were sampled for TCLP. Containers D055, D056 and D058 failed one or more of the RCRA characteristic or toxicity tests. The potential for exposure to personnel and wildlife on MCB Camp Lejeune does exist for the substances contained in these containers.

ii. Actual or potential contamination of drinking water supplies or sensitive ecosystems.

A total of 28 tests pits were excavated with samples collected from 7 of the test pits suspected to contain contamination. The analyses of the samples revealed that a greenish-blue substance discovered during the excavation of test pits 6-TP5 and 6-TP7 was likely to be #6 fuel oil. Analysis of a soil sample collected from test pit GS-1960D failed the toxicity characteristic leaching procedure for lead. The material that was test for in test pit GS-1960D was considered to be representative of the material encountered in test pit GS-1960E.

The aquifer which underlies this area is a source of potable water. Analysis of groundwater in wells adjacent to these areas has revealed that low levels of contamination exist. It is suspected that the areas identified during the tests pit excavation could potentially be sources for some of the contamination detected in the groundwater.

iii. Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release.

Material from three of the eleven composite samples taken have been classified as hazardous. The containers associated with these samples are all in poor conditions posing a threat of release. These containers are mainly 5 and 10 gallons with the tops of the containers secured.

iv. High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate.

All material identified within the drums at Site 6 has been composited and tested for RCRA hazardous waste characteristics. This test does not provide sufficient information to determine all of the pollutants or contaminants which exist in the drums. However it is assumed that all drums which contain liquids also contain pollutants or contaminants which have the potential to leak from the drums and migrate through the soils.

The test pits identified to contain either hazardous substances, pollutants or contaminants range in depth from 4 to 10 feet below the surface. The TCLP analysis conducted on test pit GS-1960D failed the test for lead, which indicated that the potential exists for the lead contained to migrate through the soils. Although the samples taken from test pit 6-TP5 did not should high levels of contaminants for TCL/TAL parameters, the material identified was #6 fuel oil. The potential for this to migrate through the soil is very low.

v. Weather conditions that could cause hazardous substances or pollutants or contaminants to migrate or be released.

Marine Corp Base Camp Lejeune is located within the coastal plain in Onslow County, North Carolina. The facility is bisected by the New River which flows in a southeasterly direction and forms an estuary before entering the Atlantic Ocean. The eastern border of Camp Lejeune is the Atlantic Ocean shoreline.

The U.S. Army Corps of Engineers has mapped the limits of 100-year floodplain at Camp Lejeune at 7.0 feet above msl in the upper reaches of the New River (WAR, 1983). The area south of Lot 201 is in close proximity to the 100 year flood plain and containers located at test pits 6-TP5 and 6-TP7 are in close proximity to the water table.

Potential weather conditions such as tropical storms or hurricanes could cause hazardous substances within the drums to migrate or be released are possible with the Mid-Atlantic Costal Plain. In addition, the highly corrosive conditions caused by the coastal environment have caused severe deterioration of the drums and releases may have already occurred.

vi. Threat of fire or explosion.

All analyses passed flammability characteristics tests with a flashpoint of 140°F or greater. Therefore the threat of fire or an explosion from the material in the containers is minimal.

vii. The availability of other appropriate federal or state response mechanisms to respond to the release.

The current Remedial Investigation/Feasibility Study for MCB Camp Lejeune is the only other response mechanism to address these drums and the waste within the test pits. Currently the effort at these sites is in the Feasibility Study stage. It is estimated that it will take a minimum of 12 months before a remedial action would be achieved under the current RI/FS effort.

viii. Other situations or factors that may pose threats to public health or welfare or the environment.

No other factors exist which pose threats to public health of welfare or the environment.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of pollutants and contaminants for this site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTION

Removal of the waste and off-site disposal of the hazardous waste in a RCRA approved landfill is the chosen solution for mitigating threats posed by this situation.

A. Proposed Actions

1. Proposed action description

All identified drums located in Site 6 will be collected and staged. All drums containing product will be overpacked prior to transposition to the staging area. The above ground storage tanks (ASTs) will be drained of all remaining product and containerized for transportation and disposal. The product from the ASTs will be tested for BTU content and hazardous constituents to determine if the product can be sent to a fuel blending facility. The tanks will be rendered inert and transported to the processing cell for cutting and cleaning.

There are two areas identified for excavation of 310 cubic yards of contaminated soil, drums and debris. The excavated material will be segregated (to the extent feasible) between drums, debris and soil, and transported to the appropriate staging cell. All intact drums will be overpacked and transported to the drum staging cell. Visual inspection will determine the immediate extent of the excavation; TCLP analysis of soils will be used to determine the extent of the soils excavation following the removal of all drums.

All drums collected will be sampled for compatibility. Sampling analysis will be completed on all wash/rinse water, soils, and debris for waste characterization. After review of the compatibility analysis, waste characterization and pervious waste stream groups (performed under the RI), waste stream composite analysis and profile forms will be submitted to disposal facilities for quotations and approval.

2. Contribution to remedial performance

A Record of Decision was signed for Operable Unit No. 2, Sites 6, 9, and 82 in September 1993. The selected remedy in the Record of Decision for Operable Unit No. 2 is a combination of remedial action alternatives for the groundwater and the soils. Overall, the major components of the selected remedy include:

•Collecting contaminated groundwater in both the shallow and deep portions of the aquifer through a series of extraction wells installed within the plume areas with the highest contaminant levels. Approximately two deep extraction wells will be installed to a depth of 110 feet and pumped at a rate of 150 gpm. In addition, three shallow extraction wells will be installed to a depth of 35 feet and pumped at a rate of 5 gpm. The extracted groundwater would be treated for organics and inorganics via physical/chemical processes. The water is expected to be discharged to nearby Wallace Creek. The area of contamination in the deep aquifer is approximately 3/4 to 1 square mile.

•In the same area an in situ treatment such as volatilization or vapor extraction would be implemented for the remediation of approximately 16,500 cubic yards of VOC-contaminated soil.

•There exist four other discrete areas located within the confines of operable unit 2 where soils are contaminated with PCBs and Pesticides. All four of these areas are located within a radius of 1/2 mile. The expected remediation is excavation and transportation off-site for disposal.

The intent of this removal action is to remove the drums and containers from site 6 which were encountered during the Remedial Investigation. The Record of Decision discussed above will be responsible for final remediation of the soils and groundwater at Site 6.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

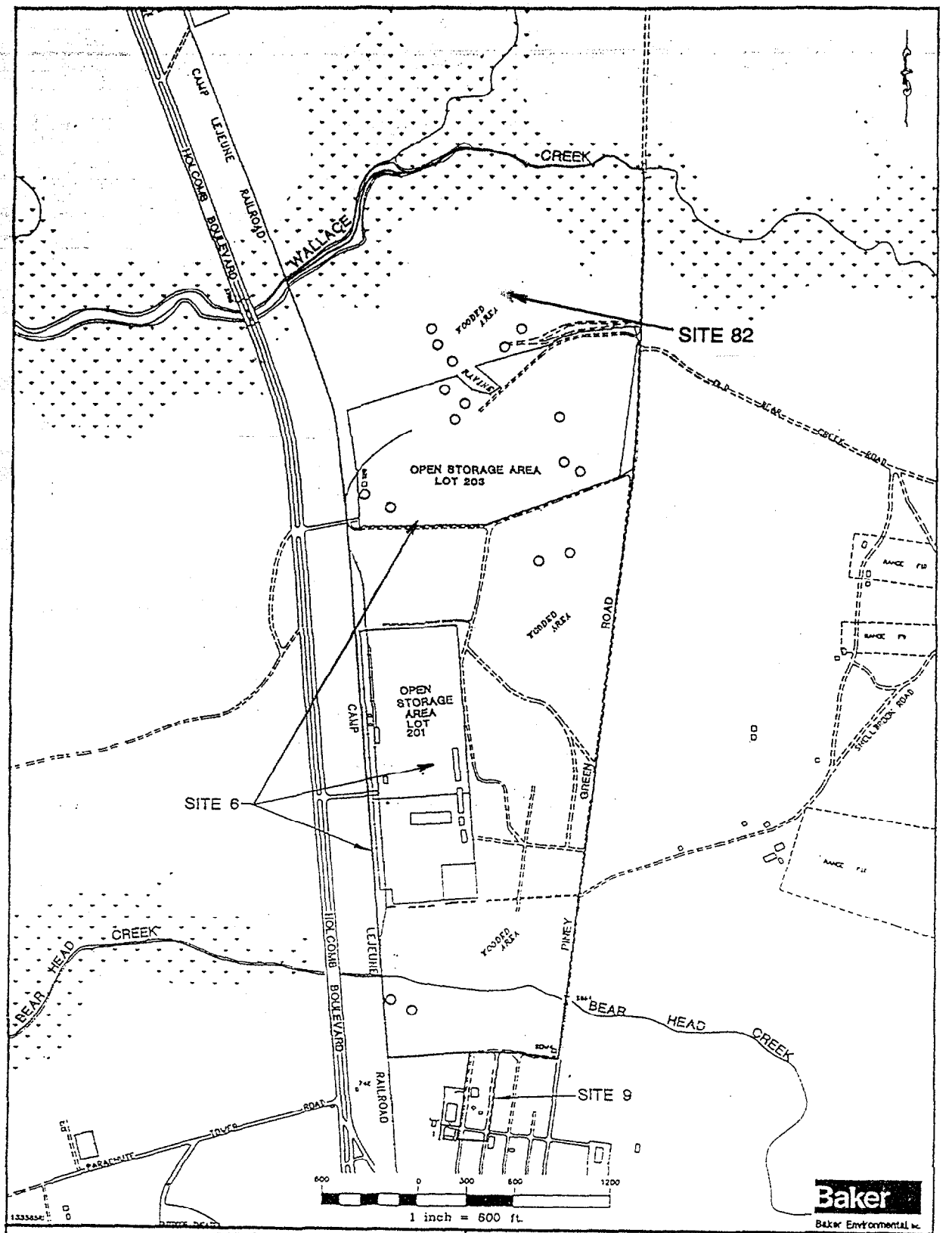
The expected change in the situation should the time critical removal action be delayed or not taken will result in a potential increase risk of exposure to the public and the environment. A delay in the action will result in the increase migration of the contamination to the surrounding soils and groundwater.

VII. RECOMMENDATION

Based on an evaluation of the above removal criteria, the material within the drums and trenches at Site 6 present a sufficient risk to warrant a time critical removal action. Removal criteria i, ii, iii, v, vii have indicated a significant risk. The drums which are in a deteriorated condition and the material within the test pits should be removed from the site as soon as possible. The time frame associated with attaining a remediation at the site following the RI/FS process is substantially longer which presents the threat of further releases to the environment; exposure of the material to humans, animals or the food chain; further contamination to the surrounding environment; and small potential for a fire or explosion. Once this material is removed from the site, the final remedy selected in the September, 1993 ROD will be responsible for final remediation of the soils and groundwater at Site 6.

Signature (Commanding General, MCB Camp Lejeune)

11·24·93
Date



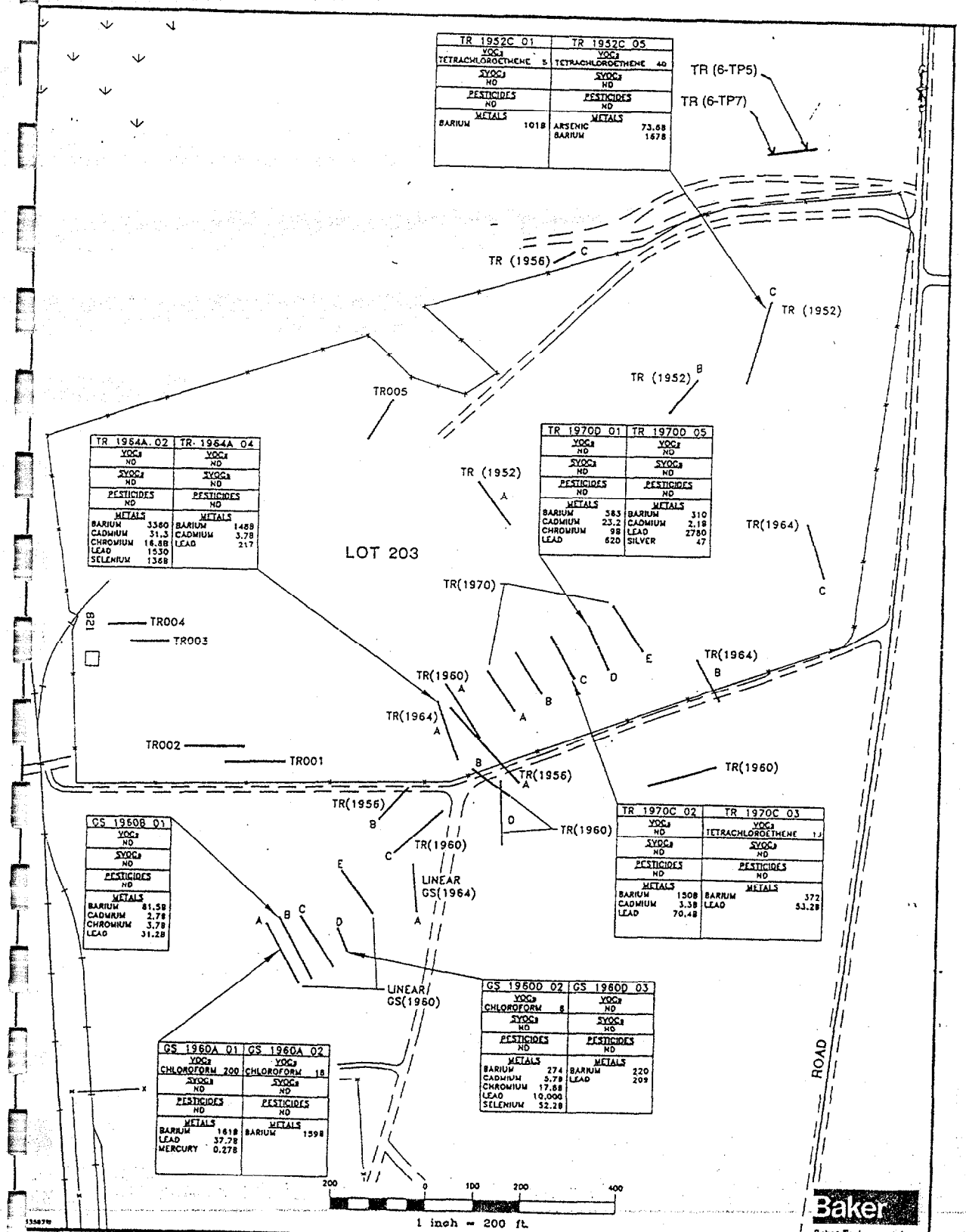
LEGEND

O APPROXIMATE LOCATION OF DRUMS

SOURCE: LANTDIV, FEBRUARY 1992

FIGURE 1 - 1
DRUM LOCATION MAP
SITE 6
REMEDIAL INVESTIGATION CTO-0133

MARINE CORPS BASE CAMP LEJEUNE
NORTH CAROLINA



LEGEND

— TRANSECT
VOCs VOLATILE ORGANIC COMPOUNDS
SVOCs SEMIVOLATILE ORGANIC COMPOUNDS
ND NOT DETECTED
B REPORTED CONCENTRATION LESS THAN METHOD DETECTION LIMIT
J ESTIMATED VALUE
-ALL RESULTS IN MICROGRAMS PER LITER (ug/L)

SOURCE: LANTDIV, FEBRUARY 1992

FIGURE 1 - 2
TEST PIT RESULTS
SITE 6
REMEDIAL INVESTIGATION CTO-0133

MARINE CORPS BASE CAMP LEJEUNE
NORTH CAROLINA