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SCREENING LEVEL CHARACTERIZATION OF ELECTRICAL SUBSTATION 411

For the
Weldon Spring Site Remedial Action Project
Weldon Spring, Missouri

Prepared by MK-Ferguson Company and Jacobs Engineering Group

NOVEMBER 1990 **REV. 0**

U.S. Department of Energy
Oak Ridge Operations Office
Weldon Spring Site Remedial Action Project

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Weldon Spring Site Remedial Action Project

Screening Level Characterization of Electrical Substation 411

November 1990

Revision 0

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Prepared for

U.S. DEPARTMENT OF ENERGY
Oak Ridge Operations Office
Under Contract DE-AC05-86OR21548

substat.411/tma/jof

ABSTRACT

Substation 411 transformer dielectric fluids were sampled for uranium and PCBs. The exterior surfaces of the metal transformers were measured for radioactivity. Results of the sampling revealed that some transformer fluid contained PCBs, but no uranium in excess of naturally occurring amounts was detected. In addition, the exterior surface of the transformers were uncontaminated. Subject to measurement of the base of the transformers (which were inaccessible during the surface scans for radioactivity), the transformers and dielectric fluids may be removed from the site for disposal.

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1 INTRODUCTION

This report presents characterization data for the Number 411 Electrical Substation located on Department of Conservation properties south of the Weldon Spring Chemical Plant (WSCP). Sample collection methods, sampling equipment and analytical results are also presented in this report. The objective of this characterization was to supply data needed to prepare a subcontract package for the removal of all transformers and dielectric fluids contained in Substation 411.

2 SAMPLING

Actual sampling of Substation 411 was undertaken April 23 and 24, 1990. This included soil sampling throughout the area and retrieving dielectric fluids (oil) samples from each transformer. A sampling plan was developed previous to sampling. This plan contains detailed information on sampling locations, sampling equipment, sampling techniques and personal protective equipment used during the sampling of Substation 411. This sampling plan is provided in Appendix A.

As mentioned in the sampling plan, two pole mounted transformers located within Substation 411 could not be sampled due to safety concerns. On June 14, 1990, a subcontractor was employed to disconnect and remove the transformers from their respective poles and place them on the substation concrete pad. The transformers were sampled on June 20, 1990 using sampling techniques and equipment contained in the sampling plan.

3 RESULTS

Each group of analytical parameters for oil and soil samples is discussed in detail in the following sections. All interpretations made in this report are based on analytical results, field observations and historical data.

3.1 Substation 411 Transformer Dielectric Fluids

The summary of oil analysis for PCB's and uranium may be found in Table 3-1. Also contained in the table is physical information regarding the transformers.

3.1.1 Radiological

Oil from each transformer was sampled either individually or through composites for natural uranium. The highest level detected was 62 pCi/l. Because there is no regulatory limit for uranium in transformer fluids, and also no background level information available for uranium in transformer fluids, a second round of sampling took place on August 20 and 21, 1990 to evaluate sampling and/or analysis variability. A blank containing motor oil was sent to the lab to establish a sample analysis background concentration. Triplicate samples were obtained for each transformer and the motor oil. Results of the lab analysis for this event are presented in Table 3-2. On September 6, 1990 a transmittal was received by the lab stating that 62 pCi/l had been detected, but that the value should be questioned because of contamination of the lab equipment. After decontamination of the lab equipment the sample was rerun, obtaining a value of <0.68 pCi/l, which is below the detection limit. With this result noted, the next highest level detected for the first sampling event was 2 pCi/l. Concentrations of

TABLE 3-1 Electrical Substration 411 Information

Unit	Serial Number	Oil Volume	PCB Level of Fluid	Uranium Level of Fluid
Transformer	2715-1	1,285 gallons	<10 PPM	2 pCi/l
Transformer	2715-2	1,285 gallons	<10 PPM	2 pCi/l
Transformer	C-500897	362 gallons	157 PPM Arochlor 1260	2 pCi/l
3 Phase Oil Circuit Breaker	12696	270 gallons 90 gal/unit	<10 PPM	0.68 pCi/l
Pole Transformer	Unknown	Apprx. 40 gallons	<10 PPM	0.68 pCi/l
Single Phase Pole Transformer	2814-16	12 gallons	1100 PPM Arochlor 1260	*<0.68 pCi/l
Three Phase Metering Outfit	58E6844	24 gallons	6.1 PPM Arochlor 1260	*<0.68 pCi/l

* - Uranium sample composited from single phase transformer and metering outfit. The sample was originally reported as 62 pCi/l. Information received from the lab stated this level was due to equipment contamination. After decontamination, the sample was rerun, obtaining this result.

TABLE 3-2 Electrical Substation 411 Information for Uranium Samples - Collected August 20 & 21, 1990

Unit	Serial Number	Uranium Levels of 3 Confirmation Triplicate Samples (pCi/l)
Transformer	2715-1	1.1 - 1.5 - 1.3
Transformer	2715-2	12.1 - 0.72 - 1.1
Transformer	C-500897	0.7 - 2.0 - 0.65
3 Phase Oil Circuit Breaker	12696	0.7 - 1.1 - 5.0
Pole Transformer	Unknown	0.5 - 9.5 - 0.5
Single Phase Pole Transformer	2814-16	0.5 - 0.5 - 0.8
Three Phase Metering Outfit	58E6844	4.1 - 2.4 - 3.4
Motor Oil	EXXON	<0.4 - 1.8 - 10.0

2 pCi/l or less are within expected limits considering the natural distribution of uranium typically found in the environment. The results of the second round of sampling at locations identified in Table 3-2 indicate that the distribution of detected levels of transformer oils is not above the upper limits of the distribution of values for the background sample of motor oil.

3.1.2 PCB's

Oil from each transformer was sampled for PCBs. Lab analysis indicates that the General Electric transformer containing 362 gallons of oil has a level of 157 ppm of the PCB Arochlor 1260. The three-phase metering outfit containing 24 gallons of oil has a level of 6.1 ppm of the PCB Arochlor 1260. The single phase transformer containing 12 gallons of oil has a level of 1,100 ppm of the PCB Arochlor 1260.

Due to the concerns associated with a possible PCB spill, transformers containing detectable levels of PCBs were drained of oil on August 24, 1990. The oil was stored in Building 434. The transformer containing 1100 ppm PCB oil was also flushed with diesel fuel as specified for transformers containing greater than 500 ppm PCB's in 40 CFR 761.60(b)(1)(i)B.

3.2 SUBSTATION 411 SOILS

This section presents analytical lab results for Hazardous Substance List (HSL) metals, lithium, molybdenum, nitroaromatics and PCB's from soil samples taken in the area immediately surrounding Substation 411. These results are presented in Appendix B of this report.

3.2.1 Metals

Two composite soil samples were collected in the area immediately surrounding Substation 411 and analyzed for HSL metals, lithium and molybdenum. As the lab results in Appendix B indicate, these soil samples appear to be at levels considered background for this area. Documentation of background results can be found in Chemical Soil Investigation Report for the WSCP/RPs, Phase II (DOE/OR/21548-061, August 1989).

3.2.2 Nitroaromatics

Two composite soil samples were also collected in the substation area and analyzed for nitroaromatics. This was deemed important because the electrical Substation 411 was constructed directly over an Ordnance Works TNT line which had been abandoned. The composite samples taken for nitroaromatics were chosen to represent the entire area around Substation 411. Additional samples were taken near the abandoned TNT line. As the lab results in Appendix B demonstrate, the two samples had nitrobenzene concentrations of 1.3 and 3.7 ppm. Such low levels do not warrant any special precautions during removal of the transformer oils and carcasses contained in Substation 411.

3.2.3 PCB's

Individual and composite soil samples for PCB analysis were collected at eleven locations in the area surrounding and within Substation 411. One composite sample for PCB's was also taken near a pole transformer lying on the ground 100 yards due south of Substation 411. As the lab results in Appendix B indicate, only two samples had PCB concentrations above the detection

limit. These levels correspond to individual samples taken down gradient from the transformer containing 157 ppm PCB oil. Although these levels of 2.2 and 3.6 ppm are above detection limits, they are well below the 10 ppm clean up criteria for an uncontrolled access area (40 CFR 761.125(c)(4)).

3.3 EXTERIOR RADIOLOGICAL CONTAMINATION

The tops and sides of the transformer carcasses were scanned with a gamma-beta detector and swiped for radiological contamination. The units were determined to be slightly above background levels, but within the uranium surface contamination guidelines for unrestricted release. However, the bottoms of all electrical units will require survey prior to release. This will be performed during removal of the units, which will require heavy equipment. The on-site analysis of paint scrapings removed from the surfaces of the No. 411 Electrical Substation units indicates uranium to be the primary contaminant, thus uranium will be the focal point of our sampling of the transformer bases.

4 CONCLUSIONS/RECOMMENDATION

There is no data to suggest that the transformer oils from substation 411 contain uranium above naturally occurring levels and, therefore, should not be considered a mixed waste. This is supported by lab analysis presented in Section 3.1.1. Also with the bottoms of the electrical units withstanding, the units are within the uranium surface contamination guidelines for unrestricted release as mentioned in Section 3.3.

It is recommended that the oils and transformer carcasses be disposed of as non-radiological contaminated material.

APPENDIX A
SUBSTATION 411 SAMPLING PLAN

112190

Weldon Spring Site Remedial Action Project

No. 411 Electrical Substation Sampling Plan

April 1990

Prepared by

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Prepared for

U.S. DEPARTMENT OF ENERGY
Oak Ridge Operations Office
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substat.411/tna/jof

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1 INTRODUCTION

This plan describes the sampling effort to be conducted in April 1990 to determine PCB and radiological content of individual transformers and area soil at the No. 411 Electrical Substation. Soil samples for nitroaromatics and HSL metals plus lithium and molybdium will also be retrieved for this exercise.

2 OBJECTIVES

This sampling effort will be performed to determine whether dielectric fluids in the No. 411 transformers are PCB and/or radiologically contaminated. The effort will also determine if the soil in and immediately surrounding No. 411 is contaminated by PCB's, nitroaromatics, HSL metals plus lithium and molybdeium. The data collected will then be used by the PMC prepare a subcontract package for transformer removal.

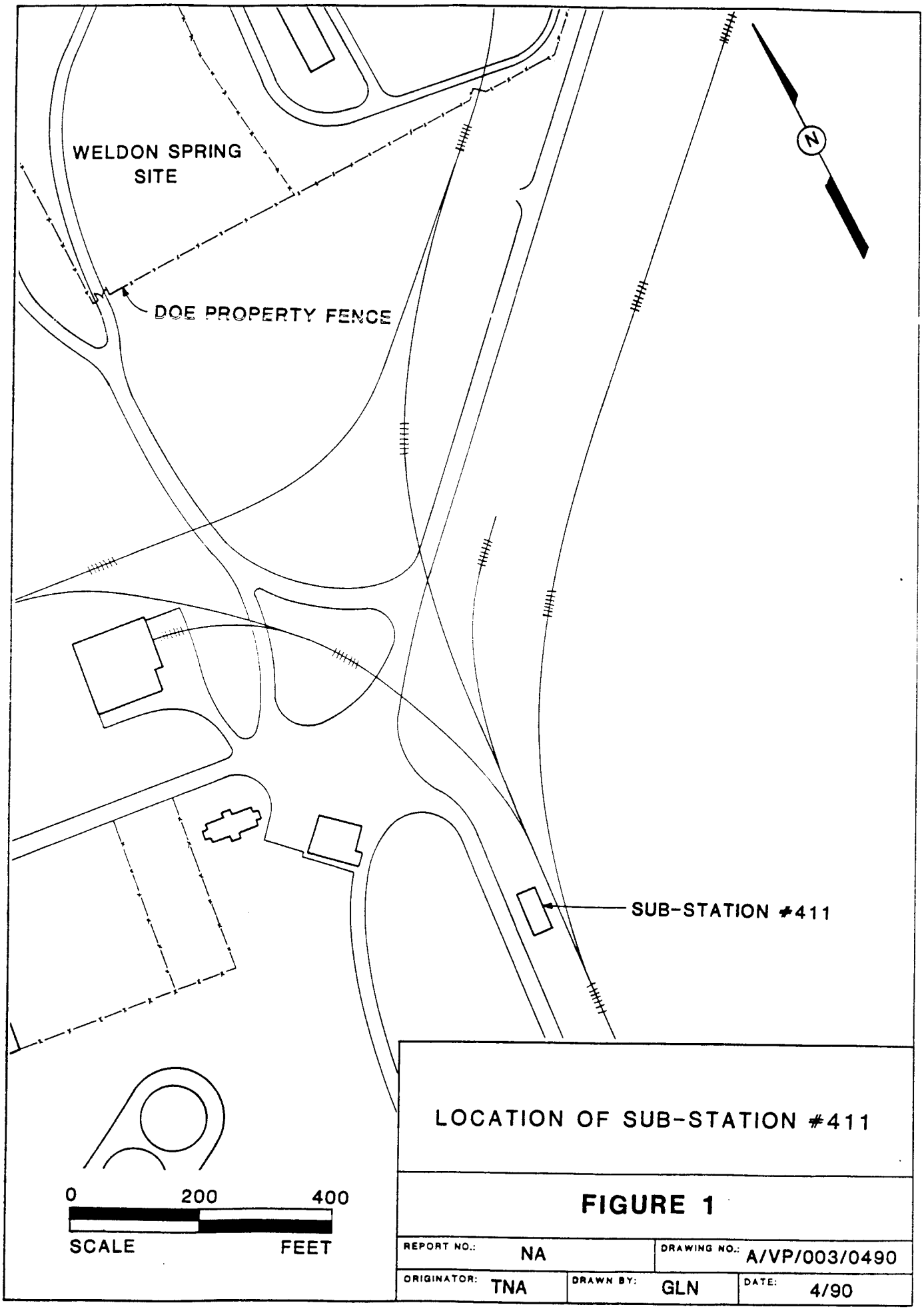
3 SAMPLING SCHEDULE

Samples will be collected during April 1990. The samples will be collected by Environmental Safety and Health (ES&H) personnel. Prior to the actual sampling, the following requirements will be fulfilled:

- The required sampling and safety equipment will be available.
- The respiratory protection program will be in operation.
- The Spill Prevention, Control and Containment Plan (SPCC Plan) will be in effect.
- Laboratories will have been selected to perform sample analysis.
- The Weldon Spring Site Remedial Action Project (WSSRAP) Operations Department will have certified that all transformers are electrically discharged and grounded.
- Access to all of the transformers will have been established.

3.1 SAMPLING LOCATIONS

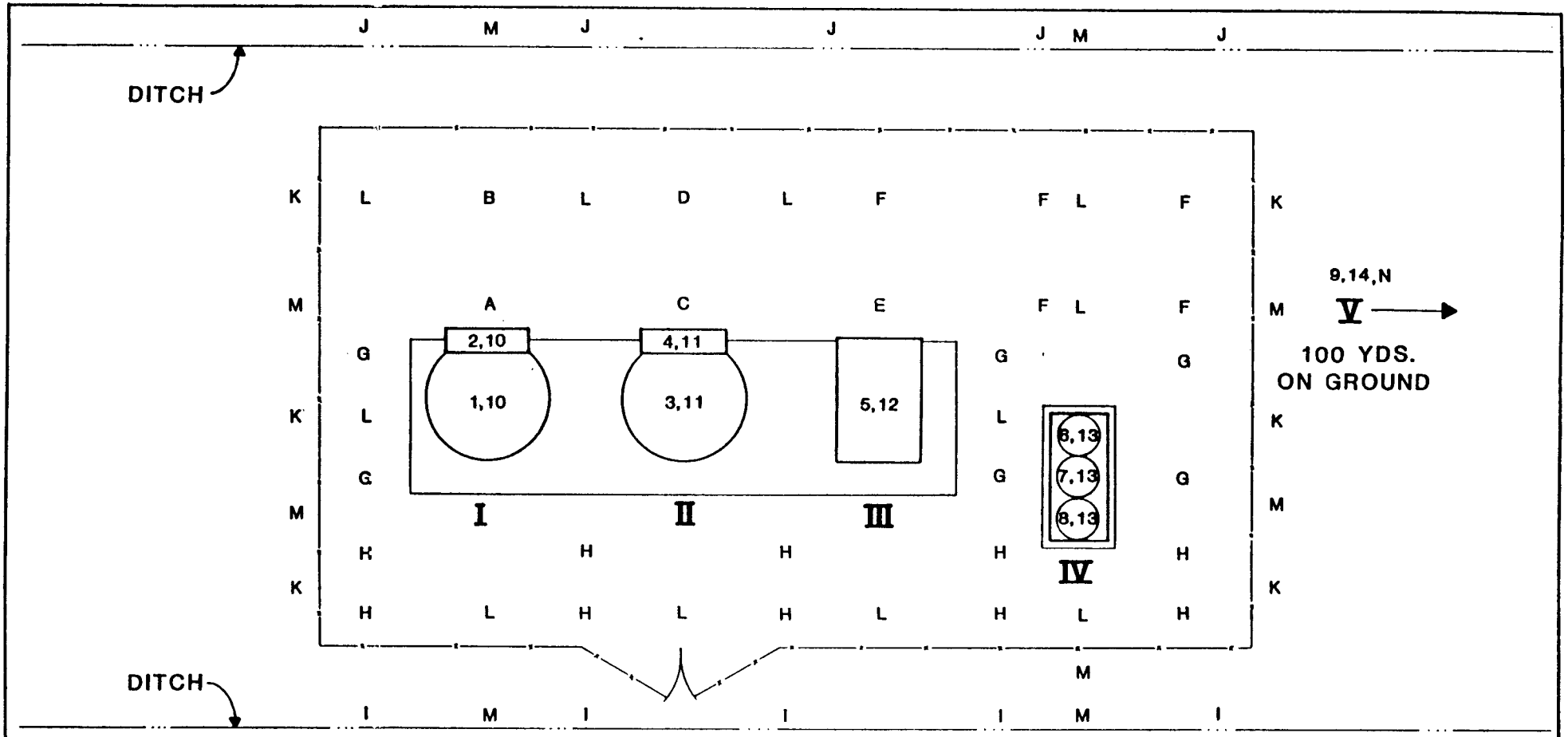
The location of the No. 411 Electrical Substation is shown in Figure 1. Locations for proposed oil and soil sampling are presented in Figure 2. Tables 1 and 2 detail information for each sampling location and Table 3 lists physical information for each transformer. Individual oil samples for PCB's will be



LOCATION OF SUB-STATION #411

FIGURE 1

REPORT NO.: NA		DRAWING NO.: A/VP/003/0490	
ORIGINATOR: TNA	DRAWN BY: GLN	DATE: 4/90	



PLAN OF SUB-STATION #411
WITH SAMPLE LOCATIONS

FIGURE 2

REPORT NO.: NA		DRAWING NO.: A/VP/004/0490	
ORIGINATOR: TNA	DRAWN BY: GLN	DATE: 4/90	

TABLE 1 Oil Sampling Locations

Number From Figure 2	Sample Type	Parameter	Sample Number	Description
1	Individual	PCB's	TO-0001-Date	Transformer I
2	Individual	PCB's	TO-0002-Date	Reservoir Tank on Transformer I
3	Individual	PCB's	TO-0003-Date	Transformer II
4	Individual	PCB's	TO-0004-Date	Reservoir Tank on Transformer II
5	Individual	PCB's	TO-0005-Date	Transformer III
6	Individual	PCB's	TO-0006-Date	Eastside vessel of 3-phase circuit breaker
7	Individual	PCB's	TO-0007-Date	Middle vessel of 3-phase circuit breaker
8	Individual	PCB's	TO-0008-Date	Westside vessel of 3-phase circuit breaker
9	Individual	PCB's	TO-0009-Date	Pole transformer lying 100 yards south of No. 411 on ground
10	Composite	Nat. Uranium, Total	TO-0010-Date	Transformer I and Reservoir Tank
11	Composite	Nat. Uranium, Total	TO-0011-Date	Transformer II and Reservoir Tank
12	Individual	Nat. Uranium, Total	TO-0012-Date	Transformer III
13	Composite	Nat. Uranium, Total	TO-0013-Date	All 3 vessels from 3-phase circuit breaker
14	Individual	Nat. Uranium, Total	TO-0014-Date	Pole transformer lying 100 yards south of No. 411 on ground

TABLE 2 Soil Sampling Locations

Letter From Figure 2	Sample Type	Parameter	Sample Number
A	Individual	PCB's	TS-000A-Date
B	Individual	PCB's	TS-000B-Date
C	Individual	PCB's	TS-000C-Date
D	Individual	PCB's	TS-000D-Date
E	Individual	PCB's	TS-000E-Date
F	Composite	PCB's	TS-000F-Date
G	Composite	PCB's	TS-000G-Date
H	Composite	PCB's	TS-000H-Date
I	Composite	PCB's	TS-000I-Date
J	Composite	PCB's	TS-000J-Date
K	Composite	PCB's	TS-000K-Date
L	Composite	Nitroaromatics HSL Metals and Li, Mo	TS-000L-Date
M	Composite	Nitroaromatics HSL Metals and Li, Mo	TS-000M-Date
N	Composite	PCB's	TS-000N-Date

TABLE 3 Physical Information on Transformers

Number From Figure 2	Serial Number	Manufacturer	Oil Capacity	Description
I	2715-1	Pennsylvania	1,285 gallons	Transformer
II	2715-2	Pennsylvania	1,285 gallons	Transformer
III	C-500897	General Electric	362 gallons	Transformer
IV	12696	Pacific Electric	270 gallons 90 gal/unit	3 phase oil circuit breaker
V	Unknown	Unknown	approx. 40 gal	Pole transformer lying on ground

taken, however most radiological oil samples will be composited. Two composite soil samples will be retrieved to determine the presence or absence of nitroaromatics and HSL metals plus lithium and molybdeum.Individual PCB soil samples will be retrieved where visible oil leakage has occurred. PCB composite samples will be taken to screen the majority of the area. Two small pole transformers are contained above No. 411 but will not be sampled in this effort due to safety concerns. These units are to be treated as PCB-contaminated for purposes of subcontract development.

3.2 Sample Collection

Sampling personnel will use the personal protective equipment listed in Table 4 during the actual sampling operations. In addition the equipment listed in Table 4 will be available for use during sample collection. Spill response equipment will also be on hand.

Personal chemical contamination control must be practiced during and following the collection and shipment of these samples. Samples will be collected by a team of at least two persons as follows:

- Prepare a field data sheet for the sample to be collected. An example field data sheet is presented in Figure 3.

- Select the corresponding pre-labeled sample bottles for the sample to be collected at that location.

- Place plastic sheeting and containers under sample ports where applicable for spill control.

TABLE 4 Equipment Needed For Transformer Sampling

Item	Usage
Tool set	Transformer opening
Buckets	Spill control
Plastic sheeting	Spill control
Oil absorbent pillows and booms	Spill control
Peristaltic pump	Sample drawing
Peristaltic pump	Sample drawing
Generator	Sample drawing
Funnels	Sample drawing
Spoons	Sampling
Sample bottles	Sample shipping
Ziploc bags	Sample shipping
D.I. Water	Decontamination
Hexane	Decontamination
Camera	Documentation
Sample labels	Documentation
Field data sheets	Documentation
Log book	Documentation
Half-face respirator with organic vapor cartridges	Personal protection
Disposable boot covers	Personal protection
Hard hats	Personal protection
Saranex or polycoated tyvek	Personal protection
Face shields	Personal protection
Nitrile gloves/surgical gloves	Personal protection
Radiation monitoring equipment	Personal protection
Two-way radio	Personal protection
Flags	Marking Soil Sample Locations
PCB Field Test Kits	Sampling

FIGURE 3 Transformer Fluid and Soil Sampling - Field Data Sheet

Sample Number: _____ Date: _____

Sample Time: _____

Sampling Location Description: _____

_____

_____

_____

Sample Description: _____

_____

_____

_____

Radiation Level:

_____ Background

_____ Elevated Amount: _____ cpm

Instrument: _____

_____

_____

_____

Samplers Signature _____

Comments: _____

_____

_____

_____

_____

- Slowly open the valve with a sample bottle under the spigot where applicable. Fill the bottle only 3/4 full.

- If sample valves and spigots are inaccessible, entry will be gained at the top of each transformer. A peristaltic pump will then be used to collect samples.

- Seal the caps on the sample bottles with tape.

- Place the oil sample bottles in separate Ziploc bags.

- Clean up the surrounding area.

- Decontaminate equipment following the procedures in WSSRAP ES&H SOP 4.1.3.

- Containerize and store any contaminated articles which cannot be decontaminated.

RADIATION MONITORING

A member of the Health Physics Group will measure the radiation levels of the individual samples prior to shipment of the samples off site. Surface radiation levels for each transformer will be measured by Health Physics technicians.

QUALITY CONTROL

One duplicate sample will be taken for oil and soil for PCB's.

REPORTING OF ANALYTICAL RESULTS

The lab data, field data, and drawings showing the sampling locations will be incorporated in a final report by ES&H for submittal to the Engineering Department. This report will be completed approximately June 1990.

APPENDIX B
SUBSTATION 411 SOILS LAB REPORTS

JTC DATA REPORT 90-174

Contract No. 3589/15-1000-1-11000
P.O. No. 3589-1002-1979
Request No. 84

TABLE 2

DATA SUMMARY

Client ID: TS-000A-042490

JTC ID: 90-04-062-01A

Location ID: WSSRAP

Matrix: Soil

Date Sampled: 4/24/90
Date Extracted: 5/04/90

PCB	Concentration	Units of Measure	Quantitation Limit	Date Analyzed
Arochlor-1016	BQL	µg/Kg	1900	5/24/90
Arochlor-1221	BQL	µg/Kg	1900	5/24/90
Arochlor-1232	BQL	µg/Kg	1900	5/24/90
Arochlor-1242	BQL	µg/Kg	1900	5/24/90
Arochlor-1248	BQL	µg/Kg	1900	5/24/90
Arochlor-1254	BQL	µg/Kg	1900	5/24/90
Arochlor-1260	BQL	µg/Kg	3800	5/24/90

BQL = Below Quantitation Limit

JTC DATA REPORT 90-174

Contract No. 3589/15-1000-1-11000
P.O. No. 3589-1002-1979
Request No. 84

TABLE 3

DATE SUMMARY

Client ID: TS-000B-042490 JTC ID: 90-04-062-02A

Location ID: WSSRAP Matrix: Soil Date Sampled: 4/24/90
Date Extracted: 5/04/90

PCB	Concentration	Units of Measure	Quantitation Limit	Date Analyzed
Arochlor-1016	BQL	µg/Kg	95	5/24/90
Arochlor-1221	BQL	µg/Kg	95	5/24/90
Arochlor-1232	BQL	µg/Kg	95	5/24/90
Arochlor-1242	BQL	µg/Kg	95	5/24/90
Arochlor-1248	BQL	µg/Kg	95	5/24/90
Arochlor-1254	BQL	µg/Kg	190	5/24/90
Arochlor-1260	BQL	µg/Kg	190	5/24/90

BQL = Below Quantitation Limit

JTC DATA REPORT 90-174

Contract No. 3589/15-1000-1-11000
P.O. No. 3589-1002-1979
Request No. 84

TABLE 4

DATA SUMMARY

Client ID: TS-000C-042490

JTC ID: 90-04-062-03A

Location ID: WSSRAP

Matrix: Soil

Date Sampled: 4/24/90
Date Extracted: 5/04/90

PCB	Concentration	Units of Measure	Quantitation Limit	Date Analyzed
Arochlor-1016	BQL	µg/Kg	10,000	5/24/90
Arochlor-1221	BQL	µg/Kg	10,000	5/24/90
Arochlor-1232	BQL	µg/Kg	10,000	5/24/90
Arochlor-1242	BQL	µg/Kg	10,000	5/24/90
Arochlor-1248	BQL	µg/Kg	10,000	5/24/90
Arochlor-1254	BQL	µg/Kg	20,000	5/24/90
Arochlor-1260	BQL	µg/Kg	20,000	5/24/90

BQL - Below Quantitation Limit

JTC DATA REPORT 90-174

Contract No. 3589/15-1000-1-11000
P.O. No. 3589-1002-1979
Request No. 84

TABLE 5

DATA SUMMARY

Client ID: TS-000D-042490

JTC ID: 90-04-062-04A

Location ID: WSSRAP

Matrix: Soil

Date Sampled: 4/24/90
Date Extracted: 5/04/90

PCB	Concentration	Units of Measure	Quantitation Limit	Date Analyzed
Arochlor-1016	BQL	µg/Kg	980	5/24/90
Arochlor-1221	BQL	µg/Kg	980	5/24/90
Arochlor-1232	BQL	µg/Kg	980	5/24/90
Arochlor-1242	BQL	µg/Kg	980	5/24/90
Arochlor-1248	BQL	µg/Kg	980	5/24/90
Arochlor-1254	BQL	µg/Kg	2000	5/24/90
Arochlor-1260	2200	µg/Kg	2000	5/24/90

BQL - Below Quantitation Limit

JTC DATA REPORT 90-174

Contract No. 3589/15-1000-1-11000
P.O. No. 3589-1002-1979
Request No. 84

TABLE 6

DATA SUMMARY

Client ID: TS-000E-042490

JTC ID: 90-04-062-05A

Location ID: WSSRAP

Matrix: Soil

Date Sampled: 4/24/90
Date Extracted: 5/04/90

PCB	Concentration	Units of Measure	Quantitation Limit	Date Analyzed
Arochlor-1016	BQL	µg/Kg	1500	5/24/90
Arochlor-1221	BQL	µg/Kg	1500	5/24/90
Arochlor-1232	BQL	µg/Kg	1500	5/24/90
Arochlor-1242	BQL	µg/Kg	1500	5/24/90
Arochlor-1248	BQL	µg/Kg	1500	5/24/90
Arochlor-1254	BQL	µg/Kg	3000	5/24/90
Arochlor-1260	3600	µg/Kg	3600	5/24/90

BQL = Below Quantitation Limit

JTC DATA REPORT 90-174

Contract No. 3589/15-1000-1-11000
P.O. No. 3589-1002-1979
Request No. 84

TABLE 7

DATA SUMMARY

Client ID: TS-000F-042490

JTC ID: 90-04-062-06A

Location ID: WSSRAP

Matrix: Soil

Date Sampled: 4/24/90
Date Extracted: 5/04/90

PCB	Concentration	Units of Measure	Quantitation Limit	Date Analyzed
Arochlor-1016	BQL	µg/Kg	120	5/24/90
Arochlor-1221	BQL	µg/Kg	120	5/24/90
Arochlor-1232	BQL	µg/Kg	120	5/24/90
Arochlor-1242	BQL	µg/Kg	120	5/24/90
Arochlor-1248	BQL	µg/Kg	120	5/24/90
Arochlor-1254	BQL	µg/Kg	230	5/24/90
Arochlor-1260	BQL	µg/Kg	230	5/24/90

BQL = Below Quantitation Limit

JTC DATA REPORT 90-174

Contract No. 3589/15-1000-1-11000
P.O. No. 3589-1002-1979
Request No. 84

TABLE 8

DATA SUMMARY

Client ID: TS-000G-042490

JTC ID: 90-04-062-07A

Location ID: WSSRAP

Matrix: Soil

Date Sampled: 4/24/90
Date Extracted: 5/04/90

PCB	Concentration	Units of Measure	Quantitation Limit	Date Analyzed
Arochlor-1016	BQL	µg/Kg	1200	5/24/90
Arochlor-1221	BQL	µg/Kg	1200	5/24/90
Arochlor-1232	BQL	µg/Kg	1200	5/24/90
Arochlor-1242	BQL	µg/Kg	1200	5/24/90
Arochlor-1248	BQL	µg/Kg	1200	5/24/90
Arochlor-1254	BQL	µg/Kg	2400	5/24/90
Arochlor-1260	BQL	µg/Kg	2400	5/24/90

BQL = Below Quantitation Limit

JTC DATA REPORT 90-174

Contract No. 3589/15-1000-1-11000
P.O. No. 3589-1002-1979
Request No. 84

TABLE 9

DATA SUMMARY

Client ID: TS-000H-042490

JTC ID: 90-04-062-08A

Location ID: WSSRAP

Matrix: Soil

Date Sampled: 4/24/90
Date Extracted: 5/04/90

PCB	Concentration	Units of Measure	Quantitation Limit	Date Analyzed
Arochlor-1016	BQL	µg/g	1000	5/24/90
Arochlor-1221	BQL	µg/g	1000	5/24/90
Arochlor-1232	BQL	µg/g	1000	5/24/90
Arochlor-1242	BQL	µg/g	1000	5/24/90
Arochlor-1248	BQL	µg/g	1000	5/24/90
Arochlor-1254	BQL	µg/g	2100	5/24/90
Arochlor-1260	BQL	µg/g	2100	5/24/90

BQL - Below Quantitation Limit

JTC DATA REPORT 90-174

Contract No. 3589/15-1000-1-11000
P.O. No. 3589-1002-1979
Request No. 84

TABLE 10

DATA SUMMARY

Client ID: TS-000I-042490

JTC ID: 90-04-062-09A

Location ID: WSSRAP

Matrix: Soil

Date Sampled: 4/24/90
Date Extracted: 5/04/90

PCB	Concentration	Units of Measure	Quantitation Limit	Date Analyzed
Arochlor-1016	BQL	µg/Kg	1200	5/24/90
Arochlor-1221	BQL	µg/Kg	1200	5/24/90
Arochlor-1232	BQL	µg/Kg	1200	5/24/90
Arochlor-1242	BQL	µg/Kg	1200	5/24/90
Arochlor-1248	BQL	µg/Kg	1200	5/24/90
Arochlor-1254	BQL	µg/Kg	2500	5/24/90
Arochlor-1260	BQL	µg/Kg	2500	5/24/90

BQL = Below Quantitation Limit

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TABLE 11

DATA SUMMARY

Client ID: TS-000J-042490

JTC ID: 90-04-062-10A

Location ID: WSSRAP

Matrix: Soil

Date Sampled: 4/24/90
Date Extracted: 5/04/90

PCB	Concentration	Units of Measure	Quantitation Limit	Date Analyzed
Arochlor-1016	BQL	µg/Kg	1200	5/24/90
Arochlor-1221	BQL	µg/Kg	1200	5/24/90
Arochlor-1232	BQL	µg/Kg	1200	5/24/90
Arochlor-1242	BQL	µg/Kg	1200	5/24/90
Arochlor-1248	BQL	µg/Kg	1200	5/24/90
Arochlor-1254	BQL	µg/Kg	2500	5/24/90
Arochlor-1260	BQL	µg/Kg	2500	5/24/90

BQL = Below Quantitation Limit

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TABLE 12

DATA SUMMARY

Client ID: TS-000K-042490

JTC ID: 90-04-062-11A

Location ID: WSSRAP

Matrix: Soil

Date Sampled: 4/24/90
Date Extracted: 5/04/90

PCB	Concentration	Units of Measure	Quantitation Limit	Date Analyzed
Arochlor-1016	BQL	µg/Kg	1000	5/24/90
Arochlor-1221	BQL	µg/Kg	1000	5/24/90
Arochlor-1232	BQL	µg/Kg	1000	5/24/90
Arochlor-1242	BQL	µg/Kg	1000	5/24/90
Arochlor-1248	BQL	µg/Kg	1000	5/24/90
Arochlor-1254	BQL	µg/Kg	2100	5/24/90
Arochlor-1260	BQL	µg/Kg	2100	5/24/90

BQL = Below Quantitation Limit

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TABLE 13

DATA SUMMARY

Client ID: TS-000N-042490

JTC ID: 90-04-062-12A

Location ID: WSSRAP

Matrix: Soil

Date Sampled: 4/24/90
Date Extracted: 5/04/90

PCB	Concentration	Units of Measure	Quantitation Limit	Date Analyzed
Arochlor-1016	BQL	µg/Kg	1400	5/24/90
Arochlor-1221	BQL	µg/Kg	1400	5/24/90
Arochlor-1232	BQL	µg/Kg	1400	5/24/90
Arochlor-1242	BQL	µg/Kg	1400	5/24/90
Arochlor-1248	BQL	µg/Kg	1400	5/24/90
Arochlor-1254	BQL	µg/Kg	2700	5/24/90
Arochlor-1260	BQL	µg/Kg	2700	5/24/90

BQL - Below Quantitation Limit

JTC DATA REPORT 90-174

Contract No. 3589/15-1000-1-11000
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TABLE 14

DATA SUMMARY

Client ID: TS-000B-042490-DU

JTC ID: 90-04-062-13A

Location ID: WSSRAP

Matrix: Soil

Date Sampled: 4/24/90
Date Extracted: 5/04/90

PCB	Concentration	Units of Measure	Quantitation Limit	Date Analyzed
Arochlor-1016	BQL	µg/Kg	1000	5/24/90
Arochlor-1221	BQL	µg/Kg	1000	5/24/90
Arochlor-1232	BQL	µg/Kg	1000	5/24/90
Arochlor-1242	BQL	µg/Kg	1000	5/24/90
Arochlor-1248	BQL	µg/Kg	1000	5/24/90
Arochlor-1254	BQL	µg/Kg	2000	5/24/90
Arochlor-1260	BQL	µg/Kg	2000	5/24/90

BQL - Below Quantitation Limit

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TABLE 15

RESULTS OF NITROAROMATIC ANALYSES

Client ID: TS-000L-042490 JTC ID: 90-04-062-14A

Location ID: WSSRAP Matrix: Soil

Date Sampled: 4/24/90
Date Extracted: 5/11/90
Date Analyzed: 5/30/90

Nitroaromatic Compound	Concentration	Units of Measure	Quantitation Limit
2,4-DNT	BQL	µg/g	0.344
2,6-DNT	BQL	µg/g	0.424
1,3-DNB	BQL	µg/g	0.401
1,3,5-TNB	BQL	µg/g	0.395
2,4,6-TNT	BQL	µg/g	0.369
Nitrobenzene	3.734	µg/g	0.443

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TABLE 16

RESULTS OF NITROAROMATIC ANALYSES

Client ID: TS-000M-042490 JTC ID: 90-04-062-15A

Location ID: WSSRAP Matrix: Soil

Date Sampled: 4/24/90
Date Extracted: 5/11/90
Date Analyzed: 5/30/90

Nitroaromatic Compound	Concentration	Units of Measure	Quantitation Limit
2,4-DNT	BQL	µg/g	0.353
2,6-DNT	BQL	µg/g	0.436
1,3-DNB	BQL	µg/g	0.412
1,3,5-TNB	BQL	µg/g	0.406
2,4,6-TNT	BQL	µg/g	0.380
Nitrobenzene	1.32	µg/g	0.456

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TABLE 17 (REVISED)

RESULTS OF METALS ANALYSES

Client ID: TS-000L-042490 JTC ID: 90-04-062-14A

Location ID: WSSRAP Matrix: Soil

Date Sampled: 4/24/90
Date Digested: 5/08/90
Hg Digested: 5/01/90

Parameter	Concentration	Units of Measure	Detection Limit	Methods Followed	Date Analyzed
Aluminum	3210	mg/Kg	39.2	200.7	5/23/90
Antimony	BQL	mg/Kg	15.2	200.7	5/23/90
Arsenic	BQL	mg/Kg	2.0	206.2	5/18/90
Barium	34.7	mg/Kg	3.0	200.7	5/23/90
Beryllium	BQL	mg/Kg	0.2	200.7	5/23/90
Cadmium	1.86	mg/Kg	0.8	200.7	5/23/90
Calcium	102426	mg/Kg	106	200.7	5/23/90
Chromium	8.02	mg/Kg	1.6	200.7	5/23/90
Cobalt	2.44	mg/Kg	1.8	200.7	5/23/90
Copper	110.2	mg/Kg	3.4	200.7	5/23/90
Iron	5302	mg/Kg	16.8	200.7	5/23/90
Lead	36.8	mg/Kg	0.6	239.2	5/10/90
Magnesium	24500	mg/Kg	87	200.7	5/23/90
Manganese	202	mg/Kg	0.8	200.7	5/23/90
Mercury	BQL	mg/Kg	0.1	245.5	5/02/90
Nickel	6.14	mg/Kg	4.6	200.7	5/23/90
Potassium	690	mg/Kg	158	258.1	5/20/90
Selenium	BQL	mg/Kg	1.0	270.2	5/11/90
Silver	BQL	mg/Kg	3.8	200.7	5/23/90
Sodium	326	mg/Kg	110	273.1	5/20/90
Thallium	BQL	mg/Kg	2.0	279.2	5/17/90
Vanadium	8.32	mg/Kg	2.2	200.7	5/23/90
Zinc	996	mg/Kg	2.8	200.7	5/23/90
Lithium	5.28	mg/Kg	4.0	200.7	5/24/90
Molybdenum	BQL	mg/Kg	4.0	200.7	5/24/90

BQL - Below Quantitation Limit

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TABLE 18

RESULTS OF METALS ANALYSES

Client ID: TS-000M-042490 JTC ID: 90-04-062-15A

Location ID: WSSRAP Matrix: Soil Date Sampled: 4/24/90
Date Digested: 5/21/90

Parameter	Concentration	Units of Measure	Detection Limit	Methods Followed	Date Analyzed
Aluminum	7372	mg/Kg	39.2	200.7	5/23/90
Antimony	BQL	mg/Kg	15.2	200.7	5/23/90
Arsenic	2.88	mg/Kg	2.0	206.2	5/18/90
Barium	58.2	mg/Kg	3.0	200.7	5/23/90
Beryllium	0.4	mg/Kg	0.2	200.7	5/23/90
Cadmium	BQL	mg/Kg	0.8	200.7	5/23/90
Calcium	62782	mg/Kg	106	200.7	5/23/90
Chromium	11.4	mg/Kg	1.6	200.7	5/23/90
Cobalt	3.86	mg/Kg	1.8	200.7	5/23/90
Copper	18.7	mg/Kg	3.4	200.7	5/23/90
Iron	8432	mg/Kg	16.8	200.7	5/23/90
Lead	95	mg/Kg	0.6	239.2	5/10/90
Magnesium	2098	mg/Kg	87	200.7	5/23/90
Manganese	321	mg/Kg	0.8	200.7	5/23/90
Mercury	0.1	mg/Kg	0.1	245.5	5/02/90
Nickel	8.6	mg/Kg	4.6	200.7	5/23/90
Potassium	864	mg/Kg	158	258.1	5/20/90
Selenium	BQL	mg/Kg	1.0	270.2	5/11/90
Silver	BQL	mg/Kg	3.8	200.7	5/23/90
Sodium	214	mg/Kg	110	273.1	5/20/90
Thallium	BQL	mg/Kg	2.0	279.2	5/17/90
Vanadium	17.2	mg/Kg	2.2	200.7	5/23/90
Zinc	381	mg/Kg	2.8	200.7	5/23/90
Lithium	BQL	mg/Kg	4.0	200.7	5/23/90
Molybdenum	BQL	mg/Kg	4.0	200.7	5/23/90

BQL - Below Quantitation Limit