

ACTION MEMORANDUM
ENGINEERING EVALUATION/COST ANALYSIS (EE/CA)
FOR
FORMER PESTICIDE SHOP
AT
NAVAL WEAPONS STATION - EARLE
COLTS NECK, NEW JERSEY

Issued:

February 4, 2000

Prepared for:

Naval Facilities Engineering Command
10 Industrial Highway
Lester, PA 19113

Prepared by:

Foster Wheeler Environmental Corporation
2300 Lincoln Highway
One Oxford Valley - Suite 200
Langhorne, PA 19047 - 1829

REMEDIAL ACTION CONTRACT N62472-94-D-0398
DELIVERY ORDER NO. 0034

NAVAL WEAPONS STATION-EARLE
ACTION MEMORANDUM
EE/CA
COLTS NECK, NEW JERSEY

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
I. PURPOSE.....	1
II. SITE CONDITIONS AND BACKGROUND.....	1
A. Site Description.....	1
1. Removal Site Evaluation.....	1
2. Physical Location.....	1
3. Site Characteristics.....	2
4. Release or Threatened Release into the Environment of a Hazardous Substance, Pollutant or Contaminant.....	2
5. National Priority List (NPL) Status.....	3
6. Maps, Pictures and Other Graphical Representation.....	3
B. Other Actions Addressing the Former Pesticide Shop.....	3
1. Previous Actions.....	3
2. Current Action.....	4
C. State and Local Authorities Rule.....	4
1. State and Local Actions.....	4
2. Potential for Continued State/Local Response.....	4
III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES.....	4
A. Threats to the Public Health or Welfare.....	4
B. Threats to the Environment.....	5
IV. ENDANGER DETERMINATION.....	5
V. PROPOSED ACTION AND ESTIMATED COSTS.....	5
A. Proposed Actions.....	5
1. Proposed Action Description.....	5
2. Contribution to Remedial Performance.....	6
3. Description of Alternative Technologies.....	6
4. Engineering Evaluation/Cost Analysis.....	6
5. Applicable or Relevant and Appropriate Requirements (ARARs).....	6
6. Project Schedule.....	6
7. Estimated Costs.....	7

NAVAL WEAPONS STATION-EARLE
ACTION MEMORANDUM
EE/CA
COLTS NECK, NEW JERSEY

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
VI. EXPECTED CHANGE IN SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN.....	7
VII. OUTSTANDING POLICY ISSUES.....	7
VIII. ENFORCEMENT.....	7
IX. RECOMMENDATION.....	7

LIST OF APPENDICES

APPENDIX A:	PREVIOUS INVESTIGATION REPORTS
APPENDIX B:	FIGURES AND MAPS
APPENDIX C:	ENGINEERING EVALUATION/COST ESTIMATE
APPENDIX D:	SCHEDULE

The following article shall be published in the Asbury Park Press from February 9, 2000 through February 11, 2000:

UNITED STATES
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

This announces that an Action Memorandum, Engineering Evaluation and Cost Analysis (EE/CA) for the excavation and removal of pesticide and herbicide-impacted soils at the Naval Weapons Station Earle Former Pesticide Shop under the Navy's Installation Restoration Program has been drafted. The Northern Division of the Naval Facilities Engineering Command, the lead agency for the site remedial activity, has recommended the removal of pesticide and herbicide impacted soils at the Former Pesticide Shop to minimize the potential for exposure and migration of the pesticides. This remedial action involves the demolition of the Former Pesticide Shop, the excavation, transportation, and off-site disposal of approximately 500 cubic yards of soils contaminated with pesticides and herbicides. The soil excavation activities will include the excavation and removal of the former septic tank, sludge, piping, and effected soils. Post excavation sampling will be used to evaluate the effectiveness of the remedial action. Naval Weapons Station Earle will consider written and verbal comments on the proposed actions before the final selection of the remedial action and issuance of a Decision Document reflecting this choice. Written comments must be postmarked **March 10, 2000**.

The Action Memorandum and EE/CA for this site may be reviewed at the repository listed below:

Monmouth County Library
Eastern Branch
Government Repository
Route 35
Shrewsbury, New Jersey 07701

Written comments on the proposed actions should be sent to:

Commanding Officer
Attn: Code 043
Naval Weapons Station Earle
Colts Neck, New Jersey 07722-5014

ACTION MEMORANDUM
FORMER PESTICIDE SHOP

I. PURPOSE

The purpose of the Action Memorandum is to request and document approval of the remediation at the Former Pesticide Shop, at the Naval Weapons Station Earle (NWS-Earle), located in Monmouth County, New Jersey. The soil remediation will be conducted by a contractor who has specific environmental and construction experience.

II. SITE CONDITIONS AND BACKGROUND

A. Site description

1. Site Evaluation

The main contaminants detected in the soils at the Former Pesticide Shop are DDT, DDE, DDD, and chlordane and potential herbicides. Elevated concentrations of the pesticides could pose a direct threat to on-site workers and the environment.

The objective of the remedial action is to excavate soils with pesticide concentrations above the NJDEP Non-Residential Cleanup Criteria and dispose of the soils off-site at an approved facility. The existing building shall also be demolished and the rubble disposed off-site. Removal of the impacted soils will minimize the potential hazards associated with direct contact and the migration/mobilization of the contaminants. Elevated concentrations of pesticides pose a direct threat to on-site workers and the environment. Chlordane is a persistent insecticide that was used to kill insects on contact and ingestion. Chlordane is classified as a probable human carcinogen. Chlordane is typically absorbed into the body through lungs, stomach, and skin. Acute or chronic exposure to chlordane may effect the central nervous system, liver and cause blood disorders. Chlordane is highly persistent in soils, but very immobile. Chlordane is highly toxic to bees and earthworms, moderately to slightly toxic to birds, and highly toxic to fresh water invertebrates and fish.

2. Physical Location

NWS-Earle is located in east-central Monmouth County in the town of Colts Neck, New Jersey. The Former Pesticide Shop is located on the Mainside portion of the base, north of the intersection of Esperance and Macassar Roads.

The building served as the Former Base Pesticide Shop, but is no longer in service. Apparently, containers and spraying containers were periodically rinsed out and some of

the wastewaters were dumped outside the building. According to Navy personnel, the pesticides shop operated prior 1976, before RCRA regulations.

The Former Pesticide Shop (the shop) is located in a grassy wooded area between Building C-54 and Building C-23. The shop consists of a small concrete block building (25 ft. x 12 ft.) with an asbestos transite roof. The block building sits atop a poured concrete slab. There is also a 15 ft by 8 ft. concrete pad on the northwestern side of the building. The shop is bordered to the east by an asphalt parking lot, to the south by a grassy area and Building C-23, to the west by a grassy, wooded area and Building C-54, and to the north by a wooded area. The shop sits atop a small knoll, which slopes to the north and northwest. An in-ground former septic leach tank is located approximately 15 feet north of the shop. The primitive septic tank consists of a concrete block in-ground structure, approximately 4 feet deep. It is assumed that piping runs underground from the building to the septic tank. The concrete blocks are spaced apart on the bottom to allow seepage to the surrounding area. A concrete lid covers the top of the tank. There are no drawings or plans available for the septic tank, but if it is similar to other tanks excavated at the facility, pea gravel or other more permeable material surrounds the concrete-block pit. An underground electrical line from Building C-23 supplies power to the shop. There is a former overhead telephone line entering the building. There are no other known utilities entering the shop.

3. Site Characteristics

Regional mapping places the Former Pesticide Shop within the outcrop area of the Vincentown Formation. The Vincentown Formation ranges between 10 and 130 feet in thickness. The sediments encountered in borings at a nearby site generally exhibit soil characteristics that agree with the published description of the Vincentown Formation. Soil borings in this site revealed brown pebbly, silty, fine to medium grained sand.

4. Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant, or Contaminant

The main contaminants detected at the Former Pesticide Shop are pesticides in the surficial soils. The laboratory analyses of soil samples collected in the area around the pesticide shop revealed the presence of: chlordane (up to 75,000 ppm); 4,4' DDD (up to 1.5 ppm); 4,4' DDE (up to 1 ppm); and 4,4' DDT (up to 52 ppm). There are also allegations that herbicides were deposited at the site. In particular, 2,4,5-T may have been deposited at the site. Laboratory analyses of herbicides shall be performed on the soils during the remedial action. If elevated levels of 2,4,5-T are detected, the determination will be made to analyze the soils for dioxins.

Nine groundwater samples were collected from temporary wells installed around the Former Pesticide Shop. The laboratory analytical results of groundwater

samples collected from two of these wells revealed an herbicide at concentration above the NJDEP Groundwater Quality Criteria. Endosulfan I was detected in the groundwater at two locations at concentrations of 0.041 ug/l and 0.61 ug/l. The NJDEP Groundwater Quality Criteria for Endosulfan I is 0.40 ug/l.

5. National Priority List (NPL) Status

NWS-Earle (Colts Neck, New Jersey) was listed as an "NPL" site in August 1990. A Federal Facilities Agreement between the Department of the Navy and the United States Environmental Protection Agency (USEPA), Region II was finalized in February 1991. In accordance with Navy policy to include the members of the public in decisions concerning site clean up decisions, NWS-Earle established a "Restoration Advisory Board" (RAB). The RAB is comprised of community members, representatives of the USEPA, New Jersey Department of Environmental Protection (NJDEP), and the Navy. The RAB was officially formed in February 1995, and meets regularly after normal business hours to allow the working public an opportunity to participate in site-specific discussions. Prior to RAB formation, a Technical Review Committee (TRC) met during normal business hours; representatives of local municipalities and regulatory agencies attended TRC meetings. This proposed action at the Former Pesticide Shop has been discussed with the NWS-Earle RAB.

The proposed Pesticide Shop Remediation is a non-time critical remedial action as defined in the National Contingency Plan (NCP).

6. Maps, Pictures, and Other Graphic Representations

Maps of the site are included in Appendix B of this Action Memorandum.

B. Other Actions Addressing Pesticide Shop

1. Previous Actions

Brown and Root Environmental conducted a soil investigation at the Former Pesticide Shop on April 21 and 22, 1998. Twenty-three soil borings around the Former Pesticide Shop were sampled from three discrete depths (surface, one and three-feet below grade). The soil samples were analyzed for chlorinated organic pesticides by SW-846 Method 8081A. Chlordane and 4,4'-DDT were the most frequently detected pesticides found in the soil samples. Chlordane was found in 20 of 23 surface soil samples; and 4,4' DDT was found in 13 of 23 surface soil samples. The laboratory analyses of soil samples collected in the area around the pesticide shop revealed the presence of: chlordane (up to 75,000 ppm); 4,4' DDD (up to 1.5 ppm); 4,4' DDE (up to 1 ppm); and 4,4' DDT (up to 52 ppm).

On December 4, 1998 and January 9, 1999, Foster Wheeler Environmental conducted a soil and groundwater investigation at the Former Pesticide Shop. The project objectives included utilizing direct-push methods to collect soil samples and groundwater samples for the laboratory analyses of pesticides. The purpose of the sample collection was twofold. Soil samples were collected to further delineate the vertical extent of pesticide contamination in the soils at the previously identified "hotspots". Groundwater samples were collected at the site to determine if pesticides impacted the groundwater. The soil investigation determined that the majority of the pesticide contamination in the soils was restricted to the upper 2 feet of soils. No pesticides migrated to the groundwater. One herbicide (Endosulfan I) was detected in two of nine groundwater samples obtained at the site at a concentration above the NJDEP Groundwater Quality Criteria. Appendix A contains the previous investigative reports.

On April 4, 1999, Foster Wheeler collected soil samples in order to obtain preliminary waste classification information for the soils at the Former Pesticide Shop. The soil samples were analyzed for TCLP pesticides and volatile organics. Appendix A contains the Analytical Report.

2. Current Action

No current action other than this Action Memorandum.

C. State and Local Authorities' Rule

1. State and Local Actions

The site is located on the NWS-Earle Base, which is secured and requires a pass for entry. The pass can only be obtained from the NWS-Earle Earle Security office.

2. Potential for Continued State/Local Response

The Navy will lead the response under cooperative agreement with the NJDEP. The potential for any continued State/Local response is unlikely.

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

A. Threats to Public Health or Welfare

Chlordane was found in 20 of 23 surface soil samples; and 4,4' DDT was found in 13 of 23 surface soil samples. The laboratory analyses of soil samples collected in the

area around the pesticide shop revealed the presence of: chlordane (up to 75,000 ppm); 4,4' DDD (up to 1.5 ppm); 4,4' DDE (up to 1 ppm); and 4,4' DDT (up to 52 ppm). The pesticides levels were concentrated in the first two feet of the soils and appear to be distributed in the soils around the former building and parking lot. Groundwater samples obtained from the site only revealed one herbicide at a concentration above the NJDEP Drinking Water Standards. Groundwater is not currently being used in the area of the pesticide shop; purchased water from the N.J. American Water Company is used in this area of the Station.

Public access to the site is strictly limited as the site is located on a secure base. Risks to public health can be avoided by restricting future land use or groundwater use in the area of the pesticide shop.

The remedial action proposed in this Action Memorandum should reduce the risks associated with the Former Pesticide Shop contamination.

B. Threats to the Environment

Direct contact of contaminated soils is the main threat to the health and the environment. Chlordane is highly persistent in soils, but very immobile. Chlordane is highly toxic to bees and earthworms, moderately to slightly toxic to birds, and highly toxic to fresh water invertebrates and fish.

The remedial action proposed in this Action Memorandum will reduce potential adverse effects of the Former Pesticide Shop contaminants on human receptors as well as ecological receptors, such as animals.

IV. ENDANGERMENT DETERMINATION

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

V. PROPOSED ACTION AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed Action Description

The proposed action at the Former Pesticide Shop include the demolition of the existing building, removal of all demolition debris, the excavation and removal of the former septic tank associated with the operations, and the excavation and removal of

pesticide and herbicide-contaminated soils with concentrations above the Non-Residential Cleanup Criteria. The remedial activities at the site will minimize the risks associated with direct-contact to the contaminants of concern.

2. Contribution to Remedial Performance

No further action may be required based upon the proposed removal action. Post-excavation sampling results will be compared to the NJDEP Non-Residential Cleanup Criteria to determine the need for additional action. Sample data that indicates levels of contaminants below the NJDEP Non-Residential Cleanup Criteria will demonstrate that the remedial action was effective. With NJDEP approval, no further action may be necessary.

3. Description of Alternative Technologies

Alternative technologies have been considered. It has been determined that the proposed action of soil removal and off-site disposal is the most effective and least expensive option.

4. Engineering Evaluation/Cost Analysis (EE/CA)

An Engineering Evaluation/Cost Analysis has been prepared and is included as Appendix C. It contains a detailed discussion of alternatives considered before selection the remedial action outlined in this Action Memorandum.

5. Applicable or Relevant and Appropriate Requirements (ARARs)

- The New Jersey Non-Residential Direct Contact Soil Cleanup Criteria Standards, as outlined in the Findings and Recommendation for the Remediation of Historic Pesticide Contamination-Final Report. Historic Pesticide Contamination Task Force. March 1999.
- The New Jersey Soil Cleanup Criteria. Last Revised May 12, 1999.

6. Project Schedule

This project will begin in March 13, 2000 and be completed by April 11, 2000. Appendix D contains the complete schedule.

7. Estimated Costs

The estimated cost of the remedial action is approximately \$250,000. A detailed cost estimate is provided in the EE/CA.

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

Although the contaminants in the soils are relatively immobile, a delay in action would increase potential for direct contact exposure to these compounds. A delay or no action at this time could potentially impact on-site workers and the environment.

VII. OUTSTANDING POLICY ISSUES

There are no outstanding policy issues that have not been discussed or addressed.

VIII. ENFORCEMENT

This remedial action will be performed properly and in accordance with this Action Memorandum, and all applicable federal, state, and local regulations.

X. RECOMMENDATION

This decision document represents the selected remedial action for the Former Pesticide Shop, at Naval Weapons Station Earle, Colts Neck, Monmouth County, New Jersey. It was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and not inconsistent with the National Contingency Plan. This decision is based on the available data for the Former Pesticide Shop.

APPENDIX A

NAVAL WEAPONS STATION EARLE
COLTS NECK NEW JERSEY

PREVIOUS INVESTIGATION REPORT

DELINEATION SAMPLING AND ANALYSIS

OLD PESTICIDE SHOP

NAVAL WEAPONS STATION

EARLE, NEW JERSEY

BACKGROUND AND LOCATION

NWS Earle is located in Monmouth County in east-central New Jersey. It is situated on approximately 11,134 acres, and includes a Mainside area, which is approximately ten miles inland from the Atlantic Ocean at Sandy Hook Bay, and a Waterfront area, which includes an ammunition depot and associated piers. The Mainside and Waterfront areas are linked by a narrow tract of land that serves as a right-of-way for a government road and railroad. The main entrance to NWS Earle is located off State Route 34.

NWS Earle was commissioned as a Naval Ammunition Depot on December 13, 1943, with the primary responsibility of furnishing ammunition to the naval fleet. The station's Ordnance Department coordinates all port services and logistic support for home-ported and visiting ships, conducts safety inspections, supervises ammunition loading for the United States Coast Guard, and provides afloat firefighting capability and standby tug services.

The Mainside area lies in the outer Coastal Plain, approximately ten miles inland from the Atlantic Ocean. The Mainside area is relatively flat, with elevations ranging from approximately 100 to 300 feet above mean sea level (MSL). The most significant topographic relief within the Mainside area is Hominy Hills, a northeast-southwest-trending group of low hills located near the center of the station.

Building S-186 (Old Pesticide Shop) located on the Mainside area, north of the intersection of Esperance and Macassar Roads served as the pesticide shop for the Mainside area. Two soil samples, one surface soil (0-0.5 ft. BGS) and one hand augured subsurface soil (1-2 ft. BGS), were collected north of Building S-186 in August 1995. Pesticides were detected in both of these samples, with the surface soil sample having much higher concentrations (390-140,000 ug/kg) than the subsurface sample (0.13-47 ug/kg). The pesticides detected in both samples included, Heptachlor, Aldrin, Dieldrin, 4,4'-DDD, 4,4'-DDT, alpha-Chlordane, and gamma-Chlordane.

RESULTS OF SCREENING SAMPLING AND ANALYSIS AT THE OLD PESTICIDE SHOP

Screening sampling was conducted at the Old Pesticide Shop on January 29, 1998. The objectives of the screening sampling and analysis (S&A) program was to determine if operations at the building had resulted in releases which had contaminated the building or surrounding area with organochlorine or organophosphorous pesticides.

The sampling was conducted in accordance with a sampling plan developed by Brown & Root Environmental following the New Jersey Department of Environmental Protection (NJDEP) Field Sampling Procedures Manual dated May 1992 and Brown & Root Environmental sampling standard operating procedures (SOPs). The following samples were obtained.

- Four wipe samples of interior wall surfaces from the Old Pesticide Shop
- Four core samples of concrete from the pad located in front of the Old Pesticide Shop
- Nine composite samples of surface soils surrounding the Old Pesticide Shop
- One sediment sample from the septic tank servicing the Old Pesticide Shop

All samples were analyzed for the full suite of Appendix IX Organochlorine Pesticides by EPA method SW-846 8081A and Appendix IX Organophosphorous pesticides by EPA Method SW-846 8141A.

A report on the results of the screening sampling dated March 11, 1998 stated the following conclusions regarding the soil at the Old Pesticides Shop:

The vertical and horizontal extent of organochlorine pesticide contamination should be further delineated. Additional surface and subsurface soils samples should be collected and analyzed for RCRA Appendix IX organochlorine pesticides. Near subsurface (one foot and three foot) soil samples should be taken to determine if any organochlorine pesticides have migrated to the subsurface. Subsurface samples could be limited to one foot and three foot depths because organochlorine pesticides are generally not mobile in soil. Therefore, little, if any, migration of organochlorine pesticides, found in surface soils, to subsurface soils is expected.

RESULTS OF DELINEATION SOIL SAMPLING AT OLD PESTICIDE SHOP

Sampling of surface and subsurface soils was conducted at the Old Pesticide Shop on April 21 and 22, 1998. Twenty-three soil locations at the Old Pesticide Shop were sampled at three different depths (surface, and one- and three-feet below ground surface). Attachment 1 contains the report of field sampling activities. All samples were analyzed for chlorinated organic pesticides by SW 846 8081A. Table 1 contains a summary of all positive detections. Included in Table 1 is a comparison to Region III industrial and residential soil standards for pesticides. Information is also included in Table 1 on concentrations of chlordane and heptachlor, which if completely leached, could result in the soil being classified as hazardous waste for disposal purposes.

Chlordane and 4,4'-DDT were the most prevalent pesticides found. Chlordane was found in 20 out of 23 surface soil samples. In eight 8 samples the Region III risk based standard for chlordane in industrial soil was exceeded. One surface soil sample exceeded the Region III chlordane standard for residential soil but was below the industrial standard. Chlordane concentrations decreased with depth. At the 1-foot and 3-foot levels, only 1 sample exceeded Region III industrial soil standards.

4,4'-DDT was found in 13 of 23 surface soil samples. In two surface soil samples the Region III industrial soil standard for 4,4'-DDT was exceeded. Concentrations in the subsurface soils did not exceed the Region III industrial standard.

4,4'-DDD and 4,4'-DDE were detected in several surface soil samples but in all cases in concentrations were well below the Region III industrial soil standards. Both compounds were found to a lesser extent in subsurface soils.

Beta-BHC was found in one surface sample at a low concentration (4 ug/kg) and was not detected in the subsurface. Heptachlor epoxide was found in two surface and one subsurface soil sample at low concentrations relative to the concentrations of other detected organochlorine pesticides.

Figure 1 shows the location of each of the 23 sampling points and the positive results for each of the three soil depths sampled at each point for 4,4'-DDD, 4,4'-DDE, 4,4'-DDT and chlordane, the four most prevalent pesticides. Attachment 2 contains the analytical data summary.

TABLE 1

SUMMARY OF POSITIVE PESTICIDE DETECTIONS
 OLD PESTICIDE SHOP
 NWS EARLE
 EARLE, NEW JERSEY
 PAGE 1 OF 2

SAMPLE ID	4,4'-DDD	4,4'-DDE	4,4'-DDT	CHLORDANE	BETA-BHC	HEPTACHLOR EPOXIDE
Soil Residential	2700	1900	1900	1800 ⁽¹⁾		140
Soil Industrial	24000	17000	17000	16000 ⁽¹⁾		1300 ⁽²⁾
RB-DATE						
SS-10				31000		
SS-10-DUP				31000 ⁽¹⁾		
SB-10-01				450		
SB-10-03				4		
SS-11	19	150	850	330		
SB-11-01						
SB-11-03						
SS-12				230000		
SB-12-01				1200 ⁽¹⁾		
SB-12-03				250		
SS-13	1500	360	12000	720 ⁽¹⁾		
SB-13-01	50	9	510	23		
SB-13-03	3		8	4		
SS-14	49	320	360	180		
SB-14-01		2	2		4	
SB-14-01 DUP		3	3			
SB-14-03						
SS-15	290	1000	1700	2600 ⁽¹⁾		
SB-15-01		32	41	130		
SB-15-03			2			
SS-16		90	99			
SB-16-01		26	28			
SB-16-03		2	2			
SS-17		160	200			
SB-17-01						
SB-17-03						
SS-18				160000 ⁽¹⁾		
SB-18-01				1200 ⁽¹⁾		
SB-18-03				42000		
SB-18-03 DUP				25000 ⁽¹⁾		
SS-19				6600 ⁽¹⁾		
SB-19-01				320		
SB-19-03	3			56		3
SS-20		17	29	430		6
SB-20-01				20		
SB-20-03				4		
SS-21			17	680 ⁽¹⁾		24
SB-21-01				17		
SB-21-03						
SB-21-03 DUP				14		
SS-22				170000		
SB-22-01				15000		
SB-22-03				300		
SS-23				1300 ⁽¹⁾		

TABLE 1

SUMMARY OF POSITIVE PESTICIDE DETECTIONS
 OLD PESTICIDE SHOP
 NWS EARLE
 EARLE, NEW JERSEY
 PAGE 2 OF 2

SAMPLE ID	4,4'-DDD	4,4'-DDE	4,4'-DDT	CHLORDANE	BETA-BHC	HEPTACHLOR EPOXIDE
Soil Residential	2700	1900	1900	1800 ⁽¹⁾		140
Soil Industrial	24000	17000	17000	16000 ⁽¹⁾		1300 ⁽²⁾
SB-23-01			2	53		
SB-23-03				10		
SS-24				20000		
SS-24 DUP				32000		
SB-24-01				180		
SB-24-03				28		2
SS-25				34000		
SB-25-01				180		
SB-25-01 DUP				120		
SB-25-03				180		
SS-26		710	19000			
SS-26RE			20000			
SB-26-01		340	6300			
SB-26-03		420	590			
SS-27				650		
SB-27-01				28		
SB-27-03				5		
SS-28			52000	140000		
SB-28-01			380	1900		
SB-28-03			5	9		
SS-29		8	16	73		
SB-29-01		55	77	200		
SB-29-03		6	9	19		
SB-29-03 DUP		15	35	77		
SS-30			350	2700 ⁽¹⁾		
SB-30-01		200	840	210		
SB-30-03		4	9	13		
SS-31			12	170		
SB-31-01				5000000		
SB-31-03		38	100	2000 ⁽¹⁾		
SS-32				580		
SB-32-01	58	59				
SB-32-03		3		20		

All results in micrograms/kilogram (ug/kg)

[-] = Exceeds Region III residential soil standard

[-] = Exceeds Region III industrial soil standard

1 - Exceeds 20 X TC level of 30 ug/l

2 - Exceeds 20 X TC level of 8 ug/l

n:\data\bbre862\earle\pestdlin.xls

ATTACHMENT 1
FIELD TRIP REPORT

FIELD TRIP REPORT

FOR

NAVAL WEAPONS STATION EARLE

COLTS NECK, NEW JERSEY

DELINEATION SAMPLING at the OLD PESTICIDE SHOP

Prepared by

Brown & Root Environmental

May 1998

1.0 OLD PESTICIDE SHOP

1.1 Introduction

The primary objective of the additional sampling at the Old Pesticide Shop was to further delineate the contamination found during the screening sampling and analysis. In order to accomplish this objective additional sampling and analysis for chlorinated pesticides was conducted. The additional sampling consisted of collecting surface and subsurface soils, surrounding the building, at 23 different locations and from three depths (surface, one foot below ground surface, and three feet below ground surface). All samples were analyzed for chlorinated pesticides. The results of the additional sampling and analysis will be used as the basis for determining the potential extent of pesticide contamination.

1.2 Surface soil sampling

On April 20 and 21, 1998, 25 surface soil samples (including two duplicates) were collected at the Old Pesticide Shop. The locations were based upon the previous sampling event results and were selected in the field. The locations were spaced evenly at 7.5-foot by 15 to 20-foot spaces throughout the southern side of the site and 10 foot by 15 foot spaces throughout the northern side of the site.

The soil samples were collected according to NJDEP Field Sampling Procedures Manual dated May 1992 and B&R Environmental SOP SA-1.3. Stainless steel trowels were used to obtain the samples and were decontaminated with Liquidnox, water, methanol, and deionized water between sample locations. The soil samples were placed directly into laboratory supplied 8-ounce jars and stored on ice. All surface soil samples were analyzed for chlorinated pesticides at RECRA Lab Net in University Park, Illinois.

The surface soils generally consisted of grayish-dark brown silty fine grained sand with some organics. No elevated Photo Ionization Detector (PID) readings were observed or noted in the surface soils.

1.3 Subsurface soil sampling

On April 20 and 21, 1998, 25 subsurface soil samples (including two duplicates) were collected from a depth of 1-foot below ground surface (bgs) and 26 subsurface soil samples (including three duplicates) were collected from a depth of 3-feet bgs at the Old Pesticide Shop. The location of each subsurface soil sample corresponded with the same location as the surface soil sample.

A stainless steel hand auger and trowel were used to obtain the samples and were decontaminated with Liquidnox, water, methanol, and deionized water between sample locations. The soil samples were placed directly into laboratory supplied 8-ounce jars and stored on ice. All subsurface soil samples were analyzed for chlorinated pesticides at RECRA Lab Net in University Park, Illinois.

The subsurface soils at 1-foot bgs generally consisted of a dark grayish brown to grayish tan silty fine grained sand or an olive green clayey fine grained sand with some silt. Elevated PID readings were observed and noted at locations 25, 26, 28, and 29. These PID readings ranged between 1.0 PPM to 6.0 PPM. There were sweet aromatic odors observed at these same locations.

The subsurface soils at 3-feet bgs generally consisted of tan, orange-tan, or grayish brown silty fine grained sand with some subround pebbles. Elevated PID readings were observed and noted at locations 25, 26, and 29. These PID readings ranged between 1.2 PPM and 10.8 PPM. There were sweet aromatic odors observed at these same locations.

The hand auger soil borings were backfilled with the soil cuttings that were removed from each location.

ATTACHMENT 2
PESTICIDE SHOP
DELINEATION SAMPLING ANALYTICAL DATA

QTC154 AWS EARLE
SOIL DATA
RECRA LABNET - CHICAGO
SDG: U04346

SAMPLE NUMBER:	186-DUP-01	186-DUP-02	186-SB-10-01	186-SB-10-03
SAMPLE DATE:	04/20/98	04/20/98	04/20/98	04/20/98
LABORATORY ID:	9804G346-004	9804G346-014	9804G346-002	9804G346-003
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	87.8 %	89.4 %	85.2 %	91.1 %
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4-DDD	1900	U		1.8	U		38	U		1.8	U	
4,4-DDE	1900	U		2.9			38	U		1.8	U	
4,4-DDT	1200	J		2.5			38	U		1.8	U	
ALDRIN	940	U		0.90	U		19	U		0.90	U	
ALPHA-BHC	940	U		0.90	U		19	U		0.90	U	
BETA-BHC	940	U		0.90	U		19	U		0.90	U	
CHLORDANE	31000			3.6	U		450			3.6		
DELTA-BHC	940	U		0.90	U		19	U		0.90	U	
DIELDRIN	1900	U		1.8	U		38	U		1.8	U	
ENDOSULFAN I	940	U		0.90	U		19	U		0.90	U	
ENDOSULFAN II	1900	U		1.8	U		38	U		1.8	U	
ENDOSULFAN SULFATE	1900	U		1.8	U		38	U		1.8	U	
ENDRIN	1900	U		1.8	U		38	U		1.8	U	
ENDRIN ALDEHYDE	1900	U		1.8	U		38	U		1.8	U	
ENDRIN KETONE	1900	U		1.8	U		38	U		1.8	U	
GAMMA-BHC (LINDANE)	940	U		0.90	U		19	U		0.90	U	
HEPTACHLOR	940	U		0.90	U		19	U		0.90	U	
HEPTACHLOR EPOXIDE	940	U		0.90	U		19	U		0.90	U	
METHOXYCHLOR	9400	U		9.0	U		190	U		9.0	U	
TOXAPHENE	19000	U		18	U		380	U		18	U	

SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04346

SAMPLE NUMBER:	186-SB-11-01	186-SB-11-03	186-SB-12-01	186-SB-12-03
SAMPLE DATE:	04/20/98	04/20/98	04/20/98	04/20/98
LABORATORY ID:	9804G346-007	9804G346-005	9804G346-009	9804G346-010
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	90.1 %	92.9 %	89.0 %	94.8 %
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	1.8	U		1.8	U		93	U		17	U	
4,4'-DDE	1.8	U		1.8	U		93	U		17	U	
4,4'-DDT	1.8	U		1.8	U		93	U		17	U	
ALDRIN	0.92	U		0.88	U		46	U		8.7	U	
ALPHA-BHC	0.92	U		0.88	U		46	U		8.7	U	
BETA-BHC	0.92	U		0.88	U		46	U		8.7	U	
CHLORDANE	3.7	U		3.5	U		1200			250		
DELTA-BHC	0.92	U		0.88	U		46	U		8.7	U	
DIELDRIN	1.8	U		1.8	U		93	U		17	U	
ENDOSULFAN I	0.92	U		0.88	U		46	U		8.7	U	
ENDOSULFAN II	1.8	U		1.8	U		93	U		17	U	
ENDOSULFAN SULFATE	1.8	U		1.8	U		93	U		17	U	
ENDRIN	1.8	U		1.8	U		93	U		17	U	
ENDRIN ALDEHYDE	1.8	U		1.8	U		93	U		17	U	
ENDRIN KETONE	1.8	U		1.8	U		93	U		17	U	
GAMMA-BHC (LINDANE)	0.92	U		0.88	U		46	U		8.7	U	
HEPTACHLOR	0.92	U		0.88	U		46	U		8.7	U	
HEPTACHLOR EPOXIDE	0.92	U		0.88	U		46	U		8.7	U	
METHOXYCHLOR	9.2	U		8.8	U		460	U		87	U	
TOXAPHENE	18	U		18	U		930	U		170	U	

CTO154 - NWS EARLE
 SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04346

SAMPLE NUMBER:	186-SB-13-01	186-SB-13-01RE	186-SB-13-03	186-SB-14-01
SAMPLE DATE:	04/20/98	04/20/98	04/20/98	04/20/98
LABORATORY ID:	9804G346-012	9804G346-012	9804G346-013	9804G346-016
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	90.9 %	90.9 %	93.5 %	91.9 %
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	50			18	U		3.2			1.8	U	
4,4'-DDE	9.0			18	U		1.8	U		1.8		
4,4'-DDT	510			500			7.8			1.8		
ALDRIN	4.5	U		9.0	U		0.88	U		0.90	U	
ALPHA-BHC	4.5	U		9.0	U		0.88	U		0.90	U	
BETA-BHC	4.5	U		9.0	U		0.88	U		3.6		
CHLORDANE	23			36	U		4.4			3.6	U	
DELTA-BHC	4.5	U		9.0	U		0.88	U		0.90	U	
DIELDRIN	9.0	U		18	U		1.8	U		1.8	U	
ENDOSULFAN I	4.5	U		9.0	U		0.88	U		0.90	U	
ENDOSULFAN II	9.0	U		18	U		1.8	U		1.8	U	
ENDOSULFAN SULFATE	9.0	U		18	U		1.8	U		1.8	U	
ENDRIN	9.0	U		18	U		1.8	U		1.8	U	
ENDRIN ALDEHYDE	9.0	U		18	U		1.8	U		1.8	U	
ENDRIN KETONE	9.0	U		18	U		1.8	U		1.8	U	
GAMMA-BHC (LINDANE)	4.5	U		9.0	U		0.88	U		0.90	U	
HEPTACHLOR	4.5	U		9.0	U		0.88	U		0.90	U	
HEPTACHLOR EPOXIDE	4.5	U		9.0	U		0.88	U		0.90	U	
METHOXYCHLOR	45	U		90	U		8.8	U		9.0	U	
TOXAPHENE	90	U		180	U		18	U		18	U	

SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04346

SAMPLE NUMBER:	186-SB-14-03	186-SB-15-01	186-SB-15-03	186-SS-10
SAMPLE DATE:	04/20/98	04/20/98	04/20/98	04/20/98
LABORATORY ID:	9804G346-017	9804G346-019	9804G346-020	9804G346-001
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	92.9 %	89.7 %	94.6 %	90.2 %
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	1.8	U		18	U		1.8	U		1800	U	
4,4'-DDE	1.8	U		32			1.4	J		1800	U	
4,4'-DDT	1.8	U		41			2.1			1800	U	
ALDRIN	0.89	U		9.2	U		0.88	U		910	U	
ALPHA-BHC	0.89	U		9.2	U		0.88	U		910	U	
BETA-BHC	0.89	U		9.2	U		0.88	U		910	U	
CHLORDANE	3.6	U		130			3.5	U		31000		
DELTA-BHC	0.89	U		9.2	U		0.88	U		910	U	
DIELDRIN	1.8	U		18	U		1.8	U		1800	U	
ENDOSULFAN I	0.89	U		9.2	U		0.88	U		910	U	
ENDOSULFAN II	1.8	U		18	U		1.8	U		1800	U	
ENDOSULFAN SULFATE	1.8	U		18	U		1.8	U		1800	U	
ENDRIN	1.8	U		18	U		1.8	U		1800	U	
ENDRIN ALDEHYDE	1.8	U		18	U		1.8	U		1800	U	
ENDRIN KETONE	1.8	U		18	U		1.8	U		1800	U	
GAMMA-BHC (LINDANE)	0.89	U		9.2	U		0.88	U		910	U	
HEPTACHLOR	0.89	U		9.2	U		0.88	U		910	U	
HEPTACHLOR EPOXIDE	0.89	U		9.2	U		0.88	U		910	U	
METHOXYCHLOR	8.9	U		92	U		8.8	U		9100	U	
TOXAPHENE	18	U		180	U		18	U		18000	U	

CTO154 - NWS EARLE
 SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04346

SAMPLE NUMBER:
 SAMPLE DATE:
 LABORATORY ID:
 QC_TYPE:
 % SOLIDS:
 UNITS:
 FIELD DUPLICATE OF:

186-SS-11
 04/20/98
 9804G346-006
 NORMAL
 91.4 %
 UG/KG

186-SS-12
 04/20/98
 9804G346-008
 NORMAL
 89.3 %
 UG/KG

186-SS-13
 04/20/98
 9804G346-011
 NORMAL
 92.3 %
 UG/KG

186-SS-13RE
 04/20/98
 9804G346-011
 NORMAL
 92.3 %
 UG/KG

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	19			18000	U		1500			890	U	
4,4'-DDE	150			18000	U		360			890	U	
4,4'-DDT	850			18000	U		12000			13000		
ALDRIN	18	U		9100	U		89	U		450	U	
ALPHA-BHC	18	U		9100	U		89	U		450	U	
BETA-BHC	18	U		9100	U		89	U		450	U	
CHLORDANE	330			200000			720			1800	U	
DELTA-BHC	18	U		9100	U		89	U		450	U	
DIELDRIN	36	U		18000	U		180	U		890	U	
ENDOSULFAN I	18	U		9100	U		89	U		450	U	
ENDOSULFAN II	36	U		18000	U		180	U		890	U	
ENDOSULFAN SULFATE	36	U		18000	U		180	U		890	U	
ENDRIN	36	U		18000	U		180	U		890	U	
ENDRIN ALDEHYDE	36	U		18000	U		180	U		890	U	
ENDRIN KETONE	36	U		18000	U		180	U		890	U	
GAMMA-BHC (LINDANE)	18	U		9100	U		89	U		450	U	
HEPTACHLOR	18	U		9100	U		89	U		450	U	
HEPTACHLOR EPOXIDE	18	U		9100	U		89	U		450	U	
METHOXYCHLOR	180	U		91000	U		890	U		4500	U	
TOXAPHENE	360	U		180000	U		1800	U		8900	U	

CTC 154 TWS RLE
 SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04346

SAMPLE NUMBER:
 SAMPLE DATE:
 LABORATORY ID:
 QC_TYPE:
 % SOLIDS:
 UNITS:
 FIELD DUPLICATE OF:

186-SS-14
 04/20/98
 9804G346-015
 NORMAL
 84.1 %
 UG/KG

186-SS-15
 04/20/98
 9804G346-018
 NORMAL
 78.8 %
 UG/KG

//
 100.0 %

//
 100.0 %

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	49			290								
4,4'-DDE	320			1000								
4,4'-DDT	360			1700								
ALDRIN	9.8	U		100	U							
ALPHA-BHC	9.8	U		100	U							
BETA-BHC	9.8	U		100	U							
CHLORDANE	180			2600								
DELTA-BHC	9.8	U		100	U							
DIELDRIN	20	U		210	U							
ENDOSULFAN I	9.8	U		100	U							
ENDOSULFAN II	20	U		210	U							
ENDOSULFAN SULFATE	20	U		210	U							
ENDRIN	20	U		210	U							
ENDRIN ALDEHYDE	20	U		210	U							
ENDRIN KETONE	20	U		210	U							
GAMMA-BHC (LINDANE)	9.8	U		100	U							
HEPTACHLOR	9.8	U		100	U							
HEPTACHLOR EPOXIDE	9.8	U		100	U							
METHOXYCHLOR	98	U		1000	U							
TOXAPHENE	200	U		2100	U							

CTO154 - NWS EARLE
 SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04347

SAMPLE NUMBER:	186-DUP-03	186-SB-16-01	186-SB-16-03	186-SB-17-01
SAMPLE DATE:	04/20/98	04/20/98	04/20/98	04/20/98
LABORATORY ID:	9804G347-007	9804G347-002	9804G347-003	9804G347-005
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	91.5 %	83.9 %	93.0 %	92.5 %
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	1800	U		1.9	U		1.8	U		1.8	U	
4,4'-DDE	1800	U		26			1.8			1.8	U	
4,4'-DDT	1800	U		28			1.8			1.8	U	
ALDRIN	900	U		0.97	U		0.88	U		0.89	U	
ALPHA-BHC	900	U		0.97	U		0.88	U		0.89	U	
BETA-BHC	900	U		0.97	U		0.88	U		0.89	U	
CHLORDANE	25000			3.9	U		3.5	U		3.6	U	
DELTA-BHC	900	U		0.97	U		0.88	U		0.89	U	
DIELDRIN	1800	U		1.9	U		1.8	U		1.8	U	
ENDOSULFAN I	900	U		0.97	U		0.88	U		0.89	U	
ENDOSULFAN II	1800	U		1.9	U		1.8	U		1.8	U	
ENDOSULFAN SULFATE	1800	U		1.9	U		1.8	U		1.8	U	
ENDRIN	1800	U		1.9	U		1.8	U		1.8	U	
ENDRIN ALDEHYDE	1800	U		1.9	U		1.8	U		1.8	U	
ENDRIN KETONE	1800	U		1.9	U		1.8	U		1.8	U	
GAMMA-BHC (LINDANE)	900	U		0.97	U		0.88	U		0.89	U	
HEPTACHLOR	900	U		0.97	U		0.88	U		0.89	U	
HEPTACHLOR EPOXIDE	900	U		0.97	U		0.88	U		0.89	U	
METHOXYCHLOR	9000	U		9.7	U		8.8	U		8.9	U	
TOXAPHENE	18000	U		19	U		18	U		18	U	

CT0154 - NWS EARLE
 SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04347

SAMPLE NUMBER:	186-SB-17-03	186-SB-18-01	186-SB-18-03	186-SB-19-01
SAMPLE DATE:	04/20/98	04/20/98	04/20/98	04/20/98
LABORATORY ID:	9804G347-006	9804G347-009	9804G347-010	9804G347-012
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	90.8 %	90.2 %	88.1 %	94.7 %
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	1.8	U		90	U		940	U		8.7	U	
4,4'-DDE	1.8	U		90	U		940	U		8.7	U	
4,4'-DDT	1.8	U		90	U		940	U		8.7	U	
ALDRIN	0.91	U		45	U		470	U		4.4	U	
ALPHA-BHC	0.91	U		45	U		470	U		4.4	U	
BETA-BHC	0.91	U		45	U		470	U		4.4	U	
CHLORDANE	3.6	U		1200			42000			320		
DELTA-BHC	0.91	U		45	U		470	U		4.4	U	
DIELDRIN	1.8	U		90	U		940	U		8.7	U	
ENDOSULFAN I	0.91	U		45	U		470	U		4.4	U	
ENDOSULFAN II	1.8	U		90	U		940	U		8.7	U	
ENDOSULFAN SULFATE	1.8	U		90	U		940	U		8.7	U	
ENDRIN	1.8	U		90	U		940	U		8.7	U	
ENDRIN ALDEHYDE	1.8	U		90	U		940	U		8.7	U	
ENDRIN KETONE	1.8	U		90	U		940	U		8.7	U	
GAMMA-BHC (LINDANE)	0.91	U		45	U		470	U		4.4	U	
HEPTACHLOR	0.91	U		45	U		470	U		4.4	U	
HEPTACHLOR EPOXIDE	0.91	U		45	U		470	U		4.4	U	
METHOXYCHLOR	9.1	U		450	U		4700	U		44	U	
TOXAPHENE	18	U		900	U		9400	U		87	U	

CTO154 - NWS EARLE
 SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04347

SAMPLE NUMBER:	186-SB-19-03	186-SB-20-01	186-SB-20-03	186-SB-21-01
SAMPLE DATE:	04/20/98	04/21/98	04/21/98	04/21/98
LABORATORY ID:	9804G347-013	9804G347-016	9804G347-017	9804G347-019
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	92.5 %	94.8 %	93.0 %	94.3 %
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	1.8	U		1.7	U		1.8	U		1.7	U	
4,4'-DDE	1.8	U		1.7	U		1.8	U		1.7	U	
4,4'-DDT	1.1	J		1.7	U		1.8	U		1.7	U	
ALDRIN	0.88	U		0.85	U		0.88	U		0.87	U	
ALPHA-BHC	0.88	U		0.85	U		0.88	U		0.87	U	
BETA-BHC	0.88	U		0.85	U		0.88	U		0.87	U	
CHLORDANE	56			20			3.5	U		17		
DELTA-BHC	0.88	U		0.85	U		0.88	U		0.87	U	
DIELDRIN	1.8	U		1.7	U		1.8	U		1.7	U	
ENDOSULFAN I	0.88	U		0.85	U		0.88	U		0.87	U	
ENDOSULFAN II	1.8	U		1.7	U		1.8	U		1.7	U	
ENDOSULFAN SULFATE	1.8	U		1.7	U		1.8	U		1.7	U	
ENDRIN	1.8	U		1.7	U		1.8	U		1.7	U	
ENDRIN ALDEHYDE	1.8	U		1.7	U		1.8	U		1.7	U	
ENDRIN KETONE	1.8	U		1.7	U		1.8	U		1.7	U	
GAMMA-BHC (LINDANE)	0.88	U		0.85	U		0.88	U		0.87	U	
HEPTACHLOR	0.88	U		0.85	U		0.88	U		0.87	U	
HEPTACHLOR EPOXIDE	3.2			0.85	U		0.88	U		0.87	U	
METHOXYCHLOR	8.8	U		8.5	U		8.8	U		8.7	U	
TOXAPHENE	18	U		17	U		18	U		17	U	

CTO154 - NWS EARLE
 SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04347

SAMPLE NUMBER:	186-SB-21-03	186-SS-16	186-SS-17	186-SS-18
SAMPLE DATE:	04/21/98	04/20/98	04/20/98	04/20/98
LABORATORY ID:	9804G347-020	9804G347-001	9804G347-004	9804G347-008
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	93.1 %	81.1 %	88.4 %	90.7 %
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	1.8	U		10	U		18	U		1800	U	
4,4'-DDE	1.8	U		90			160			1800	U	
4,4'-DDT	1.8	U		99			200			1800	U	
ALDRIN	0.88	U		5.1	U		9.3	U		920	U	
ALPHA-BHC	0.88	U		5.1	U		9.3	U		920	U	
BETA-BHC	0.88	U		5.1	U		9.3	U		920	U	
CHLORDANE	3.5	U		20	U		37	U		180000		
DELTA-BHC	0.88	U		5.1	U		9.3	U		920	U	
DIELDRIN	1.8	U		10	U		18	U		1800	U	
ENDOSULFAN I	0.88	U		5.1	U		9.3	U		920	U	
ENDOSULFAN II	1.8	U		10	U		18	U		1800	U	
ENDOSULFAN SULFATE	1.8	U		10	U		18	U		1800	U	
ENDRIN	1.8	U		10	U		18	U		1800	U	
ENDRIN ALDEHYDE	1.8	U		10	U		18	U		1800	U	
ENDRIN KETONE	1.8	U		10	U		18	U		1800	U	
GAMMA-BHC (LINDANE)	0.88	U		5.1	U		9.3	U		920	U	
HEPTACHLOR	0.88	U		5.1	U		9.3	U		920	U	
HEPTACHLOR EPOXIDE	0.88	U		5.1	U		9.3	U		920	U	
METHOXYCHLOR	8.8	U		51	U		93	U		9200	U	
TOXAPHENE	18	U		100	U		180	U		18000	U	

CT0154 - NWS EARLE
 SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04347

SAMPLE NUMBER:
 SAMPLE DATE:
 LABORATORY ID:
 QC_TYPE:
 % SOLIDS:
 UNITS:
 FIELD DUPLICATE OF:

186-SS-19
 04/20/98
 9804G347-011
 NORMAL
 91.5 %
 UG/KG

186-SS-20
 04/21/98
 9804G347-015
 NORMAL
 92.1 %
 UG/KG

186-SS-21
 04/21/98
 9804G347-018
 NORMAL
 93.7 %
 UG/KG

//
 100.0 %

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	900	U		18	U		17	U				
4,4'-DDE	900	U		17			17	U				
4,4'-DDT	900	U		29			17					
ALDRIN	450	U		9.0	U		8.7	U				
ALPHA-BHC	450	U		9.0	U		8.7	U				
BETA-BHC	450	U		9.0	U		8.7	U				
CHLORDANE	6600			430			680					
DELTA-BHC	450	U		9.0	U		8.7	U				
DIELDRIN	900	U		18	U		17	U				
ENDOSULFAN I	450	U		9.0	U		8.7	U				
ENDOSULFAN II	900	U		18	U		17	U				
ENDOSULFAN SULFATE	900	U		18	U		17	U				
ENDRIN	900	U		18	U		17	U				
ENDRIN ALDEHYDE	900	U		18	U		17	U				
ENDRIN KETONE	900	U		18	U		17	U				
GAMMA-BHC (LINDANE)	450	U		9.0	U		8.7	U				
HEPTACHLOR	450	U		9.0	U		8.7	U				
HEPTACHLOR EPOXIDE	450	U		6.1			24					
METHOXYCHLOR	4500	U		90	U		87	U				
TOXAPHENE	9000	U		180	U		170	U				

CTO154 - NWS EARLE
 SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04376

SAMPLE NUMBER:	186-DUP-04	186-DUP-05	186-DUP-06	186-SB-22-01
SAMPLE DATE:	04/21/98	04/21/98	04/21/98	04/21/98
LABORATORY ID:	9804G376-001	9804G376-007	9804G376-017	9804G376-003
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	92.6 %	90.8 %	92.9 %	93.4 %
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	1.8	U		1800	U		18	U		880	U	
4,4'-DDE	1.8	U		1800	U		18	U		880	U	
4,4'-DDT	1.8	U		1800	U		18	U		880	U	
ALDRIN	0.88	U		910	U		8.8	U		440	U	
ALPHA-BHC	0.88	U		910	U		8.8	U		440	U	
BETA-BHC	0.88	U		910	U		8.8	U		440	U	
CHLORDANE	14			32000			120			18000		
DELTA-BHC	0.88	U		910	U		8.8	U		440	U	
DIELDRIN	1.8	U		1800	U		18	U		880	U	
ENDOSULFAN I	0.88	U		910	U		8.8	U		440	U	
ENDOSULFAN II	1.8	U		1800	U		18	U		880	U	
ENDOSULFAN SULFATE	1.8	U		1800	U		18	U		880	U	
ENDRIN	1.8	U		1800	U		18	U		880	U	
ENDRIN ALDEHYDE	1.8	U		1800	U		18	U		880	U	
ENDRIN KETONE	1.8	U		1800	U		18	U		880	U	
GAMMA-BHC (LINDANE)	0.88	U		910	U		8.8	U		440	U	
HEPTACHLOR	0.88	U		910	U		8.8	U		440	U	
HEPTACHLOR EPOXIDE	0.88	U		910	U		8.8	U		440	U	
METHOXYCHLOR	8.8	U		9100	U		88	U		4400	U	
TOXAPHENE	18	U		18000	U		180	U		8800	U	

SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04376

SAMPLE NUMBER:	186-SB-22-03	186-SB-23-01	186-SB-23-03	186-SB-24-01
SAMPLE DATE:	04/21/98	04/21/98	04/21/98	04/21/98
LABORATORY ID:	9804G376-004	9804G376-012	9804G376-013	9804G376-014
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	93.6 %	94.0 %	91.5 %	93.0 %
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	35	U		1.7	U		1.8	U		18	U	
4,4'-DDE	35	U		1.7	U		1.8	U		18	U	
4,4'-DDT	35	U		1.8			1.4	J		18	U	
ALDRIN	17	U		0.87	U		0.90	U		8.8	U	
ALPHA-BHC	17	U		0.87	U		0.90	U		8.8	U	
BETA-BHC	17	U		0.87	U		0.90	U		8.8	U	
CHLORDANE	300			53			9.7			180		
DELTA-BHC	17	U		0.87	U		0.90	U		8.8	U	
DIELDRIN	35	U		1.7	U		1.8	U		18	U	
ENDOSULFAN I	17	U		0.87	U		0.90	U		8.8	U	
ENDOSULFAN II	35	U		1.7	U		1.8	U		18	U	
ENDOSULFAN SULFATE	35	U		1.7	U		1.8	U		18	U	
ENDRIN	35	U		1.7	U		1.8	U		18	U	
ENDRIN ALDEHYDE	35	U		1.7	U		1.8	U		18	U	
ENDRIN KETONE	35	U		1.7	U		1.8	U		18	U	
GAMMA-BHC (LINDANE)	17	U		0.87	U		0.90	U		8.8	U	
HEPTACHLOR	17	U		0.87	U		0.90	U		8.8	U	
HEPTACHLOR EPOXIDE	17	U		0.87	U		0.90	U		8.8	U	
METHOXYCHLOR	170	U		8.7	U		9.0	U		88	U	
TOXAPHENE	350	U		17	U		18	U		180	U	

CTO154 - NWS EARLE
 SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04376

SAMPLE NUMBER:	186-SB-24-03	186-SB-25-01	186-SB-25-03	186-SB-26-01
SAMPLE DATE:	04/21/98	04/21/98	04/21/98	04/21/98
LABORATORY ID:	9804G376-015	9804G376-016	9804G376-018	9804G376-019
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	87.3 %	92.2 %	88.7 %	92.1 %
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	1.9	U		18	U		19	U		180	U	
4,4'-DDE	1.9	U		18	U		19	U		340		
4,4'-DDT	1.9	U		18	U		19	U		6300		
ALDRIN	0.95	U		8.9	U		9.3	U		89	U	
ALPHA-BHC	0.95	U		8.9	U		9.3	U		89	U	
BETA-BHC	0.95	U		8.9	U		9.3	U		89	U	
CHLORDANE	28			180			180			360	U	
DELTA-BHC	0.95	U		8.9	U		9.3	U		89	U	
DIELDRIN	1.9	U		18	U		19	U		180	U	
ENDOSULFAN I	0.95	U		8.9	U		9.3	U		89	U	
ENDOSULFAN II	1.9	U		18	U		19	U		180	U	
ENDOSULFAN SULFATE	1.9	U		18	U		19	U		180	U	
ENDRIN	1.9	U		18	U		19	U		180	U	
ENDRIN ALDEHYDE	1.9	U		18	U		19	U		180	U	
ENDRIN KETONE	1.9	U		18	U		19	U		180	U	
GAMMA-BHC (LINDANE)	0.95	U		8.9	U		9.3	U		89	U	
HEPTACHLOR	0.95	U		8.9	U		9.3	U		89	U	
HEPTACHLOR EPOXIDE	1.5			8.9	U		9.3	U		89	U	
METHOXYCHLOR	9.5	U		89	U		93	U		890	U	
TOXAPHENE	19	U		180	U		190	U		1800	U	

SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04376

SAMPLE NUMBER: 186-SB-26-01RE
 SAMPLE DATE: 04/21/98
 LABORATORY ID: 9804G376-019
 QC_TYPE: NORMAL
 % SOLIDS: 92.1 %
 UNITS: UG/KG
 FIELD DUPLICATE OF:

186-SB-26-03
 04/21/98
 9804G376-020
 NORMAL
 88.8 %
 UG/KG

186-SB-26-03RE
 04/21/98
 9804G376-020
 NORMAL
 88.8 %
 UG/KG

186-SS-22
 04/21/98
 9804G376-002
 NORMAL
 92.2 %
 UG/KG

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	360	U		18	U		37	U		18000	U	
4,4'-DDE	360	U		420			37	U		18000	U	
4,4'-DDT	6500			590			570			18000	U	
ALDRIN	180	U		9.2	U		18	U		8900	U	
ALPHA-BHC	180	U		9.2	U		18	U		8900	U	
BETA-BHC	180	U		9.2	U		18	U		8900	U	
CHLORDANE	710	U		37	U		73	U		170000		
DELTA-BHC	180	U		9.2	U		18	U		8900	U	
DIELDRIN	360	U		18	U		37	U		18000	U	
ENDOSULFAN I	180	U		9.2	U		18	U		8900	U	
ENDOSULFAN II	360	U		18	U		37	U		18000	U	
ENDOSULFAN SULFATE	360	U		18	U		37	U		18000	U	
ENDRIN	360	U		18	U		37	U		18000	U	
ENDRIN ALDEHYDE	360	U		18	U		37	U		18000	U	
ENDRIN KETONE	360	U		18	U		37	U		18000	U	
GAMMA-BHC (LINDANE)	180	U		9.2	U		18	U		8900	U	
HEPTACHLOR	180	U		9.2	U		18	U		8900	U	
HEPTACHLOR EPOXIDE	180	U		9.2	U		18	U		8900	U	
METHOXYCHLOR	1800	U		92	U		180	U		89000	U	
TOXAPHENE	3600	U		180	U		370	U		180000	U	

CTS 154 AWS EARLE
 SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04376

SAMPLE NUMBER:	186-SS-23	186-SS-24	186-SS-25	186-SS-26
SAMPLE DATE:	04/21/98	04/21/98	04/21/98	04/21/98
LABORATORY ID:	9804G376-005	9804G376-006	9804G376-008	9804G376-009
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	83.2 %	90.5 %	87.4 %	91.0 %
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	98	U		1800	U		9500	U		180	U	
4,4'-DDE	98	U		1800	U		9500	U		710		
4,4'-DDT	98	U		1800	U		9500	U		19000		
ALDRIN	49	U		910	U		4700	U		90	U	
ALPHA-BHC	49	U		910	U		4700	U		90	U	
BETA-BHC	49	U		910	U		4700	U		90	U	
CHLORDANE	1300			30000			34000			360	U	
DELTA-BHC	49	U		910	U		4700	U		90	U	
DIELDRIN	98	U		1800	U		9500	U		180	U	
ENDOSULFAN I	49	U		910	U		4700	U		90	U	
ENDOSULFAN II	98	U		1800	U		9500	U		180	U	
ENDOSULFAN SULFATE	98	U		1800	U		9500	U		180	U	
ENDRIN	98	U		1800	U		9500	U		180	U	
ENDRIN ALDEHYDE	98	U		1800	U		9500	U		180	U	
ENDRIN KETONE	98	U		1800	U		9500	U		180	U	
GAMMA-BHC (LINDANE)	49	U		910	U		4700	U		90	U	
HEPTACHLOR	49	U		910	U		4700	U		90	U	
HEPTACHLOR EPOXIDE	49	U		910	U		4700	U		90	U	
METHOXYCHLOR	490	U		9100	U		47000	U		900	U	
TOXAPHENE	980	U		18000	U		95000	U		1800	U	

SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04376

SAMPLE NUMBER:	186-SS-26RE	186-SS-27	186-SS-28	
SAMPLE DATE:	04/21/98	04/21/98	04/21/98	//
LABORATORY ID:	9804G376-009	9804G376-010	9804G376-011	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	91.0 %	91.9 %	85.0 %	100.0 %
UNITS:	UG/KG	UG/KG	UG/KG	
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	900	U		90	U		20000	U				
4,4'-DDE	900	U		90	U		20000	U				
4,4'-DDT	20000			90	U		52000					
ALDRIN	450	U		45	U		9800	U				
ALPHA-BHC	450	U		45	U		9800	U				
BETA-BHC	450	U		45	U		9800	U				
CHLORDANE	1800	U		650			140000					
DELTA-BHC	450	U		45	U		9800	U				
DIELDRIN	900	U		90	U		20000	U				
ENDOSULFAN I	450	U		45	U		9800	U				
ENDOSULFAN II	900	U		90	U		20000	U				
ENDOSULFAN SULFATE	900	U		90	U		20000	U				
ENDRIN	900	U		90	U		20000	U				
ENDRIN ALDEHYDE	900	U		90	U		20000	U				
ENDRIN KETONE	900	U		90	U		20000	U				
GAMMA-BHC (LINDANE)	450	U		45	U		9800	U				
HEPTACHLOR	450	U		45	U		9800	U				
HEPTACHLOR EPOXIDE	450	U		45	U		9800	U				
METHOXYCHLOR	4500	U		450	U		98000	U				
TOXAPHENE	9000	U		900	U		200000	U				

CTO154 - NWS EARLE
 SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04377

SAMPLE NUMBER:	186-DUP-07	186-SB-27-01	186-SB-27-03	186-SB-28-01
SAMPLE DATE:	04/21/98	04/21/98	04/21/98	04/21/98
LABORATORY ID:	9804G377-008	9804G377-001	9804G377-002	9804G377-003
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	90.5 %	94.4 %	89.2 %	91.6 %
UNITS:	%	%	%	%
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	9.2	U		1.7	U		1.8	U		180	U	
4,4'-DDE	15			1.7	U		1.8	U		180	U	
4,4'-DDT	35			1.7	U		1.8	U		380		
ALDRIN	4.6	U		0.86	U		0.93	U		89	U	
ALPHA-BHC	4.6	U		0.86	U		0.93	U		89	U	
BETA-BHC	4.6	U		0.86	U		0.93	U		89	U	
CHLORDANE	77			28			5.4			1900		
DELTA-BHC	4.6	U		0.86	U		0.93	U		89	U	
DIELDRIN	9.2	U		1.7	U		1.8	U		180	U	
ENDOSULFAN I	4.6	U		0.86	U		0.93	U		89	U	
ENDOSULFAN II	9.2	U		1.7	U		1.8	U		180	U	
ENDOSULFAN SULFATE	9.2	U		1.7	U		1.8	U		180	U	
ENDRIN	9.2	U		1.7	U		1.8	U		180	U	
ENDRIN ALDEHYDE	9.2	U		1.7	U		1.8	U		180	U	
ENDRIN KETONE	9.2	U		1.7	U		1.8	U		180	U	
GAMMA-BHC (LINDANE)	4.6	U		0.86	U		0.93	U		89	U	
HEPTACHLOR	4.6	U		0.86	U		0.93	U		89	U	
HEPTACHLOR EPOXIDE	4.6	U		0.86	U		0.93	U		89	U	
METHOXYCHLOR	46	U		8.6	U		9.3	U		890	U	
TOXAPHENE	92	U		17	U		18	U		1800	U	

054 WS RLE
 SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04377

SAMPLE NUMBER:	186-SB-28-03	186-SB-29-01	186-SB-29-03	186-SB-30-01
SAMPLE DATE:	04/21/98	04/21/98	04/21/98	04/21/98
LABORATORY ID:	9804G377-004	9804G377-006	9804G377-007	9804G377-010
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	94.5 %	89.7 %	92.3 %	89.7 %
UNITS:	%	%	%	%
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	1.8	U		3.6	U		1.8	U		91	U	
4,4'-DDE	1.8	U		55			5.7			200		
4,4'-DDT	4.9			77			8.6			840		
ALDRIN	0.88	U		1.8	U		0.90	U		45	U	
ALPHA-BHC	0.88	U		1.8	U		0.90	U		45	U	
BETA-BHC	0.88	U		1.8	U		0.90	U		45	U	
CHLORDANE	8.9			200			19			210		
DELTA-BHC	0.88	U		1.8	U		0.90	U		45	U	
DIELDRIN	1.8	U		3.6	U		1.8	U		91	U	
ENDOSULFAN I	0.88	U		1.8	U		0.90	U		45	U	
ENDOSULFAN II	1.8	U		3.6	U		1.8	U		91	U	
ENDOSULFAN SULFATE	1.8	U		3.6	U		1.8	U		91	U	
ENDRIN	1.8	U		3.6	U		1.8	U		91	U	
ENDRIN ALDEHYDE	1.8	U		3.6	U		1.8	U		91	U	
ENDRIN KETONE	1.8	U		3.6	U		1.8	U		91	U	
GAMMA-BHC (LINDANE)	0.88	U		1.8	U		0.90	U		45	U	
HEPTACHLOR	0.88	U		1.8	U		0.90	U		45	U	
HEPTACHLOR EPOXIDE	0.88	U		1.8	U		0.90	U		45	U	
METHOXYCHLOR	8.8	U		18	U		9.0	U		450	U	
TOXAPHENE	18	U		36	U		18	U		910	U	

CTO154 - NWS EARLE
 SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04377

SAMPLE NUMBER:
 SAMPLE DATE:
 LABORATORY ID:
 QC_TYPE:
 % SOLIDS:
 UNITS:
 FIELD DUPLICATE OF:

186-SB-30-03
 04/21/98
 9804G377-011
 NORMAL
 93.0 %
 %

186-SB-31-01
 04/21/98
 9804G377-013
 NORMAL
 56.8 %
 %

186-SB-31-03
 04/21/98
 9804G377-014
 NORMAL
 91.8 %
 %

186-SB-32-01
 04/21/98
 9804G377-016
 NORMAL
 88.6 %
 %

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
4,4'-DDD	1.8	U		2900000	U		36	U		58		
4,4'-DDE	3.9			2900000	U		38			59		
4,4'-DDT	8.6			2900000	U		100			35	J	
ALDRIN	0.89	U		1400000	U		18	U		19	U	
ALPHA-BHC	0.89	U		1400000	U		18	U		19	U	
BETA-BHC	0.89	U		1400000	U		18	U		19	U	
CHLORDANE	13			75000000			2000			75	U	
DELTA-BHC	0.89	U		1400000	U		18	U		19	U	
DIELDRIN	1.8	U		2900000	U		36	U		37	U	
ENDOSULFAN I	0.89	U		1400000	U		18	U		19	U	
ENDOSULFAN II	1.8	U		2900000	U		36	U		37	U	
ENDOSULFAN SULFATE	1.8	U		2900000	U		36	U		37	U	
ENDRIN	1.8	U		2900000	U		36	U		37	U	
ENDRIN ALDEHYDE	1.8	U		2900000	U		36	U		37	U	
ENDRIN KETONE	1.8	U		2900000	U		36	U		37	U	
GAMMA-BHC (LINDANE)	0.89	U		1400000	U		18	U		19	U	
HEPTACHLOR	0.89	U		1400000	U		18	U		19	U	
HEPTACHLOR EPOXIDE	0.89	U		1400000	U		18	U		19	U	
METHOXYCHLOR	8.9	U		14000000	U		180	U		190	U	
TOXAPHENE	18	U		29000000	U		360	U		370	U	

CTO154 - NWS EARLE
 SOIL DATA
 RECRA LABNET - CHICAGO
 SDG: U04377

SAMPLE NUMBER: 186-SB-32-03
 SAMPLE DATE: 04/21/98
 LABORATORY ID: 9804G377-017
 QC_TYPE: NORMAL
 % SOLIDS: 96.5 %
 UNITS: %
 FIELD DUPLICATE OF:

186-SS-29
 04/21/98
 9804G377-005
 NORMAL
 91.3 %
 %

186-SS-30
 04/21/98
 9904G377-009
 NORMAL
 93.1 %
 %

186-SS-31
 04/21/98
 9804G377-012
 NORMAL
 93.9 %
 %

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4-DDD	1.7	U		1.8	U		180	U		8.8	U	
4,4-DDE	3.4			7.8			150	J		8.8	U	
4,4-DDT	1.7	U		16			350			12		
ALDRIN	0.85	U		0.88	U		88	U		4.4	U	
ALPHA-BHC	0.85	U		0.88	U		88	U		4.4	U	
BETA-BHC	0.85	U		0.88	U		88	U		4.4	U	
CHLORDANE	20			73			2700			170		
DELTA-BHC	0.85	U		0.88	U		88	U		4.4	U	
DIELDRIN	1.7	U		1.8	U		180	U		8.8	U	
ENDOSULFAN I	0.85	U		0.88	U		88	U		4.4	U	
ENDOSULFAN II	1.7	U		1.8	U		180	U		8.8	U	
ENDOSULFAN SULFATE	1.7	U		1.8	U		180	U		8.8	U	
ENDRIN	1.7	U		1.8	U		180	U		8.8	U	
ENDRIN ALDEHYDE	1.7	U		1.8	U		180	U		8.8	U	
ENDRIN KETONE	1.7	U		1.8	U		180	U		8.8	U	
GAMMA-BHC (LINDANE)	0.85	U		0.88	U		88	U		4.4	U	
HEPTACHLOR	0.85	U		0.88	U		88	U		4.4	U	
HEPTACHLOR EPOXIDE	0.85	U		0.88	U		88	U		4.4	U	
METHOXYCHLOR	8.5	U		8.8	U		880	U		44	U	
TOXAPHENE	17	U		18	U		1800	U		88	U	

REPORT
FOR
PESTICIDE INVESTIGATION
AT
NAVAL WEAPONS STATION - EARLE
COLTS NECK, NEW JERSEY

Issued:

March 3, 1999

Prepared for:

Naval Facilities Engineering Command
10 Industrial Highway
Lester, PA 19113

Prepared by:

Foster Wheeler Environmental Corporation
2300 Lincoln Highway
One Oxford Valley - Suite 200
Langhorne, PA 19047 - 1829

REMEDIAL ACTION CONTRACT N62472-94-D-0398
DELIVERY ORDER NO. 0034

**REPORT
FOR
PESTICIDE INVESTIGATION
AT
NAVAL WEAPONS STATION - EARLE
COLTS NECK, NEW JERSEY**

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 INTRODUCTION -----	1
2.0 PROJECT LOCATION AND DESCRIPTION -----	1
2.1 <u>Previous Investigations</u> -----	1
2.2 <u>Site Conditions</u> -----	3
2.2.1 <u>Groundwater/Soil</u> -----	3
3.0 SCOPE OF WORK -----	3
3.1 <u>TASK 1 - Project Planning/Management</u> -----	3
3.1.1 <u>Subtask 1A - Pre-Construction Submittals</u> -----	3
3.1.2 <u>Subtask 1B - Mobilization</u> -----	4
3.1.3 <u>Subtask 1C - Home Office Support</u> -----	5
3.2 <u>TASK 2 -Permit Preparation/Submission</u> -----	5
3.3 <u>TASK 3 -Collection of Subsurface Soil Samples</u> -----	5
3.4 <u>TASK 4 -Collection of Groundwater Samples</u> <u>Using a Hydropunch</u> -----	5
4.0 FIELD SAMPLING ACTIVITIES -----	6
4.1 <u>Sample Tracking System</u> -----	6
4.2 <u>Sample Analytical Requirements/Sample Collection Frequency</u> ----	6
4.3 <u>Sampling Equipment and Procedures</u> -----	6
4.3.1 <u>Surface Soil Sample Collection</u> -----	6
4.3.2 <u>Subsurface Soil Sample Collection</u> -----	6
4.3.3 <u>Groundwater Sample Collection</u> -----	7
4.3.4 <u>Septic Tank Sludge Sample Collection</u> -----	7
4.4 <u>Waste Removal/Regulatory Compliance</u> -----	7
5.0 ANALYTICAL RESULTS -----	7
5.1 <u>Surface Soil Samples</u> -----	7
5.2 <u>Subsurface Soil Samples</u> -----	8
5.3 <u>Groundwater Samples</u> -----	8
5.4 <u>Septic Tank Sludge Sample</u> -----	14
6.0 CONCLUSION/RECOMMENDATIONS -----	14

TABLE OF CONTENTS
(Continued)

LIST OF FIGURES

Figure 1 Site Layout Map-----2

LIST OF TABLES

5-1 Pesticide Results - Soil Boring PS-SB01-----9, 10
5-2 Pesticide Results - Soil Boring PS-SB02-----11, 12
5-3 Pesticide Results - Groundwater-----13

APPENDICES

Appendix A: Soil Boring Logs, PS-SB01, PS-SB02

Appendix B: Laboratory Data Packages

1.0 INTRODUCTION/ PROJECT OBJECTIVES

Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) was contracted by the Northern Division, Naval Facilities Engineering Command (NORDIV) to further delineate pesticide contamination at the former pesticide shop at the Naval Weapons Station (NWS) Earle located in Colts Neck, NJ. This Investigative Report is being submitted to satisfy the pre-construction submittal requirements included in paragraph 1.2.1, Pre- and Post-Construction Documentation of the Statement of Services for Delivery Order No. 0017, under Remedial Action Contract No. N62472-94-D-0398.

The project objectives included utilizing direct-push methods to collect soil samples and groundwater samples for the laboratory analyses of pesticides. The purpose of the sample collection was twofold. Soil samples were collected to further delineate the vertical extent of pesticide contamination in the soils at the previously identified "hotspots". Groundwater samples were collected at the site to determine if the groundwater was impacted by pesticides. This work was performed under Delivery Order No. 0034 to Navy Contract N62472-94-D-0398

2.0 PROJECT LOCATION AND DESCRIPTION

NWS-Earle is located in east-central Monmouth County in the town of Colts Neck, New Jersey. Building S-186 (Old Pesticide Shop) is located on the Mainside portion of the base, north of the intersection of Esperance and Macassar Roads. The building served as the former base pesticide shop, but is no longer in service. Apparently, containers and spraying containers were periodically rinsed out and some of the waste waters were dumped outside the building. Figure 1 depicts the site layout.

2.1 Previous Investigations

Surface and subsurface soil samples were collected during investigation efforts in January and April 1998. The soil samples were analyzed for chlorinated organic pesticides by SW-846 Method 8081A. Chlordane and 4,4'-DDT were the most frequently detected pesticides found in the soil samples. Chlordane was found in 20 out of 23 surface soil samples; 4,4' DDT was found in 13 of 23 surface soil samples. The laboratory analyses of soil samples collected in the area around the pesticide shop revealed chlordane (up to 200 ppm); 4,4' DDD (up to 1.5 ppm); 4,4' DDE (up to 1 ppm); and 4,4' DDT (up to 12 ppm).

The previous soil sample locations are shown on Figure 1 of this report, and the Delineation Sampling and Analysis Report from the Old Pesticide Shop is contained in the Work Plan for Pesticide Investigation at Naval Weapons Station - Earle Colts Neck, New Jersey issued November 30, 1998.

2.2 Site Conditions

The Former Pesticide Shop is located in a grassy wooded area between Building C-54 and Building C-23. The shop consists of a small brick building (25 ft. x 12 ft.) with a 15 ft. x 8 ft. concrete pad on the northwest side of the building. The Former Pesticide Shop sits atop a small knoll, which slopes to the northwest and north. An in-ground former septic leach tank is located to the north of the building. The site is bounded to the east by a paved parking area, to the northwest by Building C-54, to the south by the ROICC Office, and to the north by a fenced storage yard associated with Building C-54

2.2.1 Groundwater/Soil

There are no monitoring wells in the immediate area to determine depth to groundwater and groundwater flow direction. Based on topography, and monitoring wells located approximately 0.25 miles down gradient of the pesticide shop, the shallow groundwater was expected to be encountered at a depth of 10 to 15 feet below grade and flow toward the north. During investigation activities it was determined that groundwater ranged from 18 to 35 based on elevations at the sample locations.

Soils at the site are fine grained sands with some silt and minor pebbles.

3.0 SCOPE OF WORK

The objectives of this investigation were completed by utilizing a Geoprobe rig and the necessary equipment to collect soil samples and groundwater samples. A hydropunch attachment on the geoprobe was used to obtain groundwater samples for the laboratory analysis of pesticides.

3.1 TASK 1 - Project Planning/Management

Project Planning/Management activities included the preparation of pre-construction submittals, coordination of utility requirements, mobilization to the site, and Home Office support functions during the period of performance. The subtasks involved in Project Planning/Management are described below.

3.1.1 Subtask 1A - Pre-Construction Submittals

Foster Wheeler Environmental prepared and submitted the following pre-construction documents to the Navy:

Work Plan

The Work Plan for Pesticide Investigation at Naval Weapons Station - Earle Colts Neck, New Jersey (Work Plan) presented Foster Wheeler Environmental's approach to executing the project, including the site description, statement of work, procurement

approach, field procedures, materials, transportation and disposal data, and sampling and analytical requirements. The Work Plan was issued November 30, 1998.

Health and Safety Plan (HASP)

An existing HASP for previous drilling work at NWS-Earle was used for this effort. Foster Wheeler Environmental prepared an Activity Hazard Analysis (AHA) for this specific task included in the Work Plan.

The Activity Hazard Analysis (AHA) in Appendix B of the Work Plan was used for the specific hazards associated with this sampling task at the pesticide shop.

Sampling and Analysis Plan (SAP)

Foster Wheeler Environmental submitted the SAP for this investigation in the Work Plan for Pesticide Investigation at Naval Weapons Station - Earle Colts Neck, New Jersey.

The SAP presented the procedures for sampling and analysis for the Geoprobe and temporary well installation activities. The SAP specifically addressed the following areas:

- Analytical Requirements/Sample Collection Frequency
- Responsibilities of Site Personnel
- Sample Analytical Program
- Sample Packing and Shipping
- Documentation
- Field Sampling Program
- Quality Assurance/Quality Control
- Procedures for Field Changes and Corrective Actions
- Waste Removal/Regulatory Compliance

Site-specific Standard Operating Procedures were included (Section 5 of the Work Plan) to describe the sampling procedures. Any modifications to these SOPs due to field conditions or other unforeseen situations were recorded in the site logbook, documented on the appropriate Field Change Request (FCR) forms by site personnel, and approved by the Project Manager.

3.1.2 Subtask 1B - Mobilization

Mobilization consisted of contacting appropriate Navy personnel at NWS Earle to arrange for contractor passes, and to coordinate support requirements for the geoprobe work. A utility survey was conducted to determine all utility lines in the area. Any subsurface utilities were located by NWS-Earle Public Works personnel. A dig permit was obtained prior to any geoprobe work.

3.1.3 Subtask 1C - Home Office Support

Foster Wheeler Environmental's Langhorne, Pennsylvania office provided home office support for the project duration. Home office support includes the preparation of the required monthly progress, financial and technical reports.

3.2 TASK 2 - Permit Preparation/Submission

In accordance with the NJDEP, drilling permits were required because some Geoprobe borings were greater than 25 feet in depth. Well permits were not required because the hydropunch casing remained in the ground for less than 48 hours.

3.3 TASK 3 - Collection of Subsurface Soil Samples

The previous investigation at the site collected soil samples to a maximum depth of three feet below grade. Analytical results for two of the soil samples collected at the maximum depth revealed pesticide concentrations exceeding the EPA Region III Soil Clean-Up Standards for pesticides. The analyses of a soil sample from boring SB-18 revealed an exceedance of the EPA Industrial Standard for chlordane (SB-18-03 at 42,000 ug/kg). SB-18 was collected on the western side of the concrete pad adjacent the former pesticide shop. The analyses of a soil sample from boring SB-31 revealed an exceedance of the EPA Residential Standard for chlordane (SB-31-03 at 2,000 ug/kg). SB-31 was collected on the northern edge of the paved area, located east of the former pesticide shop.

Based on these two hot spots found during the previous investigation, additional subsurface soil samples were collected on December 4, 1998 at the former SB-18 and SB-31 locations. Samples were collected to a depth of 24 feet below grade and analyzed for pesticides to determine the maximum depth of contamination. Soil boring PS-SB-01 was adjacent to the original location of SB-18 and PS-SB02 was adjacent to the original location of SB-31 (Figure 1). The Geoprobe was used to advance a macro-core sampler to a starting depth of 4 feet below grade at the PS-SB-01 and 6 feet below grade at PS-SB-02. At each location, continuous subsurface samples were collected from 2' intervals down to 24 feet below grade. The soils were logged by a geologist to record the subsurface soil conditions. See Appendix A for the boring logs.

Groundwater was not found at either location within 24 feet below grade during the initial geoprobe work. Hydropunch samples were obtained at PS-SB01 and PS-SB-02 during the re-mobilization of the geoprobe on January 7, 1999 because a NJDEP permit was necessary to probe greater than 25 feet below grade.

3.4 TASK 4 - Collection of Groundwater Samples Using a Hydropunch

A hydropunch was used install temporary groundwater monitoring wells to collect groundwater samples for the laboratory analyses of pesticides. Nine soil borings surrounding the former Pesticide Shop were completed on December 4, 1998 and January

7, 1999. A groundwater sample was collected from each of the nine temporary well locations (Figure 1). Section 5.0 of the Work Plan details the collection methodology for using the hydropunch for groundwater sampling. No soil samples were obtained from these nine soil borings.

The collection depth of the groundwater samples was determined by water table depth and input from the Site Geologist. The depths of the water table ranged from 18 feet to approximately 35 feet depending on the elevation at the sample locations.

4.0 FIELD SAMPLING ACTIVITIES

Modifications to the existing SAP will be documented herein.

4.1 Sample Tracking System

A QA/QC duplicate sample was collected at PS-GW03 and designated PS-GW02.

4.2 Sample Analytical Requirements/Sample Collection Frequency

Analyses for Chlorinated Organic Pesticides was performed on both soil and aqueous samples collected around the Former Pesticide Shop.. One liter aqueous was collected for each aqueous sample.

Four surface soil samples were collected adjacent to Building C-23 and analyzed for Nitroamines.

Sample collection frequency was modified as described in Section 3.3 - Collection of Subsurface Soil Samples and Section 3.4 - Collection of Groundwater Samples using a Hydropunch.

4.3 Sampling Equipment and Procedures

4.3.1 Surface Soil Sample Collection

Surface soil samples were collected at 0 to 6 inches below grade using a decontaminated stainless steel hand trowel. The soil was placed directly into sample jars for laboratory analysis. Locations for sample collection were selected by Navy personnel and are located on Figure 1.

4.3.2 Subsurface Soil Sample Collection

Subsurface soil samples were collected using a dedicated sampling core on the Geoprobe as indicated in the Work Plan. Sample collection frequency was modified as described in Section 3.3 - Collection of Subsurface Soil Samples.

4.3.3 Groundwater Sample Collection

Groundwater samples were collected utilizing a Hydropunch following the procedures detailed in the Work Plan. Sample collection frequency was modified as described in Section 3.4 - Collection of Groundwater Samples.

4.3.4 Septic Tank Sludge Sample Collection

An underground septic tank exists to the north of the former Pesticide Shop. A stainless steel auger was used to access the sludge at the bottom of the tank. The sample was collected from a six inch interval of sludge near the bottom of the tank. The six inch interval was field composited and placed into the sample jars for laboratory analysis.

4.4 Waste Removal/Regulatory Compliance

As part of the Geoprobe work at the former pesticide shop, several investigation derived waste streams were generated. These included decontamination fluids, PPE, and other miscellaneous debris. These wastes were collected, stored separately, and will be disposed off site at a proper disposal facility. In accordance with NJDEP solid waste and/or Hazardous Waste Regulations, the investigative derived wastes (IDW) were disposed of as hazardous. In accordance to the Code of Federal Regulations, any wastes generated from this pesticide shop investigation was classified, transported, and disposed of as a hazardous waste, U036 (chlordane), U060 (DDD), and U061 (DDT). One drum of solid waste and one drum of decontamination water were disposed off-site.

5.0 ANALYTICAL RESULTS

All samples from the December 1998 and January 1999 investigations were sent to Toxicon Corporation's Bedford, Massachusetts, laboratory. Both the soil and groundwater samples were analyzed for Chlorinated Organic Pesticides, SW846 Method 608/8081A. Some samples were analyzed for Nitroamines, SW846 Method 8332. The laboratory data packages are found in Appendix B. Refer to Figure I for sample locations. Refer to the Pesticide Analytical Results, Table 5-1 - Soil Boring PS-SB01, Table 5-2 - Soil Boring PS-SB02, and Table 5-3 - Groundwater, following this discussion.

5.1 Surface Soil Samples

Four surface soil samples and one QA/QC duplicate sample were collected on December 11, 1998 to evaluate the presence of propellant residuals in the area near the RIOCC building (Building C-23). The sample points were located along the north and west side of the building. Refer to Figure 1 for approximate sample locations. Sample PS-SS01, PS-SS02, PS-SS03, PS-SS03D (duplicate of PS-SS03), and PS-SS04 were analyzed for Nitroamines-Nitroglycerin, Nitroguanidine, and Nitrocellulose. Analytical results indicate that all samples were non-detect (below the quantitation limit) for the parameters of concern. The analytical results are located in Appendix B.

5.2 Subsurface Soil Samples

Twenty one soil samples were collected from soil borings PS-SB01 and PS-SB02 on December 4, 1998. The analytical results were compared to the NJDEP Residential Direct Contact and Impact to Groundwater Soil Cleanup Criterion. Several samples (up to 22 feet below grade) indicated the presence of Chlordane, ranging from 0.026 to 40 mg/Kg. As there are no NJDEP Standards for Chlordane, the results were compared to EPA Region III Soil Cleanup Standards as in the previous investigation. Several samples exceeded both the Residential Standard (1.8 mg/kg) and the Industrial Standard (16 mg/kg).

One sample PS-SB01-06, collected at a depth of 4 to 6 feet below grade from soil boring PS-SB01 indicated a slight exceedance of the NJDEP Residential Direct Contact Soil Cleanup Criteria for Heptachlor. The NJDEP limit for Heptachlor is 0.15 mg/Kg and the sample result was 0.16 mg/Kg. The same sample indicated the presence of Heptachlor Epoxide at the same 4 to 6 foot interval. As there is no regulatory guidance on Heptachlor Epoxide, this result will not be compared to a regulatory limit. However, this depth interval at PS-SB01 will be addressed because of the slight Heptachlor exceedance. No other soil samples indicated concentrations above non-detect, or exceeded either the NJDEP Residential Direct Contact or the Impact to Groundwater Soil Cleanup Criterion.

Note that some laboratory detection limits for certain samples are above the NJDEP Cleanup Criteria for specific compounds. A careful review was made of past data and it was determined that the compounds in question were not detected at the site in the previous investigation. Based on this information, the current results are considered non-detect for those specific compounds.

5.3 Groundwater Samples

Three groundwater samples and one QA/QC duplicate sample (PS-GW03, PS-GW04, PS-GW05, and duplicate PS-GW02) were collected on December 4, 1998. Six groundwater samples (PS-GW1, PS-GW2, PS-GW6, PS-GW7, PS-GW8, and PS-GW09) were collected on January 7, 1999. Comparison of the analytical results to the Groundwater Quality Criteria indicate that two locations, PS-GW03 and PS-GW04, exceed the criteria of 0.4 ug/l for Endosulfan I. The concentration of Endosulfan I in PS-GW03 was 0.41 ug/l. Groundwater sample, PS-GW02, the duplicate of PS-GW03, was just below the criteria at 0.38 ug/l. The concentration of Endosulfan I in PS-GW04 was 0.61 ug/l. All other sample results are below the laboratory detection limits and do not indicate the presence of pesticides. The analytical results are summarized in Table 5-3, and the laboratory data package is located in Appendix B.

Note that the laboratory detection limits for some samples actually exceed the Groundwater Quality Criteria. However, comparison to the Practical Quantitation Limits (PQLs) set forth in Table 1 indicates that the laboratory detection limits are less than the

TABLE 5-1
 NAVAL WEAPONS STATION-EARLE
 DELIVERY ORDER 0034
 PESTICIDE ANALYTICAL RESULTS
 Soil Boring PS-SB01

Sample ID	Residential	Impact to	PS-SB01-04	PS-SB01-06	PS-SB01-08	PS-SB01-10	PS-SB01-12	PS-SB01-14
Date Collected	Direct Contact	Ground Water	12/4/98	12/4/98	12/4/98	12/4/98	12/4/98	12/4/98
Matrix	Soil Cleanup	Soil Cleanup	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Depth (feet)	Criteria	Criteria	2 to 4	4 to 6	6 to 8	8 to 10	10 to 12	12 to 14
Comment	(NJDEP)	(NJDEP)						
units	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
a-BHC	na	na	<0.10	<0.10	<0.050	<1.0	<0.010	<0.050
g-BHC (Lindane)	0.52	50	<0.10	<0.10	<0.050	<1.0	<0.010	<0.050
b-BHC	na	na	<0.10	<0.10	<0.050	<1.0	<0.010	<0.050
Heptachlor	0.15	50	<0.10	0.16	<0.050	<1.0	<0.010	<0.050
d-BHC	na	na	<0.10	<0.10	<0.050	<1.0	<0.010	<0.050
Aldrin	0.04	50	<0.10	<0.10	<0.050	<1.0	<0.010	<0.050
Heptachlor Epoxide	na	na	<0.10	0.12	<0.050	<1.0	<0.010	<0.050
Endosulfan I	340	50	<0.10	<0.10	<0.050	<1.0	<0.010	<0.050
4,4'-DDE	2	50	<0.10	<0.10	<0.050	<1.0	<0.010	<0.050
Dieldrin	0.042	50	<0.10	<0.10	<0.050	<1.0	<0.010	<0.050
Endrin	17	50	<0.10	<0.10	<0.050	<1.0	<0.010	<0.050
4,4'-DDT	2	500	<0.10	<0.10	<0.050	<1.0	<0.010	<0.050
Endrin Aldehyde	na	na	<0.10	<0.10	<0.050	<1.0	<0.010	<0.050
Endosulfan Sulfate	na	na	<0.10	<0.10	<0.050	<1.0	<0.010	<0.050
Chlordane	na	na	<0.10	3.8	1.1	40	<0.010	1.4
Toxaphene	0.10	50	<0.10	<0.10	<0.050	<1.0	<0.010	<0.050
Methoxychlor	280	50	<0.10	<0.10	<0.050	<1.0	<0.010	<0.050

< Less than detection limit given

na not applicable

Shaded results indicate an exceedance of the Soil Cleanup Criteria.

Bold results indicate that the laboratory detection limit is greater than the Soil Cleanup Criteria.

Pest Shop Data
 PS-SB01

TABLE 5-1
 NAVAL WEAPONS STATION-EARLE
 DELIVERY ORDER 0034
 PESTICIDE ANALYTICAL RESULTS
 Soil Boring PS-SB01

Sample ID	Residential	Impact to	PS-SB01-16	PS-SB01-18	PS-SB01-20	PS-SB01-22	PS-SB01-24
Date Collected	Direct Contact	Ground Water	12/4/98	12/4/98	12/4/98	12/4/98	12/4/98
Matrix	Soil Cleanup	Soil Cleanup	SOIL	SOIL	SOIL	SOIL	SOIL
Depth (feet)	Criteria	Criteria	14 to 16	16 to 18	18 to 20	20 to 22	22 to 24
Comment	(NJDEP)	(NJDEP)					
units	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
a-BHC	na	na	<0.010	<0.010	<0.010	<0.50	<0.010
g-BHC (Lindane)	0.52	50	<0.010	<0.010	<0.010	<0.50	<0.010
b-BHC	na	na	<0.010	<0.010	<0.010	<0.50	<0.010
Heptachlor	0.15	50	<0.010	<0.010	<0.010	<0.50	<0.010
d-BHC	na	na	<0.010	<0.010	<0.010	<0.50	<0.010
Aldrin	0.04	50	<0.010	<0.010	<0.010	<0.50	<0.010
Heptachlor Epoxide	na	na	<0.010	<0.010	<0.010	<0.50	<0.010
Endosulfan I	340	50	<0.010	<0.010	<0.010	<0.50	<0.010
4,4'-DDE	2	50	<0.010	<0.010	<0.010	<0.50	<0.010
Dieldrin	0.042	50	<0.010	<0.010	<0.010	<0.50	<0.010
Endrin	17	50	<0.010	<0.010	<0.010	<0.50	<0.010
4,4'-DDT	2	500	<0.010	<0.010	<0.010	<0.50	<0.010
Endrin Aldehyde	na	na	<0.010	<0.010	<0.010	<0.50	<0.010
Endosulfan Sulfate	na	na	<0.010	<0.010	<0.010	<0.50	<0.010
Chlordane	na	na	<0.010	0.026	<0.010	18	<0.010
Toxaphene	0.10	50	<0.010	<0.010	<0.010	<0.50	<0.010
Methoxychlor	280	50	<0.010	<0.010	<0.010	<0.50	<0.010

< Less than detection limit given

na not applicable

Shaded results indicate an exceedance of the Soil Cleanup Criteria.

Bold results indicate that the laboratory detection limit is greater than the Soil Cleanup Criteria.

TABLE 5-2
 NAVAL WEAPONS STATION-EARLE
 DELIVERY ORDER 0034
 PESTICIDE ANALYTICAL RESULTS
 Soil Boring PS-SB02

Sample ID	Residential	Impact to	PS-SB02-06	PS-SB02-08	PS-SB02-10	PS-SB02-12	PS-SB02-14
Date Collected	Direct Contact	Ground Water	12/4/98	12/4/98	12/4/98	12/4/98	12/4/98
Matrix	Soil Cleanup	Soil Cleanup	SOIL	SOIL	SOIL	SOIL	SOIL
Depth (feet)	Criteria	Criteria	4 to 6	6 to 8	8 to 10	10 to 12	12 to 14
Comment	(NJDEP)	(NJDEP)					
units	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
a-BHC	na	na	<0.10	<0.010	<0.20	<0.010	<0.10
g-BHC (Lindane)	0.52	50	<0.10	<0.010	<0.20	<0.010	<0.10
b-BHC	na	na	<0.10	<0.010	<0.20	<0.010	<0.10
Heptachlor	0.15	50	<0.10	<0.010	<0.20	<0.010	<0.10
d-BHC	na	na	<0.10	<0.010	<0.20	<0.010	<0.10
Aldrin	0.04	50	<0.10	<0.010	<0.20	<0.010	<0.10
Heptachlor Epoxide	na	na	<0.10	<0.010	<0.20	<0.010	<0.10
Endosulfan I	340	50	<0.10	<0.010	<0.20	<0.010	<0.10
4,4'-DDE	2	50	<0.10	<0.010	<0.20	<0.010	<0.10
Dieldrin	0.042	50	<0.10	<0.010	<0.20	<0.010	<0.10
Endrin	17	50	<0.10	<0.010	<0.20	<0.010	<0.10
4,4'-DDT	2	500	<0.10	<0.010	<0.20	<0.010	<0.10
Endrin Aldehyde	na	na	<0.10	<0.010	<0.20	<0.010	<0.10
Endosulfan Sulfate	na	na	<0.10	<0.010	<0.20	<0.010	<0.10
Chlordane	na	na	2.9	0.032	4.9	0.018	2.2
Toxaphene	0.10	50	<0.10	<0.010	<0.20	<0.010	<0.10
Methoxychlor	280	50	<0.10	<0.010	<0.20	<0.010	<0.10

< Less than detection limit given

na not applicable

Shaded results indicate an exceedance of the Soil Cleanup Criteria.

Bold results indicate that the laboratory detection limit is greater than the Soil Cleanup Criteria.

Pest Shop Data
 PS-SB02

TABLE 5-2
 NAVAL WEAPONS STATION-EARLE
 DELIVERY ORDER 0034
 PESTICIDE ANALYTICAL RESULTS
 Soil Boring PS-SB02

Sample ID	Residential	Impact to	PS-SB02-16	PS-SB02-18	PS-SB02-20	PS-SB02-22	PS-SB02-24
Date Collected	Direct Contact	Ground Water	12/4/98	12/4/98	12/4/98	12/4/98	12/4/98
Matrix	Soil Cleanup	Soil Cleanup	SOIL	SOIL	SOIL	SOIL	SOIL
Depth (feet)	Criteria	Criteria	14 to 16	16 to 18	18 to 20	20 to 22	22 to 24
Comment	(NJDEP)	(NJDEP)					
units	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
a-BHC	na	na	<0.010	<0.20	<0.010	<0.020	<0.010
g-BHC (Lindane)	0.52	50	<0.010	<0.20	<0.010	<0.020	<0.010
b-BHC	na	na	<0.010	<0.20	<0.010	<0.020	<0.010
Heptachlor	0.15	50	<0.010	<0.20	<0.010	<0.020	<0.010
d-BHC	na	na	<0.010	<0.20	<0.010	<0.020	<0.010
Aldrin	0.04	50	<0.010	<0.20	<0.010	<0.020	<0.010
Heptachlor Epoxide	na	na	<0.010	<0.20	<0.010	<0.020	<0.010
Endosulfan I	340	50	<0.010	<0.20	<0.010	<0.020	<0.010
4,4'-DDE	2	50	<0.010	<0.20	<0.010	<0.020	<0.010
Dieldrin	0.042	50	<0.010	<0.20	<0.010	<0.020	<0.010
Endrin	17	50	<0.010	<0.20	<0.010	<0.020	<0.010
4,4'-DDT	2	500	<0.010	<0.20	<0.010	<0.020	<0.010
Endrin Aldehyde	na	na	<0.010	<0.20	<0.010	<0.020	<0.010
Endosulfan Sulfate	na	na	<0.010	<0.20	<0.010	<0.020	<0.010
Chlordane	na	na	<0.010	6.8	<0.010	0.28	<0.010
Toxaphene	0.10	50	<0.010	<0.20	<0.010	<0.020	<0.010
Methoxychlor	280	50	<0.010	<0.20	<0.010	<0.020	<0.010

< Less than detection limit given

na not applicable

Shaded results indicate an exceedance of the Soil Cleanup Criteria.

Bold results indicate that the laboratory detection limit is greater than the Soil Cleanup Criteria.

Pest Shop Data
 PS-SB02

TABLE 5-3
 NAVAL WEAPONS STATION-EARLE
 DELIVERY ORDER 0034
 PESTICIDE ANALYTICAL RESULTS
 Groundwater

Sample ID	GROUNDWATER	PRACTICAL	PS-GW02	PS-GW03	PS-GW04	PS-GW05	PS-GW1	PS-GW2	PS-GW6	PS-GW7	PS-GW8
Date Collected	QUALITY	QUANTITATION	12/4/98	12/4/98	12/4/98	12/4/98	1/7/99	1/7/99	1/7/99	1/7/99	1/7/99
Matrix	CRITERIA	LIMIT (PQL)	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Comment	NJAC 7:9-6.11, Table 1	NJAC 7:9-6.11, Table 1	duplicate of PS- GW03								
units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
a-BHC	0.006	0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
g-BHC (Lindane)	0.2	0.2	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
b-BHC	0.2	0.04	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Heptachlor	0.008	0.4	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
d-BHC	NA	NA	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Aldrin	0.002	0.04	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Heptachlor Epoxide	0.004	0.2	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Endosulfan I	0.4	0.02	0.38	0.41	0.61	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
4,4'-DDE	0.1	0.04	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Dieldrin	0.002	0.03	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Endrin	2	0.04	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
4,4'-DDT	0.1	0.06	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Endrin Aldehyde	NA	NA	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Endosulfan Sulfate	0.4	0.08	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Chlordane	0.01	0.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Toxaphene	0.03	3	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	40	10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010

< Less than lab detection limit

NA not available

Bold results indicate an exceedance

Some results exceed Quality Criteria. Comparison to PQL indicate lab detection is less than PQL. Results less than PQL are considered non-detect.

Pest Shop Data

PQLs. Analytical results that fall below the Table 1 PQLs are considered non-detect. Also, PS-GW09 was not analyzed because the laboratory did not have sufficient volume to perform analysis. Refer to the case narrative in the laboratory data package.

5.4 Septic Tank Sludge Sample

One sample was collected from the sludge within the septic tank on December 4, 1998. Sample PS-SL01 was analyzed for Chlorinated Organic Pesticides. The analytical results indicated elevated concentrations of Chlordane at 9.5 grams/kg.

6.0 CONCLUSIONS/RECOMMENDATIONS

Based on the previous and current analytical findings, Foster Wheeler Environmental recommends detailing an excavation plan to excavate and dispose of the pesticide contaminated soils. As discussed in this report, no soils have been impacted by Nitroamines. During the previous investigation, depth of pesticide contamination did not extend to greater than 3 feet below grade, except in soil borings SS-18 and SS-31. It is believed that during the December 1998 investigation, some of the more contaminated upper soils may have contaminated the samples collected at greater depths by smearing on the sample equipment or by falling into the boring hole. Special attention will be given to excavation activities at PS-SB01 (SS-18) and PS-SB02 (SS-31) to determine vertical and horizontal extent of the contamination. Once the area is excavated to an appropriate depth, confirmatory samples will be collected and analyzed to ensure that the contaminated soils have been removed, and the depth of excavation is sufficient to meet clean-up standards.

Analysis of groundwater indicates that the ground water at two locations, PS-GW03 and PS-GW04, has been slightly impacted by pesticides. Additional monitoring of the groundwater at these locations is recommended when the excavation of contaminated soil has been completed.

APPENDIX A

Borehole Log

PROJECT: NWS-EARLE BORING NO: PS-SB01
 PROJECT LOCATION: PESTICIDE SHOP (PS) SURFACE ELEVATION: _____
 SUBCONTRACTOR/DRILLER: GES, MARK BATES DATE STARTED: 12-04-98
 FIELD GEOLOGIST: T. FOWLER DATE COMPLETED: 12-04-98
 DRILLING METHOD: GEOPROBE

REMARKS: N/A - NOT AVAILABLE NAB - NOT ABOVE BACKGROUND
MRAM - MINIRAM (HNu 0-10 PPM), (MINIRAM 0-0.6PPM)

Depth	Blows /6"	% Recovery	Color	Material Description	USCS Classification	Remarks	Profile
0				NO CORE			
2'				NO CORE			
4'		100		4-6' DK GRAY TO LIGHT GRAY (⊕6") TO YELLOWISH F TO VF SAND, DRY		PS-SB01-06	
6'		95		6-8' LT GRAY SAND ⊕ TOP, THEN BWN SILT W/SOME SAND, DRY		PS-SB01-08 HNu - NAB MRAM - NAB	
8'		N/A		8-10' GRAY TO LT BRN VF TO M SAND, TR GRAVEL, SL MOIST		PS-SB01-10 HNu - NAB MRAM - NAB (IN HOLE: HNu - NAB MRAM - NAB)	
10'							

Borehole Log

PROJECT: NWS-EARLE
 PROJECT LOCATION: PESTICIDE SHOP (PS)
 SUBCONTRACTOR/DRILLER: _____
 FIELD GEOLOGIST: _____
 DRILLING METHOD: _____

BORING NO: PS-SB01 (CONT)
 SURFACE ELEVATION: _____
 DATE STARTED: _____
 DATE COMPLETED: _____

REMARKS: _____

Depth	Blows /6"	% Recovery	Color	Material Description	USCS Classification	Remarks	Profile
10'		95		10-12' GRAY BRN VF TO M SAND, DRY		PS-SB01-12 HNu - NAB MRAM - NAB	
12'		N/A		12-14' YELLOW BRN F TO M SAND, SL MOIST		PS-SB01-14 HNu - NAB MRAM - NAB	
14'		95		14-16' GRAY BRN TO YELLOW BRN F TO M SAND, DRY		PS-SB01-16 HNu - NAB MRAM - NAB	
16'		N/A		16-18' GRAY BRN TO YELLOW BRN F TO M SAND, DRY		PS-SB01-18 HNu - NAB MRAM - NAB	
18'		95		18-20' GRAY BRN TO YELLOW BRN F TO M SAND, DRY		PS-SB01-20 HNu - NAB MRAM - NAB	
20'							

Borehole Log

PROJECT: NWS-EARLE BORING NO.: PS-SB01 (CONT)
 PROJECT LOCATION: PESTICIDE SHOP (PS) SURFACE ELEVATION: _____
 SUBCONTRACTOR/DRILLER: _____ DATE STARTED: _____
 FIELD GEOLOGIST: _____ DATE COMPLETED: _____
 DRILLING METHOD: _____
 REMARKS: _____

Depth	Blows /6"	% Recovery	Color	Material Description	USCS Classification	Remarks	Profile
20'		95		20-22' BRN SILT AND SAND @ TOP, THEN YELLOW BRN F TO M SAND, DRY		PS-SB01-22	
22'				22-24' LT GRAY F TO M SAND, DRY		PS-SB01-24 HNu - NAB MRAM - NAB	
24'							
26'							
28'							
30'							

Borehole Log

PROJECT: NWS-EARLE **BORING NO.:** PS-SB02
PROJECT LOCATION: PESTICIDE SHOP (PS) **SURFACE ELEVATION:** _____
SUBCONTRACTOR/DRILLER: GES, MARK BATES **DATE STARTED:** 12-04-98
FIELD GEOLOGIST: T. FOWLER **DATE COMPLETED:** 12-04-98
DRILLING METHOD: GEOPROBE

REMARKS: N/A - NOT AVAILABLE NAB - NOT ABOVE BACKGROUND
MRAM - MINIRAM (HNu 0-10 PPM), (MINIRAM 0-0.6PPM)

Depth	Blows /6"	% Recovery	Color	Material Description	USCS Classification	Remarks	Profile
0				NO CORE			
2'				NO CORE			
4'		98		4-6' GRAY F TO M SAND W/TR DK BRN ORGANICS @ TOP, THEN YELLOW BRN F SAND, DRY		PS-SB02-06 HNu - NAB MRAM - NAB (IN HOLE: HNu - NAB MRAM - NAB)	
6'		N/A		6-8' YELLOW BRN F SAND @ TOP TO BRN SILT, SOME SAND @ BOTTOM, DRY		PS-SB02-08 HNu - NAB MRAM - NAB	
8'		80		8-10' DK GRAY TO YELLOW BRN F TO M SAND		PS-SB01-10 HNu - NAB MRAM - NAB	
10'							

Borehole Log

PROJECT: NWS-EARLE
 PROJECT LOCATION: PESTICIDE SHOP (PS)
 SUBCONTRACTOR/DRILLER: _____
 FIELD GEOLOGIST: _____
 DRILLING METHOD: _____

BORING NO: PS-SB02 (CONT)
 SURFACE ELEVATION: _____
 DATE STARTED: _____
 DATE COMPLETED: _____

REMARKS: _____

Depth	Blows /6"	% Recovery	Color	Material Description	USCS Classification	Remarks	Profile
10'		N/A		10-12' YELLOW BRN F TO M SAND, TR SILT		PS-SB02-12 H _{Nu} - NAB M _{RAM} - NAB	
12'		N/A		12-14' YELLOW BRN F TO M SAND, DRY		PS-SB02-14 H _{Nu} - NAB M _{RAM} - NAB	
14'		98		14-16' YELLOW BRN F TO M SAND, SL MOIST		PS-SB02-16 H _{Nu} - NAB M _{RAM} - NAB	
16'		N/A		16-18' GRAY TO YELLOW BRN F TO M SAND, TR GRAVEL, DRY		PS-SB02-18 H _{Nu} - NAB M _{RAM} - NAB	
18'		N/A		18-20' ORANGEISH F TO M SAND		PS-SB02-20 H _{Nu} - NAB M _{RAM} - NAB	
20'							

Borehole Log

PROJECT: NWS-EARLE **BORING NO:** PS-SB02 (CONT)
PROJECT LOCATION: PESTICIDE SHOP (PS) **SURFACE ELEVATION:** _____
SUBCONTRACTOR/DRILLER: _____ **DATE STARTED:** _____
FIELD GEOLOGIST: _____ **DATE COMPLETED:** _____
DRILLING METHOD: _____

REMARKS: _____

Depth	Blows /6"	% Recovery	Color	Material Description	USCS Classification	Remarks	Profile
20'		N/A		20-22' BRN SILT, SOME SAND @ TOP, TO YELLOW BRN F TO M SAND, DRY		PS-SB02-22 HNu - NAB MRAM - NAB	
22'		N/A		22-24' YELLOW BRN F TO M SAND, SL MOIST		PS-SB02-24 HNu - NAB MRAM - NAB	
24'							
26'							
28'							
30'							

APPENDIX B

Received: 12/05/98

12/10/98 08:35:32

REPORT FOSTER & WHEELER
TO 1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047
215-702-4007 FAX: 4045

ATTEN MICHAEL HEFFRON

PREPARED TOXIKON CORPORATION
BY 15 WIGGINS AVE
BEDFORD, MA 01730

ATTEN PAUL LEZBERG
PHONE (781)275-3330


CERTIFIED BY
CONTACT JAYSON

CLIENT FOSTER SAMPLES 27
COMPANY FOSTER & WHEELER
FACILITY 1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047

MA CERT # M-MA064: TRACE METALS, SULFATE, CYANIDE, RES. FREE
CHLORINE, Ca, TOTAL ALK., TDS, pH, THMs, VOC, PEST., NUTRIENTS.
DEMAND. O&G, PHENOLICS, PCBs . CT DHS #PH-0563, NY #10778
FL HRS E87143, NJ DEP 59538, NC DNR286, SC 88002, NH 204091-C.

WORK ID NWS EARLE

TAKEN 12/4/98

TRANS _____

TYPE SOIL/WATER/SLUDGE

P.O. # 34-000491

INVOICE under separate cover

VERIFIED BY: 

SAMPLE IDENTIFICATION

TEST CODES and NAMES used on this workorder

- 01 PS-SB01-06
- 02 PS-SB01-08
- 03 PS-SB01-10
- 04 PS-SB01-12
- 05 PS-SB01-14
- 06 PS-SB01-16
- 07 PS-SB01-18
- 08 PS-SB01-20
- 09 PS-SB01-22
- 10 PS-SB01-24
- 11 PS-SB01-04
- 12 PS-SB02-06
- 13 PS-SB02-08
- 14 PS-SB02-10
- 15 PS-SB02-12
- 16 PS-SB02-14
- 17 PS-SB02-16
- 18 PS-SB02-18
- 19 PS-SB02-20
- 20 PS-SB02-22
- 21 PS-SB02-24
- 22 PS-GW03
- 23 PS-GW04
- 24 PS-GW05
- 25 PS-GW02
- 26 PS-SL01

- PEST S PESTICIDES - SOIL
- PEST W PESTICIDES - WATER

Page 2
Received: 12/05/98

TOXIKOM CORP. REPORT
12/10/98 08:35:32

Work Order # 98-12-129

SAMPLE IDENTIFICATION
27 PS-FB01

Received: 12/05/98

Results by Sample

SAMPLE ID PS-S801-06FRACTION 01ATEST CODE PEST SNAME PESTICIDES - SOILDate & Time Collected 12/04/98 09:10:00Category SOIL**PESTICIDES in SOIL**

	RESULT	LIMIT
a-BHC	<u>ND</u>	<u>0.10</u>
g-BHC (Lindane)	<u>ND</u>	<u>0.10</u>
b-BHC	<u>ND</u>	<u>0.10</u>
Heptachlor	<u>0.16</u>	<u>0.10</u>
d-BHC	<u>ND</u>	<u>0.10</u>
Aldrin	<u>ND</u>	<u>0.10</u>
Heptachlor Epoxide	<u>0.12</u>	<u>0.10</u>
Endosulfan I	<u>ND</u>	<u>0.10</u>
4,4'-DDE	<u>ND</u>	<u>0.10</u>
Dieldrin	<u>ND</u>	<u>0.10</u>
Endrin	<u>ND</u>	<u>0.10</u>
4,4'-DDD	<u>ND</u>	<u>0.10</u>
Endosulfan II	<u>ND</u>	<u>0.10</u>
4,4'-DDT	<u>ND</u>	<u>0.10</u>
Endrin Aldehyde	<u>ND</u>	<u>0.10</u>
Endosulfan Sulfate	<u>ND</u>	<u>0.10</u>
Chlordane	<u>3.8</u>	<u>0.10</u>
Toxaphene	<u>ND</u>	<u>0.10</u>
Methoxychlor	<u>ND</u>	<u>0.10</u>

Notes and Definitions for this Report:

UNITS: mg/Kg
 EXTRACTED: 12/07/98
 DATE RUN: 12/09/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 10

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-SB01-08FRACTION 02ATEST CODE PEST SNAME PESTICIDES - SOILDate & Time Collected 12/04/98 09:11:00Category SOIL**PESTICIDES in SOIL**

	RESULT	LIMIT
a-BHC	ND	0.050
g-BHC (Lindane)	ND	0.050
b-BHC	ND	0.050
Heptachlor	ND	0.050
d-BHC	ND	0.050
Aldrin	ND	0.050
Heptachlor Epoxide	ND	0.050
Endosulfan I	ND	0.050
4,4'-DDE	ND	0.050
Dieldrin	ND	0.050
Endrin	ND	0.050
4,4'-DDD	ND	0.050
Endosulfan II	ND	0.050
4,4'-DDT	ND	0.050
Endrin Aldehyde	ND	0.050
Endosulfan Sulfate	ND	0.050
Chlordane	1.1	0.050
Toxaphene	ND	0.050
Methoxychlor	ND	0.050

Notes and Definitions for this Report:

UNITS: mg/Kg
EXTRACTED: 12/07/98
DATE RUN: 12/09/98
ANALYST: CK
INSTRUMENT: HP2
DIL. FACTOR: 5

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-SB01-10FRACTION 03ATEST CODE PEST SNAME PESTICIDES - SOILDate & Time Collected 12/04/98 09:20:00Category SOIL**PESTICIDES in SOIL**

	RESULT	LIMIT
a-BHC	ND	1.0
g-BHC (Lindane)	ND	1.0
b-BHC	ND	1.0
Heptachlor	ND	1.0
d-BHC	ND	1.0
Aldrin	ND	1.0
Heptachlor Epoxide	ND	1.0
Endosulfan I	ND	1.0
4,4'-DDE	ND	1.0
Dieldrin	ND	1.0
Endrin	ND	1.0
4,4'-DDD	ND	1.0
Endosulfan II	ND	1.0
4,4'-DDT	ND	1.0
Endrin Aldehyde	ND	1.0
Endosulfan Sulfate	ND	1.0
Chlordane	40	1.0
Toxaphene	ND	1.0
Methoxychlor	ND	1.0

Notes and Definitions for this Report:

UNITS: mg/Kg
EXTRACTED: 12/07/98
DATE RUN: 12/09/98
ANALYST: CK
INSTRUMENT: HP2
DIL. FACTOR: 100

ND = not detected at detection limit

SAMPLE ID PS-S801-12 FRACTION 04A TEST CODE PEST S NAME PESTICIDES - SOIL
Date & Time Collected 12/04/98 09:21:00 Category SOIL

PESTICIDES in SOIL

	RESULT	LIMIT
a-BHC	_____	ND 0.010
g-BHC (Lindane)	_____	ND 0.010
b-BHC	_____	ND 0.010
Heptachlor	_____	ND 0.010
d-BHC	_____	ND 0.010
Aldrin	_____	ND 0.010
Heptachlor Epoxide	_____	ND 0.010
Endosulfan I	_____	ND 0.010
4,4'-DDE	_____	ND 0.010
Dieldrin	_____	ND 0.010
Endrin	_____	ND 0.010
4,4'-DDD	_____	ND 0.010
Endosulfan II	_____	ND 0.010
4,4'-DDT	_____	ND 0.010
Endrin Aldehyde	_____	ND 0.010
Endosulfan Sulfate	_____	ND 0.010
Chlordane	_____	ND 0.010
Toxaphene	_____	ND 0.010
Methoxychlor	_____	ND 0.010

Notes and Definitions for this Report:

UNITS: mg/Kg
EXTRACTED: 12/07/98
DATE RUN: 12/08/98
ANALYST: CK
INSTRUMENT: HP2
DIL. FACTOR: 1

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-SB01-14FRACTION 05ATEST CODE PEST SNAME PESTICIDES - SOILDate & Time Collected 12/04/98 09:30:00Category SOIL**PESTICIDES in SOIL**

	RESULT	LIMIT
a-BHC	ND	0.050
g-BHC (Lindane)	ND	0.050
b-BHC	ND	0.050
Heptachlor	ND	0.050
d-BHC	ND	0.050
Aldrin	ND	0.050
Heptachlor Epoxide	ND	0.050
Endosulfan I	ND	0.050
4,4'-DDE	ND	0.050
Dieldrin	ND	0.050
Endrin	ND	0.050
4,4'-DDD	ND	0.050
Endosulfan II	ND	0.050
4,4'-DDT	ND	0.050
Endrin Aldehyde	ND	0.050
Endosulfan Sulfate	ND	0.050
Chlordane	1.4	0.050
Toxaphene	ND	0.050
Methoxychlor	ND	0.050

Notes and Definitions for this Report:

UNITS: mg/Kg
 EXTRACTED: 12/07/98
 DATE RUN: 12/09/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 5

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-SB01-16FRACTION 06ATEST CODE PEST S NAME PESTICIDES - SOILDate & Time Collected 12/04/98 09:31:00Category SOILPESTICIDES in SOIL

	RESULT	LIMIT
a-BHC	ND	0.010
g-BHC (Lindane)	ND	0.010
b-BHC	ND	0.010
Heptachlor	ND	0.010
d-BHC	ND	0.010
Aldrin	ND	0.010
Heptachlor Epoxide	ND	0.010
Endosulfan I	ND	0.010
4,4'-DDE	ND	0.010
Dieldrin	ND	0.010
Endrin	ND	0.010
4,4'-DDD	ND	0.010
Endosulfan II	ND	0.010
4,4'-DDT	ND	0.010
Endrin Aldehyde	ND	0.010
Endosulfan Sulfate	ND	0.010
Chlordane	ND	0.010
Toxaphene	ND	0.010
Methoxychlor	ND	0.010

Notes and Definitions for this Report:

UNITS: mg/Kg
 EXTRACTED: 12/07/98
 DATE RUN: 12/08/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 1

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-SB01-18FRACTION 07ATEST CODE PEST SNAME PESTICIDES - SOILDate & Time Collected 12/04/98 09:40:00Category SOIL**PESTICIDES in SOIL**

	RESULT	LIMIT
a-BHC	_____	ND 0.010
g-BHC (Lindane)	_____	ND 0.010
b-BHC	_____	ND 0.010
Heptachlor	_____	ND 0.010
d-BHC	_____	ND 0.010
Aldrin	_____	ND 0.010
Heptachlor Epoxide	_____	ND 0.010
Endosulfan I	_____	ND 0.010
4,4'-DDE	_____	ND 0.010
Dieldrin	_____	ND 0.010
Endrin	_____	ND 0.010
4,4'-DDD	_____	ND 0.010
Endosulfan II	_____	ND 0.010
4,4'-DDT	_____	ND 0.010
Endrin Aldehyde	_____	ND 0.010
Endosulfan Sulfate	_____	ND 0.010
Chlordane	_____	0.026 0.010
Toxaphene	_____	ND 0.010
Methoxychlor	_____	ND 0.010

Notes and Definitions for this Report:

UNITS: mg/Kg
 EXTRACTED: 12/07/98
 DATE RUN: 12/08/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 1

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-SB01-20FRACTION 08ATEST CODE PEST S NAME PESTICIDES - SOILDate & Time Collected 12/04/98 09:41:00Category SOIL**PESTICIDES in SOIL**

	RESULT	LIMIT
a-BHC	ND	0.010
g-BHC (Lindane)	ND	0.010
b-BHC	ND	0.010
Heptachlor	ND	0.010
d-BHC	ND	0.010
Aldrin	ND	0.010
Heptachlor Epoxide	ND	0.010
Endosulfan I	ND	0.010
4,4'-DDE	ND	0.010
Dieldrin	ND	0.010
Endrin	ND	0.010
4,4'-DDD	ND	0.010
Endosulfan II	ND	0.010
4,4'-DDT	ND	0.010
Endrin Aldehyde	ND	0.010
Endosulfan Sulfate	ND	0.010
Chlordane	ND	0.010
Toxaphene	ND	0.010
Methoxychlor	ND	0.010

Notes and Definitions for this Report:

UNITS: mg/Kg
 EXTRACTED: 12/07/98
 DATE RUN: 12/08/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 1

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-SB01-22FRACTION 09ATEST CODE PEST SNAME PESTICIDES - SOILDate & Time Collected 12/04/98 09:49:00Category SOIL**PESTICIDES in SOIL**

	RESULT	LIMIT
a-BHC	ND	0.50
g-BHC (Lindane)	ND	0.50
b-BHC	ND	0.50
Heptachlor	ND	0.50
d-BHC	ND	0.50
Aldrin	ND	0.50
Heptachlor Epoxide	ND	0.50
Endosulfan I	ND	0.50
4,4'-DDE	ND	0.50
Dieldrin	ND	0.50
Endrin	ND	0.50
4,4'-DDD	ND	0.50
Endosulfan II	ND	0.50
4,4'-DDT	ND	0.50
Endrin Aldehyde	ND	0.50
Endosulfan Sulfate	ND	0.50
Chlordane	18	0.50
Toxaphene	ND	0.50
Methoxychlor	ND	0.50

Notes and Definitions for this Report:

UNITS: mg/Kg
 EXTRACTED: 12/07/98
 DATE RUN: 12/09/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 50

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-SB01-24FRACTION 10A TEST CODE PEST S NAME PESTICIDES - SOILDate & Time Collected 12/04/98 09:50:00Category SOIL**PESTICIDES in SOIL**

	RESULT	LIMIT
a-BHC	_____	ND 0.010
g-BHC (Lindane)	_____	ND 0.010
b-BHC	_____	ND 0.010
Heptachlor	_____	ND 0.010
d-BHC	_____	ND 0.010
Aldrin	_____	ND 0.010
Heptachlor Epoxide	_____	ND 0.010
Endosulfan I	_____	ND 0.010
4,4'-DDE	_____	ND 0.010
Dieldrin	_____	ND 0.010
Endrin	_____	ND 0.010
4,4'-DDD	_____	ND 0.010
Endosulfan II	_____	ND 0.010
4,4'-DDT	_____	ND 0.010
Endrin Aldehyde	_____	ND 0.010
Endosulfan Sulfate	_____	ND 0.010
Chlordane	_____	ND 0.010
Toxaphene	_____	ND 0.010
Methoxychlor	_____	ND 0.010

Notes and Definitions for this Report:

UNITS: mg/Kg
 EXTRACTED: 12/07/98
 DATE RUN: 12/08/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 1

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-SB01-04FRACTION 11A

TEST CODE

PEST S

NAME PESTICIDES - SOILDate & Time Collected 12/04/98 09:00:00Category SOIL**PESTICIDES in SOIL**

	RESULT	LIMIT
a-BHC	_____	ND 0.50
g-BHC (Lindane)	_____	ND 0.50
b-BHC	_____	ND 0.50
Heptachlor	_____	ND 0.50
d-BHC	_____	ND 0.50
Aldrin	_____	ND 0.50
Heptachlor Epoxide	_____	ND 0.50
Endosulfan I	_____	ND 0.50
4,4'-DDE	_____	ND 0.50
Dieldrin	_____	ND 0.50
Endrin	_____	ND 0.50
4,4'-DDD	_____	ND 0.50
Endosulfan II	_____	ND 0.50
4,4'-DDT	_____	ND 0.50
Endrin Aldehyde	_____	ND 0.50
Endosulfan Sulfate	_____	ND 0.50
Chlordane	_____	6.4 0.50
Toxaphene	_____	ND 0.50
Methoxychlor	_____	ND 0.50

Notes and Definitions for this Report:

UNITS: mg/Kg
 EXTRACTED: 12/07/98
 DATE RUN: 12/09/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 50

ND = not detected at detection limit

SAMPLE ID PS-SB02-06 FRACTION 12A TEST CODE PEST S NAME PESTICIDES - SOIL
Date & Time Collected 12/04/98 10:02:00 Category SOIL

PESTICIDES in SOIL

	RESULT	LIMIT
a-BHC	ND	0.10
g-BHC (Lindane)	ND	0.10
b-BHC	ND	0.10
Heptachlor	ND	0.10
d-BHC	ND	0.10
Aldrin	ND	0.10
Heptachlor Epoxide	ND	0.10
Endosulfan I	ND	0.10
4,4'-DDE	ND	0.10
Dieldrin	ND	0.10
Endrin	ND	0.10
4,4'-DDD	ND	0.10
Endosulfan II	ND	0.10
4,4'-DDT	ND	0.10
Endrin Aldehyde	ND	0.10
Endosulfan Sulfate	ND	0.10
Chlordane	2.9	0.10
Toxaphene	ND	0.10
Methoxychlor	ND	0.10

Notes and Definitions for this Report:

UNITS: mg/Kg
EXTRACTED: 12/07/98
DATE RUN: 12/09/98
ANALYST: CK
INSTRUMENT: HP2
DIL. FACTOR: 10

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-S802-08FRACTION 13ATEST CODE PEST SNAME PESTICIDES - SOILDate & Time Collected 12/04/98 10:03:00Category SOIL**PESTICIDES in SOIL**

	RESULT	LIMIT
a-BHC	<u>ND</u>	<u>0.010</u>
g-BHC (Lindane)	<u>ND</u>	<u>0.010</u>
b-BHC	<u>ND</u>	<u>0.010</u>
Heptachlor	<u>ND</u>	<u>0.010</u>
d-BHC	<u>ND</u>	<u>0.010</u>
Aldrin	<u>ND</u>	<u>0.010</u>
Heptachlor Epoxide	<u>ND</u>	<u>0.010</u>
Endosulfan I	<u>ND</u>	<u>0.010</u>
4,4'-DDE	<u>ND</u>	<u>0.010</u>
Dieldrin	<u>ND</u>	<u>0.010</u>
Endrin	<u>ND</u>	<u>0.010</u>
4,4'-DDD	<u>ND</u>	<u>0.010</u>
Endosulfan II	<u>ND</u>	<u>0.010</u>
4,4'-DDT	<u>ND</u>	<u>0.010</u>
Endrin Aldehyde	<u>ND</u>	<u>0.010</u>
Endosulfan Sulfate	<u>ND</u>	<u>0.010</u>
Chlordane	<u>0.032</u>	<u>0.010</u>
Toxaphene	<u>ND</u>	<u>0.010</u>
Methoxychlor	<u>ND</u>	<u>0.010</u>

Notes and Definitions for this Report:

UNITS: mg/Kg
 EXTRACTED: 12/07/98
 DATE RUN: 12/08/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 1

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-S802-10FRACTION 14ATEST CODE PEST SNAME PESTICIDES - SOILDate & Time Collected 12/04/98 10:11:00Category SOIL**PESTICIDES in SOIL**

	RESULT	LIMIT
a-BHC	ND	0.20
g-BHC (Lindane)	ND	0.20
b-BHC	ND	0.20
Heptachlor	ND	0.20
d-BHC	ND	0.20
Aldrin	ND	0.20
Heptachlor Epoxide	ND	0.20
Endosulfan I	ND	0.20
4,4'-DDE	ND	0.20
Dieldrin	ND	0.20
Endrin	ND	0.20
4,4'-DDD	ND	0.20
Endosulfan II	ND	0.20
4,4'-DDT	ND	0.20
Endrin Aldehyde	ND	0.20
Endosulfan Sulfate	ND	0.20
Chlordane	4.9	0.20
Toxaphene	ND	0.20
Methoxychlor	ND	0.20

Notes and Definitions for this Report:

UNITS: mg/Kg
 EXTRACTED: 12/07/98
 DATE RUN: 12/09/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 20

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-S802-12FRACTION 15ATEST CODE PEST SNAME PESTICIDES - SOILDate & Time Collected 12/04/98 10:12:00Category SOILPESTICIDES in SOIL

	RESULT	LIMIT
a-BHC	_____	ND 0.010
g-BHC (Lindane)	_____	ND 0.010
b-BHC	_____	ND 0.010
Heptachlor	_____	ND 0.010
d-BHC	_____	ND 0.010
Aldrin	_____	ND 0.010
Heptachlor Epoxide	_____	ND 0.010
Endosulfan I	_____	ND 0.010
4,4'-DDE	_____	ND 0.010
Dieldrin	_____	ND 0.010
Endrin	_____	ND 0.010
4,4'-DDD	_____	ND 0.010
Endosulfan II	_____	ND 0.010
4,4'-DDT	_____	ND 0.010
Endrin Aldehyde	_____	ND 0.010
Endosulfan Sulfate	_____	ND 0.010
Chlordane	_____	0.018 0.010
Toxaphene	_____	ND 0.010
Methoxychlor	_____	ND 0.010

Notes and Definitions for this Report:

UNITS: mg/Kg
 EXTRACTED: 12/07/98
 DATE RUN: 12/09/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 1

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-SB02-14FRACTION 16A

TEST CODE

PEST S

NAME PESTICIDES - SOILDate & Time Collected 12/04/98 10:26:00Category SOIL**PESTICIDES in SOIL**

	RESULT	LIMIT
a-BHC	_____	ND 0.10
g-BHC (Lindane)	_____	ND 0.10
b-BHC	_____	ND 0.10
Heptachlor	_____	ND 0.10
d-BHC	_____	ND 0.10
Aldrin	_____	ND 0.10
Heptachlor Epoxide	_____	ND 0.10
Endosulfan I	_____	ND 0.10
4,4'-DDE	_____	ND 0.10
Dieldrin	_____	ND 0.10
Endrin	_____	ND 0.10
4,4'-DDD	_____	ND 0.10
Endosulfan II	_____	ND 0.10
4,4'-DDT	_____	ND 0.10
Endrin Aldehyde	_____	ND 0.10
Endosulfan Sulfate	_____	ND 0.10
Chlordane	_____	2.2 0.10
Toxaphene	_____	ND 0.10
Methoxychlor	_____	ND 0.10

Notes and Definitions for this Report:

UNITS: mg/Kg
 EXTRACTED: 12/07/98
 DATE RUN: 12/09/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 10

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-SB02-16FRACTION 17ATEST CODE PEST SNAME PESTICIDES - SOILDate & Time Collected 12/04/98 10:27:00Category SOIL**PESTICIDES in SOIL**

	RESULT	LIMIT
a-BHC	<u>ND</u>	<u>0.010</u>
g-BHC (Lindane)	<u>ND</u>	<u>0.010</u>
b-BHC	<u>ND</u>	<u>0.010</u>
Heptachlor	<u>ND</u>	<u>0.010</u>
d-BHC	<u>ND</u>	<u>0.010</u>
Aldrin	<u>ND</u>	<u>0.010</u>
Heptachlor Epoxide	<u>ND</u>	<u>0.010</u>
Endosulfan I	<u>ND</u>	<u>0.010</u>
4,4'-DDE	<u>ND</u>	<u>0.010</u>
Dieldrin	<u>ND</u>	<u>0.010</u>
Endrin	<u>ND</u>	<u>0.010</u>
4,4'-DDD	<u>ND</u>	<u>0.010</u>
Endosulfan II	<u>ND</u>	<u>0.010</u>
4,4'-DDT	<u>ND</u>	<u>0.010</u>
Endrin Aldehyde	<u>ND</u>	<u>0.010</u>
Endosulfan Sulfate	<u>ND</u>	<u>0.010</u>
Chlordane	<u>ND</u>	<u>0.010</u>
Toxaphene	<u>ND</u>	<u>0.010</u>
Methoxychlor	<u>ND</u>	<u>0.010</u>

Notes and Definitions for this Report:

UNITS: mg/Kg
 EXTRACTED: 12/07/98
 DATE RUN: 12/09/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 1

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-S802-18FRACTION 18ATEST CODE PEST S NAME PESTICIDES - SOILDate & Time Collected 12/04/98 10:38:00Category SOIL**PESTICIDES in SOIL**

	RESULT	LIMIT
a-BHC	<u>ND</u>	<u>0.20</u>
g-BHC (Lindane)	<u>ND</u>	<u>0.20</u>
b-BHC	<u>ND</u>	<u>0.20</u>
Heptachlor	<u>ND</u>	<u>0.20</u>
d-BHC	<u>ND</u>	<u>0.20</u>
Aldrin	<u>ND</u>	<u>0.20</u>
Heptachlor Epoxide	<u>ND</u>	<u>0.20</u>
Endosulfan I	<u>ND</u>	<u>0.20</u>
4,4'-DDE	<u>ND</u>	<u>0.20</u>
Dieldrin	<u>ND</u>	<u>0.20</u>
Endrin	<u>ND</u>	<u>0.20</u>
4,4'-DDD	<u>ND</u>	<u>0.20</u>
Endosulfan II	<u>ND</u>	<u>0.20</u>
4,4'-DDT	<u>ND</u>	<u>0.20</u>
Endrin Aldehyde	<u>ND</u>	<u>0.20</u>
Endosulfan Sulfate	<u>ND</u>	<u>0.20</u>
Chlordane	<u>6.8</u>	<u>0.20</u>
Toxaphene	<u>ND</u>	<u>0.20</u>
Methoxychlor	<u>ND</u>	<u>0.20</u>

Notes and Definitions for this Report:

UNITS: mg/Kg
 EXTRACTED: 12/07/98
 DATE RUN: 12/09/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 20

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-SB02-20FRACTION 19ATEST CODE PEST SNAME PESTICIDES - SOILDate & Time Collected 12/04/98 10:39:00Category SOIL**PESTICIDES in SOIL**

	RESULT	LIMIT
a-BHC	<u>ND</u>	<u>0.010</u>
g-BHC (Lindane)	<u>ND</u>	<u>0.010</u>
b-BHC	<u>ND</u>	<u>0.010</u>
Heptachlor	<u>ND</u>	<u>0.010</u>
d-BHC	<u>ND</u>	<u>0.010</u>
Aldrin	<u>ND</u>	<u>0.010</u>
Heptachlor Epoxide	<u>ND</u>	<u>0.010</u>
Endosulfan I	<u>ND</u>	<u>0.010</u>
4,4'-DDE	<u>ND</u>	<u>0.010</u>
Dieldrin	<u>ND</u>	<u>0.010</u>
Endrin	<u>ND</u>	<u>0.010</u>
4,4'-DDD	<u>ND</u>	<u>0.010</u>
Endosulfan II	<u>ND</u>	<u>0.010</u>
4,4'-DDT	<u>ND</u>	<u>0.010</u>
Endrin Aldehyde	<u>ND</u>	<u>0.010</u>
Endosulfan Sulfate	<u>ND</u>	<u>0.010</u>
Chlordane	<u>ND</u>	<u>0.010</u>
Toxaphene	<u>ND</u>	<u>0.010</u>
Methoxychlor	<u>ND</u>	<u>0.010</u>

Notes and Definitions for this Report:

UNITS: mg/Kg
EXTRACTED: 12/07/98
DATE RUN: 12/09/98
ANALYST: CK
INSTRUMENT: HP2
DIL. FACTOR: 1

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-SB02-22FRACTION 20ATEST CODE PEST S NAME PESTICIDES - SOILDate & Time Collected 12/04/98 10:50:00Category SOILPESTICIDES in SOIL

	RESULT	LIMIT
a-BHC	ND	0.020
g-BHC (Lindane)	ND	0.020
b-BHC	ND	0.020
Heptachlor	ND	0.020
d-BHC	ND	0.020
Aldrin	ND	0.020
Heptachlor Epoxide	ND	0.020
Endosulfan I	ND	0.020
4,4'-DDE	ND	0.020
Dieldrin	ND	0.020
Endrin	ND	0.020
4,4'-DDD	ND	0.020
Endosulfan II	ND	0.020
4,4'-DDT	ND	0.020
Endrin Aldehyde	ND	0.020
Endosulfan Sulfate	ND	0.020
Chlordane	0.28	0.020
Toxaphene	ND	0.020
Methoxychlor	ND	0.020

Notes and Definitions for this Report:

UNITS: mg/Kg
 EXTRACTED: 12/07/98
 DATE RUN: 12/09/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 2

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-SB02-24FRACTION 21ATEST CODE PEST SNAME PESTICIDES - SOILDate & Time Collected 12/04/98 10:51:00Category SOIL**PESTICIDES in SOIL**

	RESULT	LIMIT
a-BHC	ND	0.010
g-BHC (Lindane)	ND	0.010
b-BHC	ND	0.010
Heptachlor	ND	0.010
d-BHC	ND	0.010
Aldrin	ND	0.010
Heptachlor Epoxide	ND	0.010
Endosulfan I	ND	0.010
4,4'-DDE	ND	0.010
Dieldrin	ND	0.010
Endrin	ND	0.010
4,4'-DDD	ND	0.010
Endosulfan II	ND	0.010
4,4'-DDT	ND	0.010
Endrin Aldehyde	ND	0.010
Endosulfan Sulfate	ND	0.010
Chlordane	ND	0.010
Toxaphene	ND	0.010
Methoxychlor	ND	0.010

Notes and Definitions for this Report:

UNITS: mg/Kg
 EXTRACTED: 12/07/98
 DATE RUN: 12/09/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 1

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-GW03FRACTION 22A TEST CODE PEST W NAME PESTICIDES - WATERDate & Time Collected 12/04/98 12:10:00Category WATER**PESTICIDES in WATER**

	RESULT	LIMIT
a-BHC	_____ ND	0.010
g-BHC (Lindane)	_____ ND	0.010
b-BHC	_____ ND	0.010
Heptachlor	_____ ND	0.010
d-BHC	_____ ND	0.010
Aldrin	_____ ND	0.010
Heptachlor Epoxide	_____ ND	0.010
Endosulfan I	0.41	0.010
4,4'-DDE	_____ ND	0.010
Dieldrin	_____ ND	0.010
Endrin	_____ ND	0.010
4,4'-DDD	_____ ND	0.010
Endosulfan II	_____ ND	0.010
4,4'-DDT	_____ ND	0.010
Endrin Aldehyde	_____ ND	0.010
Endosulfan Sulfate	_____ ND	0.010
Chlordane	_____ ND	0.010
Toxaphene	_____ ND	0.010
Methoxychlor	_____ ND	0.010

Notes and Definitions for this Report:

EXTRACTED: 12/07/98
 DATE RUN: 12/08/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 1
 UNITS: ug/L

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-GM04FRACTION Z3ATEST CODE PEST WNAME PESTICIDES - WATERDate & Time Collected 12/04/98 13:10:00Category WATER**PESTICIDES in WATER**

RESULT LIMIT

a-BHC	<u>ND</u>	<u>0.010</u>
g-BHC (Lindane)	<u>ND</u>	<u>0.010</u>
b-BHC	<u>ND</u>	<u>0.010</u>
Heptachlor	<u>ND</u>	<u>0.010</u>
d-BHC	<u>ND</u>	<u>0.010</u>
Aldrin	<u>ND</u>	<u>0.010</u>
Heptachlor Epoxide	<u>ND</u>	<u>0.010</u>
Endosulfan I	<u>0.61</u>	<u>0.010</u>
4,4'-DDE	<u>ND</u>	<u>0.010</u>
Dieldrin	<u>ND</u>	<u>0.010</u>
Endrin	<u>ND</u>	<u>0.010</u>
4,4'-DDD	<u>ND</u>	<u>0.010</u>
Endosulfan II	<u>ND</u>	<u>0.010</u>
4,4'-DDT	<u>ND</u>	<u>0.010</u>
Endrin Aldehyde	<u>ND</u>	<u>0.010</u>
Endosulfan Sulfate	<u>ND</u>	<u>0.010</u>
Chlordane	<u>ND</u>	<u>0.010</u>
Toxaphene	<u>ND</u>	<u>0.010</u>
Methoxychlor	<u>ND</u>	<u>0.010</u>

Notes and Definitions for this Report:

EXTRACTED: 12/07/98
 DATE RUN: 12/08/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 1
 UNITS: ug/L

ND = not detected at detection limit

SAMPLE ID PS-GM05 FRACTION 24A TEST CODE PEST W NAME PESTICIDES - WATER
Date & Time Collected 12/04/98 14:40:00 Category WATER

PESTICIDES in WATER

	RESULT	LIMIT
a-BHC	_____ ND	0.010
g-BHC (Lindane)	_____ ND	0.010
b-BHC	_____ ND	0.010
Heptachlor	_____ ND	0.010
d-BHC	_____ ND	0.010
Aldrin	_____ ND	0.010
Heptachlor Epoxide	_____ ND	0.010
Endosulfan I	_____ ND	0.010
4,4'-DDE	_____ ND	0.010
Dieldrin	_____ ND	0.010
Endrin	_____ ND	0.010
4,4'-DDD	_____ ND	0.010
Endosulfan II	_____ ND	0.010
4,4'-DDT	_____ ND	0.010
Endrin Aldehyde	_____ ND	0.010
Endosulfan Sulfate	_____ ND	0.010
Chlordane	_____ ND	0.010
Toxaphene	_____ ND	0.010
Methoxychlor	_____ ND	0.010

Notes and Definitions for this Report:

EXTRACTED: 12/07/98
DATE RUN: 12/08/98
ANALYST: CK
INSTRUMENT: HP2
DIL. FACTOR: 1
UNITS: ug/L

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-GJ02FRACTION 25ATEST CODE PEST WNAME PESTICIDES - WATERDate & Time Collected 12/04/98 11:50:00Category WATER**PESTICIDES in WATER**

RESULT LIMIT

a-BHC	<u>ND</u>	<u>0.010</u>
g-BHC (Lindane)	<u>ND</u>	<u>0.010</u>
b-BHC	<u>ND</u>	<u>0.010</u>
Heptachlor	<u>ND</u>	<u>0.010</u>
d-BHC	<u>ND</u>	<u>0.010</u>
Aldrin	<u>ND</u>	<u>0.010</u>
Heptachlor Epoxide	<u>ND</u>	<u>0.010</u>
Endosulfan I	<u>0.38</u>	<u>0.010</u>
4,4'-DDE	<u>ND</u>	<u>0.010</u>
Dieldrin	<u>ND</u>	<u>0.010</u>
Endrin	<u>ND</u>	<u>0.010</u>
4,4'-DDD	<u>ND</u>	<u>0.010</u>
Endosulfan II	<u>ND</u>	<u>0.010</u>
4,4'-DDT	<u>ND</u>	<u>0.010</u>
Endrin Aldehyde	<u>ND</u>	<u>0.010</u>
Endosulfan Sulfate	<u>ND</u>	<u>0.010</u>
Chlordane	<u>ND</u>	<u>0.010</u>
Toxaphene	<u>ND</u>	<u>0.010</u>
Methoxychlor	<u>ND</u>	<u>0.010</u>

Notes and Definitions for this Report:

EXTRACTED: 12/07/98
DATE RUN: 12/08/98
ANALYST: CK
INSTRUMENT: HP2
DIL. FACTOR: 1
UNITS: ug/L

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-SL01FRACTION 26A TEST CODE PEST S NAME PESTICIDES - SOILDate & Time Collected 12/04/98 15:00:00Category SLUDGE**PESTICIDES in SOIL**

	RESULT	LIMIT
a-BHC	_____ ND	0.10
g-BHC (Lindane)	_____ ND	0.10
b-BHC	_____ ND	0.10
Heptachlor	_____ ND	0.10
d-BHC	_____ ND	0.10
Aldrin	_____ ND	0.10
Heptachlor Epoxide	_____ ND	0.10
Endosulfan I	_____ ND	0.10
4,4'-DDE	_____ ND	0.10
Dieldrin	_____ ND	0.10
Endrin	_____ ND	0.10
4,4'-DDD	_____ ND	0.10
Endosulfan II	_____ ND	0.10
4,4'-DDT	_____ ND	0.10
Endrin Aldehyde	_____ ND	0.10
Endosulfan Sulfate	_____ ND	0.10
Chlordane	_____ 9.5	0.10
Toxaphene	_____ ND	0.10
Methoxychlor	_____ ND	0.10

Notes and Definitions for this Report:

UNITS: g/Kg
 EXTRACTED: 12/07/98
 DATE RUN: 12/09/98
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 10000

ND = not detected at detection limit

Received: 12/05/98

Results by Sample

SAMPLE ID PS-FB01FRACTION 27ATEST CODE PEST WNAME PESTICIDES - WATERDate & Time Collected 12/04/98 15:00:00Category WATER**PESTICIDES in WATER**

RESULT LIMIT

a-BHC	<u>ND</u>	<u>0.010</u>
g-BHC (Lindane)	<u>ND</u>	<u>0.010</u>
b-BHC	<u>ND</u>	<u>0.010</u>
Heptachlor	<u>ND</u>	<u>0.010</u>
d-BHC	<u>ND</u>	<u>0.010</u>
Aldrin	<u>ND</u>	<u>0.010</u>
Heptachlor Epoxide	<u>ND</u>	<u>0.010</u>
Endosulfan I	<u>ND</u>	<u>0.010</u>
4,4'-DDE	<u>ND</u>	<u>0.010</u>
Dieldrin	<u>ND</u>	<u>0.010</u>
Endrin	<u>ND</u>	<u>0.010</u>
4,4'-DDD	<u>ND</u>	<u>0.010</u>
Endosulfan II	<u>ND</u>	<u>0.010</u>
4,4'-DDT	<u>ND</u>	<u>0.010</u>
Endrin Aldehyde	<u>ND</u>	<u>0.010</u>
Endosulfan Sulfate	<u>ND</u>	<u>0.010</u>
Chlordane	<u>ND</u>	<u>0.010</u>
Toxaphene	<u>ND</u>	<u>0.010</u>
Methoxychlor	<u>ND</u>	<u>0.010</u>

Notes and Definitions for this Report:

EXTRACTED: 12/07/98DATE RUN: 12/08/98ANALYST: CKINSTRUMENT: HP2DIL. FACTOR: 1UNITS: ug/L

ND = not detected at detection limit

Received: 12/05/98

Test Methodology

TEST CODE PEST S NAME PESTICIDES - SOIL

EPA Method: 8081. Organochlorine Pesticides & Polchlorinated Biphenyls
by Gas Chromatography

Reference: Test Methods for Evaluating Solid Waste: Physical/Chemical
Methods. EPA SW-846 FINAL UPDATE 111, 1996.
Office of Solid Waste, USEPA.

TEST CODE PEST W NAME PESTICIDES - WATER

EPA METHOD: 608 for water sample

Reference: Methods for Organic Chemical Analysis of Municipal and Industrial
Wastewater. Appendix A. 40 CFR Part 136. Federal Register Vol. 49,
No. 209, 1984.

COMPANY: Foster Wheeler Equip.
 ADDRESS: one Oxford Valley Suite 200
Langhorne, PA 19047
 PHONE #: (215) 702-4015 FAX #: (215) 702-4045
 P.O. #: 34-000491
 PROJECT MANAGER: M. G. Hoff
 PROJECT ID/LOCATION: NWS - Earle

- SAMPLE TYPE CONTAINER TYPE
- 1. WASTEWATER P - PLASTIC
 - 2. SOIL G - GLASS
 - 3. SLUDGE V - VOA
 - 4. OIL
 - 5. DRINKING WATER
 - 6. WATER (GW/MW/SW)
 - 7. OTHER (SPECIFY)

ANALYSES

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER			SAMPLING		PRESERVATIVE	SPECIAL INSTRUCTIONS/ COMMENTS
			SIZE	TYPE	#	DATE	TIME		
1	PS-SB01-06	2	8oz	G	1	12/4/98	0910	cool	Chlorinated organic pest.
2	PS-SB01-08					12/4/98	0911		
3	PS-SB01-10						0920		
4	PS-SB01-12						0921		
5	PS-SB01-14						0930		
6	PS-SB01-16						0931		
7	PS-SB01-18						0940		
8	PS-SB01-20						0941		
9	PS-SB01-22						0949		
10	PS-SB01-24						0950		
11	PS-SB01-04						0900		
12	PS-SB02-06	↓	↓	↓	↓	↓	1002	↓	
13	PS-SB02-08	2	8oz	G	1	12/4/98	1003	cool	

SAMPLED BY: Tom Fowler
 DATE: 12-4-98
 TIME: 18:30

RELINQUISHED BY: Tom Fowler
 DATE: 12-4-98
 TIME: 17:00

RELINQUISHED BY: _____
 DATE: _____
 TIME: _____

METHOD OF SHIPMENT: P.L. 11/1/00

QUOTATION #: _____

RECEIVED BY: _____
 DATE: _____
 TIME: _____

RECEIVED FOR LAB BY: J. Scostino
 DATE: 12-5-98
 TIME: 12-10-

COOLER TEMPERATURE: 20

RUSH BUSINESS DAY TURN AROUND
 ROUTINE

Sample disposal information
 Are there any other known or suspected contaminants in these samples other than those listed above?
 Yes ___ No ___ If Yes 1st Known



15 Wiggins Ave., Bedford, MA 01730
 Telephone: (781) 275-3330
 Fax: (781) 275-7478

CHAIN OF CUSTODY RECORD

WORK ORDER #: 40-12-121

DUE DATE: 12-09-98

COMPANY: Easton Wheel Env Corp
 ADDRESS: One Pk Road Valley Suite 200
Longmead PA 19047
 PHONE #: (215) 702-4045 FAX #: (215) 702-4045
 P.O. #: 34-000491
 PROJECT MANAGER: Mike Heffron
 PROJECT ID/LOCATION: NW Steale

- | SAMPLE TYPE | CONTAINER TYPE |
|---------------------|----------------|
| 1. WASTEWATER | P - PLASTIC |
| 2. SOIL | G - GLASS |
| 3. SLUDGE | V - VOA |
| 4. OIL | |
| 5. DRINKING WATER | |
| 6. WATER (GW/MW/SW) | |
| 7. OTHER (SPECIFY) | |

ANALYSES

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER			SAMPLING		PRESERVATIVE	SPECIAL INSTRUCTIONS/ COMMENTS
			SIZE	TYPE	#	DATE	TIME		
14	PS-SB02-10	2	8oz	G	1	12/4/98	1011	cool	
15	PS-SB02-12	2					1012		
16	PS-SB02-14	2					1026		
17	PS-SB02-16	2					1027		
18	PS-SB02-18	2					1038		
19	PS-SB02-20	2					1039		
20	PS-SB02-22	2	↓				1050		
21	PS-SB02-24	2	8oz				1051		
22	PS-GW03	GW	1L				1210		PH5
23	PS-GW04	GW					1310		PH5
24	PS-GW05	GW	↓	↓	↓	↓	1440	↓	PH5
25	PS-GW02	GW	1L	G	1	12/4/98	1150	cool	PH5
26	PS-S201	3	8oz	G	1	12/4/98	1500	cool	
27	PS-FB01	3	8oz	G	1	12/4/98	1500	cool	PH6

Chlorinated organic part

SAMPLED BY: [Signature]
 RELINQUISHED BY: [Signature]
 RELINQUISHED BY: [Signature]
 METHOD OF SHIPMENT: P. & Atlantic

DATE: 12-4-98
 TIME: 15:30
 DATE: 12-4-98
 TIME: 17:00
 DATE: -
 TIME: -

QUOTATION #:
 RECEIVED BY: [Signature]
 RECEIVED FOR LAB BY: [Signature]
 COOLER TEMPERATURE: 20°
 DATE: -
 TIME: -
 DATE: 12-5-98
 TIME: 12-10--

72hr TAT
 RUSH BUSINESS DAY TURN AROUND
 ROUTINE
 Sample disposal information
 Are there any other known or suspected contaminants in these samples other than those listed above?
 Yes ___ No ___ If Yes, 1st Known _____

CASE NARRATIVE

Work Order: 9812129

All samples were analyzed within the method holding times.

No target compounds were detected in the method blanks.

TOXIKON

GC PESTICIDES/PCB ANALYSIS MS/MSD RECOVERIES (METHOD 608/8080)

PROJECT : 9812129
MATRIX : SOLIDS

LABORATORY CONTROL SPIKE LCS9812013

COMPOUND	SPIKE ADDED (ug)	CONTROL SPIKE (ug)	CONTROL % RECOVERY	QC LIMITS
gamma-BHC (Lindane)	0.2	0.174	87.0	25-111
Heptachlor	0.2	0.208	104.0	28-122
Aldrin	0.2	0.154	77.0	16-124
Dieldrin	0.8	0.872	109.0	28-128
Endrin	0.8	0.778	97.3	17-158
4,4'-DDT	0.8	0.836	104.5	27-132
*** AROCHLOR 1260	5.0	NA	NA	38-144

MATRIX SPIKE SAMPLE : MS9812129.1
DILUTION : 1X

COMPOUND	SPIKE ADDED (ug)	SAMPLE CONC. (ug)	MS CONC. (ug)	MS % RECOVERY
gamma-BHC (Lindane)	0.2	ND	0.151	75.5
Heptachlor	0.2	3.74	7.86	NC
Aldrin	0.2	ND	0.229	114.5
Dieldrin	0.8	ND	1.07	133.8
Endrin	0.8	ND	0.671	83.9
4,4'-DDT	0.8	ND	0.996	124.5
*** AROCHLOR 1260	5.0	NA	NA	NA

MATRIX SPIKE DUPLICATE : MSD9812129.1
DILUTION : 1X

COMPOUND	SPIKE ADDED (ug)	MSD CONC. (ug)	MSD % RECOVERY	% RPD	QC LIMITS	
					%RPD	RECOVERY
gamma-BHC (Lindane)	0.2	0.173	86.5	13.58	< 15	25-111
Heptachlor	0.2	7	NC	11.60	< 15	28-122
Aldrin	0.2	0.241	120.5	5.11	< 15	16-124
Dieldrin	0.8	1.1	137.5	2.76	< 15	28-128
Endrin	0.8	0.621	77.6	7.74	< 15	17-158
4,4'-DDT	0.8	0.887	110.9	11.58	<15	27-132
*** AROCHLOR 1260	5.0	NA	NA	NA	<15	38-144

*** Arochlor units in ppm (mg/L) (for "PCB ONLY" analysis)

NC = Not calculated when native concentration exceeds matrix spike amount.

D - Indicates Diluted Out

INT - Indicates Interference

TOXIKON

**GC PESTICIDES/PCB ANALYSIS SURROGATE RECOVERIES
(METHOD 608/8080)**

PROJECT # : 9812129

MATRIX : SOLIDS

SAMPLE ID	2,4,5,6-Tetrachloro-M-Xylene	Decachlorobiphenyl
METHOD BLANK	69.5	80
LCS	82.8	79
MS9812129.1	70	68
MSD9812129.1	67	79.3
9812129.1	53	59.3
9812129.2	56.5	61
9812129.3	DILUTED OUT	DILUTED OUT
9812129.4	68	101
9812129.5	58	80
9812129.6	40.8	53
9812129.7	50	64.3
9812129.8	66.8	75.3
9812129.9	59	110.5
9812129.10	54.5	80
9812129.11	62.5	86.5
9812129.12	74.8	79.5
9812129.13	56.3	80
9812129.14	94.8	103.3
9812129.15	64.8	76
9812129.16	79.8	88
9812129.17	50	80
9812129.18	77.8	79.5
9812129.19	68	75.5
9812129.20	67	82.5

D - Indicates Diluted Out

INT - Indicates Interference

TOXIKON

**GC PESTICIDES/PCB ANALYSIS MS/MSD RECOVERIES
(METHOD 608/8080)**

PROJECT : 9812129

MATRIX : SOLIDS

LABORATORY CONTROL SPIKE

LCS9812014

COMPOUND	SPIKE ADDED (ug)	CONTROL SPIKE (ug)	CONTROL % RECOVERY	QC LIMITS
gamma-BHC (Lindane)	0.2	0.135	67.5	25-111
Heptachlor	0.2	0.154	77.0	28-122
Aldrin	0.2	0.199	99.5	16-124
Dieldrin	0.8	0.629	78.6	28-128
Endrin	0.8	0.683	85.4	17-158
4,4'-DDT	0.8	0.766	95.8	27-132
*** AROCHLOR 1260	5.0	NA	NA	38-144

MATRIX SPIKE SAMPLE : MS9812129.21
DILUTION : 1X

COMPOUND	SPIKE ADDED (ug)	SAMPLE CONC. (ug)	MS CONC. (ug)	MS % RECOVERY
gamma-BHC (Lindane)	0.2	ND	0.14	70.0
Heptachlor	0.2	ND	0.18	90.0
Aldrin	0.2	ND	0.244	122.0
Dieldrin	0.8	ND	0.69	86.3
Endrin	0.8	ND	0.733	91.6
4,4'-DDT	0.8	ND	0.803	100.4
*** AROCHLOR 1260	5.0	NA	NA	NA

MATRIX SPIKE DUPLICATE : MSD9812129.21
DILUTION : 1X

COMPOUND	SPIKE ADDED (ug)	MSD CONC. (ug)	MSD % RECOVERY	% RPD	QC LIMITS	
					%RPD	RECOVERY
gamma-BHC (Lindane)	0.2	0.133	66.5	5.13	< 15	25-111
Heptachlor	0.2	0.165	82.5	8.70	< 15	28-122
Aldrin	0.2	0.23	115.0	5.91	< 15	16-124
Dieldrin	0.8	0.675	84.4	2.20	< 15	28-128
Endrin	0.8	0.726	90.8	0.96	< 15	17-158
4,4'-DDT	0.8	0.791	98.9	1.51	<15	27-132
*** AROCHLOR 1260	5.0	NA	NA	NA	<15	38-144

*** Arochlor units in ppm (mg/L) (for "PCB ONLY" analysis)

D - Indicates Diluted Out
INT - Indicates Interference

TOXIKON

**GC PESTICIDES/PCB ANALYSIS LCS/LCSD RECOVERIES
(METHOD 608/8080)**

PROJECT : 9812129

MATRIX : WATER

LABORATORY CONTROL SPIKE: LCS9811076

COMPOUND	SPIKE ADDED (ug/L)	LCS CONC. (ug/L)	LCS % RECOVERY	QC LIMITS
gamma-BHC (Lindane)	0.2	0.246	123.0	25-111
Heptachlor	0.2	0.185	92.5	28-122
Aldrin	0.2	0.201	100.5	16-124
Dieldrin	0.8	1.05	131.3	28-128
Endrin	0.8	1.25	156.3	17-158
4,4'-DDT	0.8	0.981	122.6	27-132
*** AROCHLOR 1260	5.0	NA	NA	38-144

LABORATORY CONTROL SPIKE DUPLICATE: LCSD9811076

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONC. (ug/L)	LCSD % RECOVERY	% RPD	QC LIMITS	
					%RPD	RECOVERY
gamma-BHC (Lindane)	0.2	0.235	117.5	4.6	< 15	25-111
Heptachlor	0.2	0.165	82.5	11.4	< 15	28-122
Aldrin	0.2	0.174	87.0	14.4	< 15	16-124
Dieldrin	0.8	0.948	118.5	10.2	< 15	28-128
Endrin	0.8	1.12	140.0	11.0	< 15	17-158
4,4'-DDT	0.8	0.925	115.6	5.9	<15	27-132
*** AROCHLOR 1260	5.0	NA	NA	NA	<15	38-144

*** Arochlor units in ppm (mg/L) (for "PCB ONLY" analysis)

D - Indicates Diluted Out

INT - Indicates Interference

CASE NARRATIVE

Work Order: 9812129

All samples were analyzed within the method holding times.

No target compounds were detected in the method blanks.

TOXIKON

GC PESTICIDES/PCB ANALYSIS LCS/LCSD RECOVERIES
(METHOD 608/8080)

PROJECT : 9812129
MATRIX : WATER

LABORATORY CONTROL SPIKE: LCS9811076

COMPOUND	SPIKE ADDED (ug/L)	LCS CONC. (ug/L)	LCS % RECOVERY	QC LIMITS
gamma-BHC (Lindane)	0.2	0.246	123.0	25-111
Heptachlor	0.2	0.185	92.5	28-122
Aldrin	0.2	0.201	100.5	16-124
Dieldrin	0.8	1.05	131.3	28-128
Endrin	0.8	1.25	156.3	17-158
4,4'-DDT	0.8	0.981	122.6	27-132
*** AROCHLOR 1260	5.0	NA	NA	38-144

LABORATORY CONTROL SPIKE DUPLICATE: LCSD9811076

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONC. (ug/L)	LCSD % RECOVERY	% RPD	QC LIMITS	
					%RPD	RECOVERY
gamma-BHC (Lindane)	0.2	0.235	117.5	4.6	< 15	25-111
Heptachlor	0.2	0.165	82.5	11.4	< 15	28-122
Aldrin	0.2	0.174	87.0	14.4	< 15	16-124
Dieldrin	0.8	0.948	118.5	10.2	< 15	28-128
Endrin	0.8	1.12	140.0	11.0	< 15	17-158
4,4'-DDT	0.8	0.925	115.6	5.9	<15	27-132
*** AROCHLOR 1260	5.0	NA	NA	NA	<15	38-144

*** Arochlor units in ppm (mg/L) (for "PCB ONLY" analysis)

D - Indicates Diluted Out

INT - Indicates Interference

TOXIKON

**GC PESTICIDES/PCB ANALYSIS MS/MSD RECOVERIES
(METHOD 608/8080)**

PROJECT : 9812129
MATRIX : SOLIDS

LABORATORY CONTROL SPIKE LCS9812014

COMPOUND	SPIKE ADDED (ug)	CONTROL SPIKE (ug)	CONTROL % RECOVERY	QC LIMITS
gamma-BHC (Lindane)	0.2	0.135	67.5	25-111
Heptachlor	0.2	0.154	77.0	28-122
Aldrin	0.2	0.199	99.5	16-124
Dieldrin	0.8	0.629	78.6	28-128
Endrin	0.8	0.683	85.4	17-158
4,4'-DDT	0.8	0.766	95.8	27-132
*** AROCHLOR 1260	5.0	NA	NA	38-144

MATRIX SPIKE SAMPLE : MS9812129.21
DILUTION : 1X

COMPOUND	SPIKE ADDED (ug)	SAMPLE CONC. (ug)	MS CONC. (ug)	MS % RECOVERY
gamma-BHC (Lindane)	0.2	ND	0.14	70.0
Heptachlor	0.2	ND	0.18	90.0
Aldrin	0.2	ND	0.244	122.0
Dieldrin	0.8	ND	0.69	86.3
Endrin	0.8	ND	0.733	91.6
4,4'-DDT	0.8	ND	0.803	100.4
*** AROCHLOR 1260	5.0	NA	NA	NA

MATRIX SPIKE DUPLICATE : MSD9812129.21
DILUTION : 1X

COMPOUND	SPIKE ADDED (ug)	MSD CONC. (ug)	MSD % RECOVERY	% RPD	QC LIMITS	
					%RPD	RECOVERY
gamma-BHC (Lindane)	0.2	0.133	66.5	5.13	< 15	25-111
Heptachlor	0.2	0.165	82.5	8.70	< 15	28-122
Aldrin	0.2	0.23	115.0	5.91	< 15	16-124
Dieldrin	0.8	0.675	84.4	2.20	< 15	28-128
Endrin	0.8	0.726	90.8	0.96	< 15	17-158
4,4'-DDT	0.8	0.791	98.9	1.51	<15	27-132
*** AROCHLOR 1260	5.0	NA	NA	NA	<15	38-144

*** Arochlor units in ppm (mg/L) (for "PCB ONLY" analysis)

D - Indicates Diluted Out
INT - Indicates Interference

TOXIKON

GC PESTICIDES/PCB ANALYSIS SURROGATE RECOVERIES
(METHOD 608/8080)

PROJECT #: 9812129
MATRIX: SOLIDS

SAMPLE ID	2,4,5,6-Tetrachloro-M-Xylene	Decachlorobiphenyl
METHOD BLANK	69.5	80
LCS	82.8	79
MS9812129.1	70	68
MSD9812129.1	67	79.3
9812129.1	53	59.3
9812129.2	56.5	61
9812129.3	DILUTED OUT	DILUTED OUT
9812129.4	68	101
9812129.5	58	80
9812129.6	40.8	53
9812129.7	50	64.3
9812129.8	66.8	75.3
9812129.9	59	110.5
9812129.10	54.5	80
9812129.11	62.5	86.5
9812129.12	74.8	79.5
9812129.13	56.3	80
9812129.14	94.8	103.3
9812129.15	64.8	76
9812129.16	79.8	88
9812129.17	50	80
9812129.18	77.8	79.5
9812129.19	68	75.5
9812129.20	67	82.5

D - Indicates Diluted Out
INT - Indicates Interference

TOXIKON

**GC PESTICIDES/PCB ANALYSIS MS/MSD RECOVERIES
(METHOD 608/8080)**

PROJECT : 9812129

MATRIX : SOLIDS

LABORATORY CONTROL SPIKE LCS9812013

COMPOUND	SPIKE ADDED (ug)	CONTROL SPIKE (ug)	CONTROL % RECOVERY	QC LIMITS
gamma-BHC (Lindane)	0.2	0.174	87.0	25-111
Heptachlor	0.2	0.208	104.0	28-122
Aldrin	0.2	0.154	77.0	16-124
Dieldrin	0.8	0.872	109.0	28-128
Endrin	0.8	0.778	97.3	17-158
4,4'-DDT	0.8	0.836	104.5	27-132
*** AROCHLOR 1260	5.0	NA	NA	38-144

MATRIX SPIKE SAMPLE : MS9812129.1
DILUTION : 1X

COMPOUND	SPIKE ADDED (ug)	SAMPLE CONC. (ug)	MS CONC. (ug)	MS % RECOVERY
gamma-BHC (Lindane)	0.2	ND	0.151	75.5
Heptachlor	0.2	3.74	7.86	NC
Aldrin	0.2	ND	0.229	114.5
Dieldrin	0.8	ND	1.07	133.8
Endrin	0.8	ND	0.671	83.9
4,4'-DDT	0.8	ND	0.996	124.5
*** AROCHLOR 1260	5.0	NA	NA	NA

MATRIX SPIKE DUPLICATE : MSD9812129.1
DILUTION : 1X

COMPOUND	SPIKE ADDED (ug)	MSD CONC. (ug)	MSD % RECOVERY	% RPD	QC LIMITS	
					%RPD	RECOVERY
gamma-BHC (Lindane)	0.2	0.173	86.5	13.58	< 15	25-111
Heptachlor	0.2	7	NC	11.60	< 15	28-122
Aldrin	0.2	0.241	120.5	5.11	< 15	16-124
Dieldrin	0.8	1.1	137.5	2.76	< 15	28-128
Endrin	0.8	0.621	77.6	7.74	< 15	17-158
4,4'-DDT	0.8	0.887	110.9	11.58	<15	27-132
*** AROCHLOR 1260	5.0	NA	NA	NA	<15	38-144

*** Arochlor units in ppm (mg/L) (for "PCB ONLY" analysis)

NC = Not calculated when native concentration exceeds matrix spike amount.

D - Indicates Diluted Out

INT - Indicates Interference

Page 1

TOXIKON CORP.

REPORT

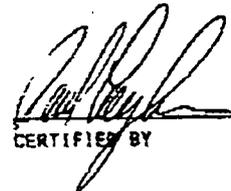
Work Order # 99-01-119

Received: 01/08/99

01/14/99 14:51:17

REPORT FOSTER & WHEELER
TO 1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047
215-702-4007 FAX: 4045

PREPARED TOXIKON CORPORATION
BY 15 WIGGINS AVE
BEDFORD, MA 01730


CERTIFIED BY

ATTEN MICHAEL HEFFRON

ATTEN PAUL LEZBERG
PHONE (781)275-3330

CONTACT JAYSON

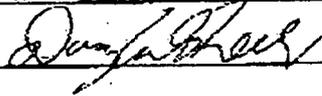
CLIENT FOSTER SAMPLES 7

COMPANY FOSTER & WHEELER
FACILITY 1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19047

MA CERT # M-MA064: TRACE METALS, SULFATE, CYANIDE, RES. FREE
CHLORINE, Ca, TOTAL ALK., TDS, pH, THMS, VOC, PEST-NUTRIENTS.
DEMAND, O&G, PHENOLICS, PCBs. CT DMS #M-0563, NY #10778
FL HRS E87143, NJ DEP 59538, NC DWR286, SC 89002, NH 204091-C.

WORK ID NWS EARLE PESTICIDES

TAKEN 1/7/99

VERIFIED BY: 

TRANS

TYPE WATER

P.O. #

INVOICE under separate cover

SAMPLE IDENTIFICATION

TEST CODES and NAMES used on this workorder

- 01 PS-GW1
- 02 PS-GW2
- 03 PS-GW6
- 04 PS-GW7
- 05 PS-GW8
- 06 PS-GW-09
- 07 PS-T801

PEST W PESTICIDES - WATER

NOT ENOUGH VOLUME TO RUN SAMPLE. CJ 1-29-99

Page 2

TOXIKON CORP.

REPORT

Work Order # 99-01-119

Received: 01/08/99

Results by Sample

SAMPLE ID PS-CM1FRACTION 01A TEST CODE PEST W NAME PESTICIDES - WATERDate & Time Collected 01/07/99 15:30:00 Category WATER**PESTICIDES in WATER**

RESULT LIMIT

a-BHC	ND	0.010
g-BHC (Lindane)	ND	0.010
b-BHC	ND	0.010
Heptachlor	ND	0.010
d-BHC	ND	0.010
Aldrin	ND	0.010
Heptachlor Epoxide	ND	0.010
Endosulfan I	ND	0.010
4,4'-DDE	ND	0.010
Dieldrin	ND	0.010
Endrin	ND	0.010
4,4'-DDD	ND	0.010
Endosulfan II	ND	0.010
4,4'-DDT	ND	0.010
Endrin Aldehyde	ND	0.010
Endosulfan Sulfate	ND	0.010
Chlordane	ND	0.010
Toxaphene	ND	0.010
Methoxychlor	ND	0.010

Notes and Definitions for this Report:

EXTRACTED: 01/09/99
 DATE RUN: 01/13/99
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 1
 UNITS: ug/L

ND = not detected at detection limit

Page 3

TOXIKOM CORP.

REPORT

Work Order # 99-01-119

Received: 01/08/99

Results by Sample

SAMPLE ID PS-GW2FRACTION Q2A TEST CODE PEST W NAME PESTICIDES - WATERDate & Time Collected 01/07/99 14:45:00 Category WATER**PESTICIDES in WATER**

RESULT LIMIT

a-BHC	<u>ND</u>	<u>0.010</u>
g-BHC (Lindane)	<u>ND</u>	<u>0.010</u>
b-BHC	<u>ND</u>	<u>0.010</u>
Heptachlor	<u>ND</u>	<u>0.010</u>
d-BHC	<u>ND</u>	<u>0.010</u>
Aldrin	<u>ND</u>	<u>0.010</u>
Heptachlor Epoxide	<u>ND</u>	<u>0.010</u>
Endosulfan I	<u>ND</u>	<u>0.010</u>
4,4'-DDE	<u>ND</u>	<u>0.010</u>
Dieldrin	<u>ND</u>	<u>0.010</u>
Endrin	<u>ND</u>	<u>0.010</u>
4,4'-DDD	<u>ND</u>	<u>0.010</u>
Endosulfan II	<u>ND</u>	<u>0.010</u>
4,4'-DDT	<u>ND</u>	<u>0.010</u>
Endrin Aldehyde	<u>ND</u>	<u>0.010</u>
Endosulfan Sulfate	<u>ND</u>	<u>0.010</u>
Chlordane	<u>ND</u>	<u>0.010</u>
Toxaphene	<u>ND</u>	<u>0.010</u>
Methoxychlor	<u>ND</u>	<u>0.010</u>

Notes and Definitions for this Report:

EXTRACTED: 01/09/99
 DATE RUN: 01/13/99
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 1
 UNITS: ug/L

ND = not detected at detection limit

Page 4

TOXIKON CORP.

REPORT

Work Order # 99-01-119

Received: 01/08/99

Results by Sample

SAMPLE ID PS-6W6FRACTION 03A TEST CODE PEST W NAME PESTICIDES - WATERDate & Time Collected 01/07/99 10:05:00 Category WATER**PESTICIDES in WATER**

RESULT LIMIT

a-BHC	ND	0.010
g-BHC (Lindane)	ND	0.010
b-BHC	ND	0.010
Heptachlor	ND	0.010
d-BHC	ND	0.010
Aldrin	ND	0.010
Heptachlor Epoxide	ND	0.010
Endosulfan I	ND	0.010
4,4'-DDE	ND	0.010
Dieldrin	ND	0.010
Endrin	ND	0.010
4,4'-DDD	ND	0.010
Endosulfan II	ND	0.010
4,4'-DDT	ND	0.010
Endrin Aldehyde	ND	0.010
Endosulfan Sulfate	ND	0.010
Chlordane	ND	0.010
Toxaphene	ND	0.010
Methoxychlor	ND	0.010

Notes and Definitions for this Report:

EXTRACTED: 01/09/99
 DATE RUN: 01/13/99
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 1
 UNITS: ug/L

ND = not detected at detection limit

Page 5

TOXIKON CORP.

REPORT

Work Order # 99-01-119

Received: 01/08/99

Results by Sample

SAMPLE ID PS-GW7FRACTION 04ATEST CODE PEST WNAME PESTICIDES - WATERDate & Time Collected 01/07/99 11:30:00Category WATERPESTICIDES in WATER

RESULT LIMIT

a-BHC	ND	0.010
g-BHC (Lindane)	ND	0.010
b-BHC	ND	0.010
Heptachlor	ND	0.010
d-BHC	ND	0.010
Aldrin	ND	0.010
Heptachlor Epoxide	ND	0.010
Endosulfan I	ND	0.010
4,4'-DDE	ND	0.010
Dieldrin	ND	0.010
Endrin	ND	0.010
4,4'-DDD	ND	0.010
Endosulfan II	ND	0.010
4,4'-DDT	ND	0.010
Endrin Aldehyde	ND	0.010
Endosulfan Sulfate	ND	0.010
Chlordane	ND	0.010
Toxaphene	ND	0.010
Methoxychlor	ND	0.010

Notes and Definitions for this Report:

EXTRACTED: 01/09/99
 DATE RUN: 01/13/99
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 1
 UNITS: ug/L

ND = not detected at detection limit

Page 6

TOXIKON CORP.

REPORT

Work Order # 99-01-119

Received: 01/08/99

Results by Sample

SAMPLE ID PS-GMBFRACTION 05A TEST CODE PEST W NAME PESTICIDES - WATERDate & Time Collected 01/07/99 12:35:00 Category WATERPESTICIDES in WATER

RESULT LIMIT

a-BHC	_____	ND	0.010
g-BHC (Lindane)	_____	ND	0.010
b-BHC	_____	ND	0.010
Heptachlor	_____	ND	0.010
d-BHC	_____	ND	0.010
Aldrin	_____	ND	0.010
Heptachlor Epoxide	_____	ND	0.010
Endosulfan I	_____	ND	0.010
4,4'-DDE	_____	ND	0.010
Dieldrin	_____	ND	0.010
Endrin	_____	ND	0.010
4,4'-DDD	_____	ND	0.010
Endosulfan II	_____	ND	0.010
4,4'-DDT	_____	ND	0.010
Endrin Aldehyde	_____	ND	0.010
Endosulfan Sulfate	_____	ND	0.010
Chlordane	_____	ND	0.010
Toxaphene	_____	ND	0.010
Methoxychlor	_____	ND	0.010

Notes and Definitions for this Report:

EXTRACTED: 01/09/99DATE RUN: 01/13/99ANALYST: CKINSTRUMENT: HPZDIL. FACTOR: 1UNITS: ug/L

ND = not detected at detection limit

Page 7

TOXIKON CORP.

REPORT

Work Order # 99-01-119

Received: 01/08/99

Results by Sample

SAMPLE ID PS-1801FRACTION 07A TEST CODE PEST W NAME PESTICIDES - WATERDate & Time Collected 01/07/99Category WATER**PESTICIDES in WATER**

RESULT LIMIT

a-BHC	ND	0.010
g-BHC (Lindane)	ND	0.010
b-BHC	ND	0.010
Heptachlor	ND	0.010
d-BHC	ND	0.010
Aldrin	ND	0.010
Heptachlor Epoxide	ND	0.010
Endosulfan I	ND	0.010
4,4'-DDE	ND	0.010
Dieldrin	ND	0.010
Endrin	ND	0.010
4,4'-DDD	ND	0.010
Endosulfan II	ND	0.010
4,4'-DDT	ND	0.010
Endrin Aldehyde	ND	0.010
Endosulfan Sulfate	ND	0.010
Chlordane	ND	0.010
Toxaphene	ND	0.010
Methoxychlor	ND	0.010

Notes and Definitions for this Report:

EXTRACTED: 01/11/99
 DATE RUN: 01/13/99
 ANALYST: CK
 INSTRUMENT: HP2
 DIL. FACTOR: 1
 UNITS: ug/L

ND = not detected at detection limit

Page 8

TOXIKON CORP.

REPORT

Work Order # 99-01-119

Received: 01/08/99

Test Methodology

TEST CODE PEST M NAME PESTICIDES - WATER

EPA METHOD: 608 for water sample

Reference: Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater. Appendix A. 40 CFR Part 136. Federal Register Vol. 49, No. 209, 1984.



15 Wiggins Ave., Bedford, MA 01730
 Telephone: (781) 275-3330
 Fax: (781) 275-7478

CHAIN OF CUSTODY RECORD

WORK ORDER #: 99-01-119
 DUE DATE: 01-13-99

01/14/99 15:21 FAX

COMPANY: Foster Waste Equip
 ADDRESS: One Oxford Valley, Suite 200
Langhorne, PA 19047
 PHONE #: (215) 702-4045 FAX #: (215) 702-4045
 P.O. #:
 PROJECT MANAGER: Mike Heffern
 PROJECT ID/LOCATION: NWS - East Pastures

- SAMPLE TYPE CONTAINER TYPE
- 1. WASTEWATER F - PLASTIC
 - 2. SOIL G - GLASS
 - 3. SLUDGE V - VOA
 - 4. OIL
 - 5. DRINKING WATER
 - 6. WATER (GW/MW/BW)
 - 7. OTHER (SPECIFY)

ANALYSES

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER		SAMPLING #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	ANALYSES										SPECIAL INSTRUCTIONS/ COMMENTS			
			SIZE	TYPE																		
①	PS-GW1	GW	12	G	1	1/7/99	1530	na	X													PH=6
②	PS-GW2						1445		X													PH=6
③	PS-GW6						1005		X													PH=6
④	PS-GW7						1130		X													PH=6
⑤	PS-GW8						1235		X													PH=6
⑥	PS-GW09	V			V		1545		X													PH=6 (TWO SAMP) Do not fast
⑦	PS-GW10	V	V	V	2	V		na	X													Do not fast NO PS GW 10
⑦	PS-TB01	7	small	P	1	1/7/99		na	X													PH=6

SAMPLED BY: C. JOBLON DATE: 1-7-99 QUOTATION #:
 RELINQUISHED BY: C. JOBLON TIME: 16:00
 RELINQUISHED BY: DATE: 1-7-99 RECEIVED BY: TIME:
 METHOD OF SHIPMENT: DATE: TIME: RECEIVED FOR LAB BY: DATE: 01-08-99 TIME: 13:52
 COOLER TEMPERATURE:

72 hr
 RUSH BUSINESS DAY TURN AROUND
 ROUTINE
 Sample disposal information
 Are there any other known or suspected contaminants in these samples other than those listed above?



ISO-9001 Certified
Celebrating 20 Years of
Excellence

FACSIMILE INSTRUCTION SHEET

Date: 1/14

Name: Michael Heffron

Company: Foster & Wheeler

Fax #: 215-702-4045

From: Michael Heffron

Total No. of Pages Including Cover Sheet: _____

If you do not receive all of the pages, please call (781) 275-3330.
Thank you. Notes:

STATEMENT OF CONFIDENTIALITY

This Facsimile transmission contains information from Toxikon. The information contained is confidential and/or privileged, and it is intended only for the use of the addressee named on the transmittal sheet. If you are not the intended addressee, please note that any disclosure, copying, distribution or use of this faxed information is prohibited. If you received this facsimile in error, please notify us immediately by telephone, so that we can arrange to retrieve the original documents without cost to you.

REMEMBER! CONTACT US IMMEDIATELY IF YOU ARE NOT THE INTENDED RECIPIENT.

Project#9901119

Case Narrative

Fraction 6, sample ID PS-GW-09, was not run due to insufficient quantity of sample. Two 1-L jars were provided. One was labeled MS by the client and the other labeled MSD by the client. The two jars were spiked by the lab and extracted. No third jar was provided for a sample run.

GP Work Order # 9812122
SAMPLE ANALYSIS REPORT

Prepared For:

FOSTER WHEELER ENVIRONMENTAL
2300 LINCOLN HWY EAST
LANGHORNE, PA 19047

NAVAL WEAPONS STATION-EARLE

Prepared By:

GPL Laboratories, LLLP
202 Perry Parkway
Gaithersburg, MD 20877

January 6, 1999

Cathy Blase for
Yemane Yohannes, Laboratory Director

GPL LABORATORIES, LLLP
ORGANIC ANALYSIS RESULTS

Page 2

ect: NAVAL WEAPONS STATION-EARLE

GP ID: 9812122-01
Client ID: PS-SS01

Matrix: SOIL
Collected: 12/11/98

Parameter	Method	Result	Rep.Lim.	Units	Dil.	Prepared	Analyzed By
Nitroglycerin	8330M	BQL	5000.0	ug/Kg	1	12/19/98	12/27/98 LF
Nitroguanidine	HPLC	BQL	510.0	ug/Kg	1	12/19/98	12/28/98 LF

GP ID: 9812122-02
Client ID: PS-SS02

Matrix: SOIL
Collected: 12/11/98

Parameter	Method	Result	Rep.Lim.	Units	Dil.	Prepared	Analyzed By
Nitroglycerin	8330M	BQL	5000.0	ug/Kg	1	12/19/98	12/28/98 LF
Nitroguanidine	HPLC	BQL	510.0	ug/Kg	1	12/19/98	12/28/98 LF

GP ID: 9812122-03
Client ID: PS-SS03

Matrix: SOIL
Collected: 12/11/98

Parameter	Method	Result	Rep.Lim.	Units	Dil.	Prepared	Analyzed By
Nitroglycerin	8330M	BQL	5000.0	ug/Kg	1	12/19/98	12/28/98 LF
Nitroguanidine	HPLC	BQL	510.0	ug/Kg	1	12/19/98	12/28/98 LF

GP ID: 9812122-04
Client ID: PS-SS03D

Matrix: SOIL
Collected: 12/11/98

Parameter	Method	Result	Rep.Lim.	Units	Dil.	Prepared	Analyzed By
Nitroglycerin	8330M	BQL	5000.0	ug/Kg	1	12/19/98	12/28/98 LF
Nitroguanidine	HPLC	BQL	510.0	ug/Kg	1	12/19/98	12/28/98 LF

GP ID: 9812122-05
Client ID: PS-SS04

Matrix: SOIL
Collected: 12/11/98

Parameter	Method	Result	Rep.Lim.	Units	Dil.	Prepared	Analyzed By
Nitroglycerin	8330M	BQL	5000.0	ug/Kg	1	12/19/98	12/28/98 LF
Nitroguanidine	HPLC	BQL	510.0	ug/Kg	1	12/19/98	12/28/98 LF

Project: NAVAL WEAPONS STATION-EARLE

GPL LABORATORIES, LLLP
WET CHEMISTRY ANALYSIS RESULTS

Page 3

GP ID: 9812122-01
Client ID: PS-SS01

Matrix: SOIL
Collected: 12/11/98

Parameter	Method	Result	Rep.Lim.	Units	Dil.	Prepared	Analyzed By
Nitrocellulose	IAAP	BQL	37.6	mg/Kg	1	12/30/98	12/31/98 DCB
Percent Solids	MCAWW 160.3	91.1		%			01/06/99 DCB

GP ID: 9812122-02
Client ID: PS-SS02

Matrix: SOIL
Collected: 12/11/98

Parameter	Method	Result	Rep.Lim.	Units	Dil.	Prepared	Analyzed By
Nitrocellulose	IAAP	BQL	32.9	mg/Kg	1	12/30/98	12/31/98 DCB
Percent Solids	MCAWW 160.3	94.4		%			01/06/99 DCB

GP ID: 9812122-03
Client ID: PS-SS03

Matrix: SOIL
Collected: 12/11/98

Parameter	Method	Result	Rep.Lim.	Units	Dil.	Prepared	Analyzed By
Nitrocellulose	IAAP	BQL	32.2	mg/Kg	1	12/30/98	12/31/98 DCB
Percent Solids	MCAWW 160.3	93.1		%			01/06/99 DCB

GP ID: 9812122-04
Client ID: PS-SS03D

Matrix: SOIL
Collected: 12/11/98

Parameter	Method	Result	Rep.Lim.	Units	Dil.	Prepared	Analyzed By
Nitrocellulose	IAAP	BQL	30.7	mg/Kg	1	12/30/98	12/31/98 DCB
Percent Solids	MCAWW 160.3	92.3		%			01/06/99 DCB

GP ID: 9812122-05
Client ID: PS-SS04

Matrix: SOIL
Collected: 12/11/98

Parameter	Method	Result	Rep.Lim.	Units	Dil.	Prepared	Analyzed By
Nitrocellulose	IAAP	BQL	28.7	mg/Kg	1	12/30/98	12/31/98 DCB
Percent Solids	MCAWW 160.3	94.3		%			01/06/99 DCB

GPL LABORATORIES, LLLP

Possible notes and definitions for this report:

- BQL** = Below Quantitation Limit
- J** = Value is less than the reporting limits but greater than zero
- P** = Indicates that there is greater than 25% difference for detected pesticide/Aroclor results between the two GC columns
- B** = Indicates that the compound was found in the associated blank
- E** = Indicates that the concentration exceeded the calibration range of the instrument
- U** = Indicates that the compound was analyzed for but not detected. number indicates the detection limit
- D** = Indicates that the compound was found in an analysis at a secondary dilution factor
- *** = Value obtained from a 1:5 dilution
- +** = Value obtained from a 1:10 dilution
- #** = Value obtained from a 1:20 dilution
- =** = Value obtained from a 1:25 dilution
- ^** = Value obtained from a 1:50 dilution
- = Value obtained from a 1:100 dilution
- !** = Value obtained from a 1:250 dilution
- @** = Value obtained from a 1:125 dilution (medium level)
- \$** = Value obtained from a 1:500 dilution
- &** = Value obtained from a 1:1000 dilution
- N** = Flashpoint not observed; heated to specified limit
- R** = Flammable at room temperature
- TNTC** = Too numerous to count
- B.P.** = Detection limit taken from boiling point
- F.F.** = Sample gave off flammable fumes

GPL LABORATORIES, LLLP

202 Perry Parkway
Gaithersburg, MD 20877
(301) 926-6802
Fax (301) 840-1209

Contract #/Billing Reference
P.O.# 015185

1 of 1 Pgs.

Project: <i>Annual Weapons Station - Ertle</i>					Turnaround Time																								
Client: <i>Foster Wheeler Environ.</i>					# of Containers																								
Send Results To: <i>Foster Wheeler Environ. Attn: Haffner</i>					Container Type																								
Address: <i>One Oxford Valley Site 202 Langhorne, PA 19047</i>					Preservative Used																								
Phone: <i>(215) 702-4015</i>					Type of Analysis																								
					<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Nitro glycerine</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Nitro cellulose</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Nitro quaternary</div> </div>										Lab Cooler No.					CLIENT COMMENTS									
Sample ID#	Date Sampled	Time Sampled	Sample Matrix	Sampler's Initials																									
<i>PS-5501</i>	<i>12/16/88</i>		<i>Soil</i>	<i>WH</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																						
<i>PS-5502</i>	<i>↓</i>		<i>↓</i>	<i>WH</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																						
<i>PS-5503</i>	<i>↓</i>		<i>↓</i>	<i>WH</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																						
<i>PS-5503D</i>	<i>↓</i>		<i>↓</i>	<i>WH</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																						
<i>PS-5504</i>	<i>↓</i>		<i>↓</i>	<i>WH</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													<i>Do MS/MSD</i>									
Relinquished By: <i>[Signature]</i>					Date/Time: <i>12/16/88</i>					Received By:					Relinquished By:					Received for Laboratory By: <i>[Signature]</i>					Date/Time: <i>12/16/88 10:50 AM</i>				
Relinquished By:					Date/Time:					Received By:					Date/Time:					Shipper:					Airbill No.:				
Relinquished By:					Date/Time:					Received By:					Lab Comments:					Temp: <i>F.C.</i>									

G.P. W.O. 97-12122

01/07/99 THU 08:56 FAX 301 840 1209 GP ENVIRONMENTAL 007

ENVIRONMENTAL SERVICES

SAMPLE RECEIPT CHECKLIST

O. No. 49-1242 Carrier Name FEDX
 Client Name FOSTER WALKER Prepared (Logged In) By [Signature] 1/14/99
Initials Date
 Date Received 1/14/99 Project Niguss / WAP / Station
 Time Received 1:05 A Site EAUC
 Received By [Signature] VOA Holding Blank ID. No. _____

	YES	NO
Bill/Manifest Present? No. <u>Q081336532</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Shipping Container in Good Condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Custody Seals Present on Shipping Container? Condition: Good _____ Broken _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Chain-of-Custody Present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Chain-of-Custody Agrees with Sample Labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Chain-of-Custody Signed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Leaking Present in Shipping Container? Type of Packing <u>Bubble wrap</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Custody Seals on Sample Bottles? Condition: Good _____ Broken _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Sample Bottles <u>6</u>		
Total Number of Samples <u>5</u>		
Samples Intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sufficient Sample Volume for Indicated Test?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	YES	NO
Trip Blanks Received? No. of Sets _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>
VOA Vials Have Zero Headspace? _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Preservatives Added to Sample? <u>[Signature]</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
pH Check Required? Performed By? _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ice Present in Shipping Container? <u>[Signature]</u> (BLUE)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Containers# _____ Temperature _____		
<u>41</u> <u>4.6</u>		
Project Manager Contacted? Name: <u>FREDERICKSON</u> Date Contacted: <u>1/14/99</u>		

Any NO response must be detailed in the comments section below. If items are not applicable to particular samples or contracts, they should be marked N/A.

COMMENTS: _____

Checklist Completed by [Signature]
Date 1/14/99

TCLP SOIL SAMPLE RESULTS
FOR
PESTICIDE INVESTIGATION
AT
NAVAL WEAPONS STATION - EARLE
COLTS NECK, NEW JERSEY

Issued:

April 15, 1998

Prepared for:

Naval Facilities Engineering Command
10 Industrial Highway
Lester, PA 19113

Prepared by:

Foster Wheeler Environmental Corporation
2300 Lincoln Highway
One Oxford Valley - Suite 200
Langhorne, PA 19047 - 1829

REMEDIAL ACTION CONTRACT N62472-94-D-0398
DELIVERY ORDER NO. 0034

1.0 INTRODUCTION

The objective of the soil-sampling event at the Former Pesticide Shop at Naval Weapons Station-Earle was to obtain an expedient preliminary determination of the potential of soils with elevated concentrations of total chlordane to be hazardous for chlordane.

2.0 SAMPLE DISCUSSION

Foster Wheeler Environmental collected surface soil samples on April 4, 1999 in order to obtain preliminary waste classification information for the soils at the Former Pesticide Shop. Table 1-1 provides a summary of the soil sample description, and Attachment 1 contains the laboratory analytical data. Figure 1 depicts the former and present soil sample locations. The analytical results of former sampling episodes at the Former Pesticide Shop were used to establish the locations of the new soil samples. The former soil samples were analyzed for total pesticides, and the new soil samples were analyzed for TCLP pesticides and TCLP volatile organics. Soil sample PS99SS01 was obtained from former soil sample location areas that represented the median range of soil concentrations above the Region III Residential standard for chlordane (average of total chlordane: 1,357 ug/kg). Soil sample PS99SS02 was obtained from former soil sample locations that represented elevated concentrations of chlordane (average total chlordane: 490,000 ug/kg). Soil sample PS99SS03 was obtained from a former soil sample location that had the highest chlordane concentration (75,000,000 ug/kg).

Only one (PS99SS03) of the three TCLP soil samples collected contained chlordane concentrations above the detection limit, all other pesticide compounds were below the detection limits. The TCLP laboratory analyses of soil sample PS99SS03 revealed a chlordane concentration of 0.29 mg/l. According to 40CFR §261.30, wastes exhibiting a TCLP chlordane concentration of 0.03 mg/l are hazardous (D020) due to the characteristic of toxicity. The laboratory results for TCLP volatile organics revealed that all the soil concentrations were below the detection limits.

SS-20	DDE	DDT	Chlordane	SS-21	DDT	Chlordane	SS-23	DDT	Chlordane	SS-27	Chlordane	SS-26	DDE	DDT	SS-30	DDE	DDT	Chlordane	SS-32	DDE	Chlordane
SB-20-01	17	29	430	SB-21-01	17	680 (1)	SB-23-01	2	1300(1)	SB-27-01	650	SB-26-01	710	19000	SS-30-01	200	840	210	SB-32-01	59	580
SB-20-03			20				SB-23-03		53	SB-27-03	28	SB-26-03	340	6300	SB-30-03	4	9	13	SB-32-03	3	20
			4						10		5										

SS-22	Chlordane
SB-22-01	170000(1)
SB-22-03	300

SS-19	DDT	Chlordane
SB-19-01		6600(1)
SB-19-03	3	320
		56

SS-18	Chlordane
SB-18-01	180000(1)
SB-18-03	1200(1)
	42000(1)

SS-16	DDE	DDT
SB-16-01	90	99
SB-16-03	26	28
	2	2

SS-17	DDE	DDT
	160	200

PS-GW-04	Endosulfan I	0.61*
PS-GW-03	Endosulfan I	0.41*

SS-25	Chlordane
SB-25-01	34000(1)
SB-25-03	180
	180

TCLP SAMPLE PS99SS03

SS-31	DDE	DDT	Chlordane
SB-31-01		12	170
SB-31-03	38	100	7500000(1)
			2000(1)

SS-28	DDT	Chlordane
SB-28-01	52000	140000(1)
SB-28-03	380	1900
	5	9

SS-24	Chlordane
SB-24-01	30000(1)
SB-24-03	180
	28

SS-10	Chlordane
SB-10-01	31000(1)
SB-10-03	450
	4

SS-11	DDD	DDE	DDT	Chl rdan
	19	150	850	330

SS-12	Chlordane
SB-12-01	200000(1)
SB-12-03	1200(1)
	250

SS-13	DDD	DDE	DDT	Chlordane
SB-13-01	1500	360	12000	720(1)
SB-13-03			13000	
	50	9	510	23
	3		8	4

SS-14	DDD	DDE	DDT	Chlordane
SB-14-01	49	320	360	180
		2	2	

SS-15	DDD	DDE	DDT	Chlordane
SB-15-01	290	1000	1700	2600(1)
SB-15-03		32	41	130
			2	

● TCLP SAMPLE PS99SS01
 ■ TCLP SAMPLE PS99SS02

LEGEND

SS SURFACE SOIL
 SB SOIL BORING
 GW GROUNDWATER
 * EXCEEDS NJDEP GROUNDWATER QUALITY STANDARDS (ug/l)
 12000 EXCEEDS REGION III RESIDENTIAL STANDARD
 200000 EXCEEDS REGION III INDUSTRIAL SOIL STANDARD
 1 EXCEEDS 20 X TC LEVEL OF 30 ug/l
 2 EXCEEDS 20 X TC LEVEL OF 8 ug/l
 DDD 4,4' DDD
 DDE 4,4' DDE
 DDT 4,4' DDT

NOTES: 1- All soil results in ug/kg

2 -



earle\pestsite.dwg

ESPERANCE ROAD

U.S. Navy RAC
 Naval Weapons Station - Earle

Figure 1
 Site Lay out Map

F FOSTER WHEELER ENVIRONMENTAL CORPORATION

Table 1-1 Naval Weapons Station-Earle
Former Pesticide Shop
TCLP Soil Sample Descriptions

Soil Sample No.	Sample Location	Sample Description
PS99SS01	Composite sample collected from 0 to 6 inches below grade at the former soil sample locations: SS-29, SS-30, and SS-23.	Brown fine to medium grained silty sand with some rounded cobbles.
PS99SS02	Composite sample collected from 0 to 1 ft. below grade at the former soil sample locations: SS18, SS-22, and SS28.	Brown silty sand with some rounded cobbles stained gray in areas. Organic loam the first 2 inches.
PS99SS03	Grab sample collected from 6 to 12 inches below grade at former soil sample location SS-31.	Black-stained fine to medium sand.

2.0 CONCLUSIONS

Only one of the three soil samples had a TCLP chlordane concentration that was above the hazardous waste classification concentration. Two of the highest concentrations of chlordane have been detected in previous soil samples collected immediately north of the paved parking lot. It is recommended that a Sampling Plan be submitted and a sampling episode be performed to completely delineate the soils that are above the Non-Residential Soil Clean-Up Standards, as well as further delineate the chlordane concentration in soils in the vicinity of the area that exhibited hazardous concentrations. The soil samples collected for delineating the soils above the Clean-Up Standards would be analyzed for total pesticides and the soil samples collected in the area of the hazardous soil will be analyzed for total and TCLP pesticides.

Once the affected area is delineated a Work Plan could be submitted for the excavation and removal of the soil. The Work Plan would be completed in accordance to New Jersey Department of Environmental Protection's Guidance Document for the Remediation of Contaminated Soils, 1996. The soils would be stockpiled and composite soil samples obtained for waste classification and off-site disposal. Although this approach may involve additional sampling, it would ensure an accurate delineation and waste characterization of soils for off-site disposal.

ATTACHMENT 1

Page 1

TOXIKON CORP.

REPORT

Work Order # 99-06-057

Received: 04/03/99

04/08/99 15:23:09

REPORT FOSTER & WHEELER
TO 1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19067
215-702-4007 FAX: 4045
ATTEN MICHAEL HEFFRON

PREPARED TOXIKON CORPORATION
BY 15 WIGGINS AVE
BEDFORD, MA 01730
ATTEN PAUL LEZBERG
PHONE (781)275-3330

Paul Lezberg
CERTIFIED BY

CONTACT JAYSON

CLIENT FOSTER SAMPLES 3
COMPANY FOSTER & WHEELER
FACILITY 1 OXFORD VALLEY, SUITE 200
LANGHORNE, PA. 19067

MA CERT # M-RA066: TRACE METALS, SULFATE, CYANIDE, RES. FREE
CHLORINE, Ca, TOTAL ALK., TDS, pH, THMs, VOC, PEST., NUTRIENTS,
DEMAND, O&G, PHENOLICS, PCBs - CT DHS #PH-0563, NY #10778
FL HRS E87143, NJ DEP #9538, NC DNR206, SC 88002, NH 204091-G.

WORK TO MWS-EARLE
TAKEN 4/2/99
TRANS _____
TYPE SOIL
P.O. # _____
INVOICE under separate cover

VERIFIED BY: *Paul Lezberg*

SAMPLE IDENTIFICATION

TEST CODES and NAMES used on this workorder

- 01 PS99SS01
- 02 PS99SS02
- 03 PS99SS03

- ETCLPP EXT. TCLP PESTICIDES
- ETCLPV EXTRACTION TCLP, VOLATILES
- TCLPP PESTICIDES - TCLP
- TCLPV PURG. ORG. SOIL - TCLP

Page 2

TOXIKOM CORP.

REPORT

Work Order # 99-04-057

Received: 04/03/99

Results by Sample

SAMPLE ID PS99SS01FRACTION 01A TEST CODE TCLPP NAME PESTICIDES - TCLPDate & Time Collected 04/02/99 09:00:00 Category SOIL**TCLP PESTICIDES**

EPA HW NO. (1)	CAS NO. (2)	TOXICITY CHARACTERISTIC CONTAMINANT	REGULATORY LEVEL (MG/L)	METHOD DETECT LIMIT	RESULT (MG/L) (3)	MATRIX SPIKE% RECOVERY (4)	RESULT (MG/L) (4)
D020	57-74-9	Chlordane	0.03	0.010	ND	104	ND
D012	72-20-8	Endrin	0.02	0.010	ND	78.2	ND
D031	76-44-8	Heptachlor	0.008	0.0050	ND	100	ND
D031	1024-57-3	Heptachlor Epoxide	0.008	0.0050	ND	80.0	ND
D013	58-89-9	Methoxychlor	10.0	0.010	ND	92.2	ND
D014	72-43-5	Toxaphene	0.5	0.010	ND	110	ND
D015	8001-35-2	Lindane	0.4	0.010	ND	67.8	ND

Notes and Definitions for this Report:

EXTRACTED 04/06/99
DATE RUN 04/06/99
ANALYST CK
INSTRUMENT HP2
DIL. FACTOR 1

ND = not detected at detection limit

- (1) Hazardous Waste Number
(2) Chemical Abstract Service Number
(3) Uncorrected Result
(4) Bias Corrected Result

Page 3

TOXIKON CORP.

REPORT

Work Order # 99-04-057

Received: 04/03/99

Results by Sample

SAMPLE ID P999S01

FRACTION 01A TEST CODE TCLPV NAME PURG. ORG. SOIL - TCLP
Date & Time Collected 04/02/99 09:00:00 Category SOIL**TCLP VOLATILES**

EPA HW NO. (1)	CAS NO. (2)	TOXICITY CHARACTERISTIC CONTAMINANT	REGULATORY LEVEL (MG/L)	METHOD DETECT LIMIT	RESULT (MG/L) (3)	MATRIX SPIKE% RECOVERY	RESULT (MG/L) (4)
D018	71-43-2	Benzene	<u>0.5</u>	<u>0.010</u>	<u>ND</u>	<u>98.0</u>	<u>ND</u>
D019	56-23-5	Carbon Tetrachloride	<u>0.5</u>	<u>0.010</u>	<u>ND</u>	<u>92.0</u>	<u>ND</u>
D021	108-90-7	Chlorobenzene	<u>100.0</u>	<u>0.010</u>	<u>ND</u>	<u>97.0</u>	<u>ND</u>
D022	67-66-3	Chloroform	<u>6.0</u>	<u>0.010</u>	<u>ND</u>	<u>94.0</u>	<u>ND</u>
D028	107-06-2	1,2-Dichloroethane	<u>0.5</u>	<u>0.010</u>	<u>ND</u>	<u>105</u>	<u>ND</u>
D029	75-35-4	1,1-Dichloroethylene	<u>0.7</u>	<u>0.010</u>	<u>ND</u>	<u>82.0</u>	<u>ND</u>
D035	78-93-3	Methyl-ethyl-ketone	<u>200.0</u>	<u>0.010</u>	<u>ND</u>	<u>112</u>	<u>ND</u>
D039	127-18-4	Tetrachloroethylene	<u>0.7</u>	<u>0.010</u>	<u>ND</u>	<u>93.0</u>	<u>ND</u>
D040	79-01-6	Trichloroethylene	<u>0.5</u>	<u>0.010</u>	<u>ND</u>	<u>93.0</u>	<u>ND</u>
D043	75-01-4	Vinyl Chloride	<u>0.2</u>	<u>0.010</u>	<u>ND</u>	<u>91.0</u>	<u>ND</u>

Notes and Definitions for this Report:

EXTRACTED 04/05/99
DATE RUN 04/06/99
ANALYST JPM
DILUTION FACTOR: 5

ND = not detected at detection limit

(1) Hazardous Waste Number

(2) Chemical Abstract Service Number

(3) Uncorrected Result

(4) Bias Corrected Result

Page 4

TOXICOM CORP.

REPORT

Work Order # 99-04-057

Received: 04/03/99

Results by Sample

SAMPLE ID PS99SS02FRACTION 02ATEST CODE TCLPPNAME PESTICIDES - TCLPDate & Time Collected 04/02/99 09:30:00Category SOIL**TCLP PESTICIDES**

EPA HW NO. (1)	CAS NO. (2)	TOXICITY CHARACTERISTIC CONTAMINANT	REGULATORY LEVEL (MG/L)	METHOD DETECT LIMIT:	RESULT (MG/L) (3)	MATRIX SPIKEX RECOVERY	RESULT (MG/L) (4)
D020	57-74-9	Chlordane	0.03	0.010	ND	104	ND
D012	72-20-8	Endrin	0.02	0.010	ND	78.2	ND
D031	76-44-8	Heptachlor	0.008	0.0050	ND	100	ND
D031	1024-57-3	Heptachlor Epoxide	0.008	0.0050	ND	80.0	ND
D013	58-89-9	Methoxychlor	10.0	0.010	ND	92.2	ND
D014	72-43-5	Toxaphene	0.5	0.010	ND	110	ND
D015	8001-35-2	Lindane	0.4	0.010	ND	67.8	ND

Notes and Definitions for this Report:

EXTRACTED 04/05/99DATE RUN 04/06/99ANALYST CKINSTRUMENT HP2DIL. FACTOR 1

ND = not detected at detection limit

(1) Hazardous Waste Number

(2) Chemical Abstract Service Number

(3) Uncorrected Result

(4) Bias Corrected Result

Page 5

TOXIKEM CORP.

REPORT

Work Order # 99-04-057

Received: 04/03/99

Results by Sample

SAMPLE ID PS99SS02FRACTION 02ATEST CODE TCLPVNAME PURG. ORG. SOIL - TCLPDate & Time Collected 04/02/99 09:30:00Category SOILTCLP VOLATILES

EPA HW NO. (1)	CAS NO. (2)	TOXICITY CHARACTERISTIC CONTAMINANT	REGULATORY LEVEL (MG/L)	METHOD DETECT LIMIT	RESULT (MG/L) (3)	MATRIX SPIKEZ RECOVERY	RESULT (MG/L) (4)
D018	71-43-2	Benzene	<u>0.5</u>	<u>0.010</u>	ND	<u>98.0</u>	ND
D019	56-23-5	Carbon Tetrachloride	<u>0.5</u>	<u>0.010</u>	ND	<u>92.0</u>	ND
D021	108-90-7	Chlorobenzene	<u>100.0</u>	<u>0.010</u>	ND	<u>97.0</u>	ND
D022	67-66-3	Chloroform	<u>6.0</u>	<u>0.010</u>	ND	<u>94.0</u>	ND
D028	107-06-2	1,2-Dichloroethane	<u>0.5</u>	<u>0.010</u>	ND	<u>105</u>	ND
D029	75-35-4	1,1-Dichloroethylene	<u>0.7</u>	<u>0.010</u>	ND	<u>82.0</u>	ND
D035	78-93-3	Methyl-ethyl-ketone	<u>200.0</u>	<u>0.010</u>	ND	<u>112</u>	ND
D039	127-18-4	Tetrachloroethylene	<u>0.7</u>	<u>0.010</u>	ND	<u>93.0</u>	ND
D040	79-01-6	Trichloroethylene	<u>0.5</u>	<u>0.010</u>	ND	<u>93.0</u>	ND
D043	75-01-6	Vinyl Chloride	<u>0.2</u>	<u>0.010</u>	ND	<u>91.0</u>	ND

Notes and Definitions for this Report:

EXTRACTED 04/05/99
DATE RUN 04/06/99
ANALYST JPM
DILUTION FACTOR: 5

ND = not detected at detection limit

(1) Hazardous Waste Number

(2) Chemical Abstract Service Number

(3) Uncorrected Result

(4) Bias Corrected Result

Page 6

Received: 04/03/99

TOXIKIN CORP.

REPORT

Work Order # 99-04-057

Results by Sample

SAMPLE ID P599SS03FRACTION 03A TEST CODE TCLPP NAME PESTICIDES - TCLPDate & Time Collected 04/02/99 09:40:00 Category SOIL**TCLP PESTICIDES**

EPA HW NO. (1)	CAS NO. (2)	TOXICITY CHARACTERISTIC CONTAMINANT	REGULATORY LEVEL (MG/L)	METHOD DETECT LIMIT	RESULT (MG/L) (3)	MATRIX SPIKE RECOVERY	RESULT (MG/L) (4)
D020	57-74-9	Chlordane	0.03	0.20	0.29	104	0.28
D012	72-20-8	Endrin	0.02	0.010	ND	78.2	ND
D031	76-44-8	Heptachlor	0.008	0.0050	ND	100	ND
D031	1024-57-3	Heptachlor Epoxide	0.008	0.0050	ND	80.0	ND
D013	58-89-9	Methoxychlor	10.0	0.010	ND	92.2	ND
D014	72-43-5	Toxaphene	0.5	0.010	ND	110	ND
D015	8001-35-2	Lindane	0.4	0.010	ND	67.8	ND

Notes and Definitions for this Report:

EXTRACTED 04/06/99DATE RUN 04/06/99ANALYST CKINSTRUMENT HP2DIL. FACTOR 1

ND = not detected at detection limit

(1) Hazardous Waste Number

(2) Chemical Abstract Service Number

(3) Uncorrected Result

(4) Bias Corrected Result

Page 7

TOKIDOMI CORP.

REPORT

Work Order # 99-04-057

Received: 04/03/99

Test Methodology

TEST CODE ETCLPP NAME EXT. TCLP PESTICIDES

EPA METHOD: 1311

Reference: Federal Register/ Vol. 55, No. 61/ June 29 1990. Rules and Regulations. Appendix II. Toxicity Characteristic Leaching Procedure (TCLP).

TEST CODE ETCLPV NAME EXTRACTION TCLP, VOLATILES

EPA METHOD: 1311: Volatile Organic Fraction.

Reference: Federal Register/ Vol. 55, No. 61/ June 29 1990. Rules and Regulations. Appendix II. Toxicity Characteristic Leaching Procedure (TCLP).

TEST CODE TCLPP NAME PESTICIDES - TCLP

EPA METHOD: 1311 Pesticide Fraction by 8080.

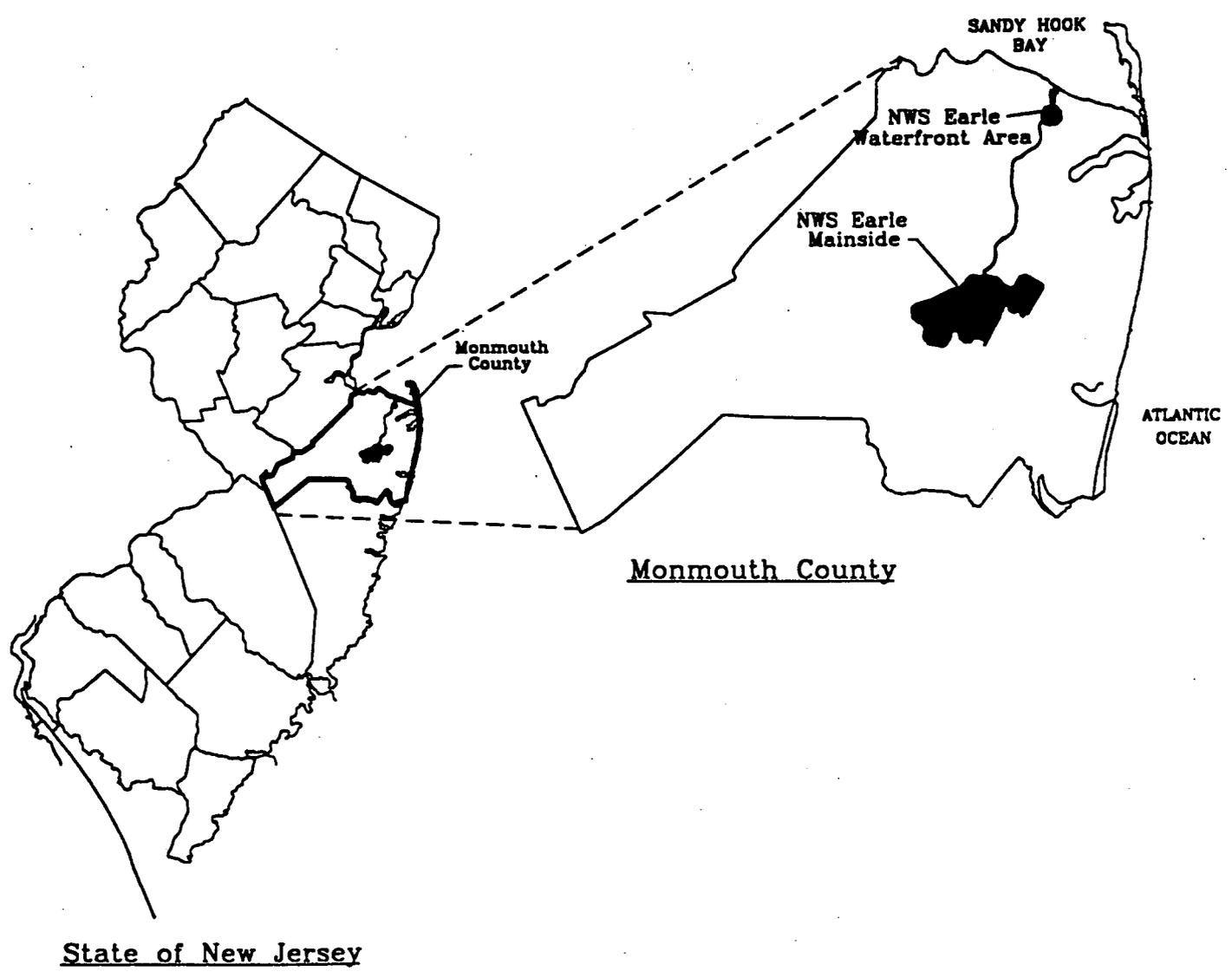
Reference: Federal Register/ Vol. 55, No. 61/ June 29 1990. Rules and Regulations. Appendix II. Toxicity Characteristic Leaching Procedure (TCLP).

TEST CODE TCLPV NAME PURG. ORG. SOIL - TCLP

EPA METHOD: 1311: Volatile Organic Fraction by 8240

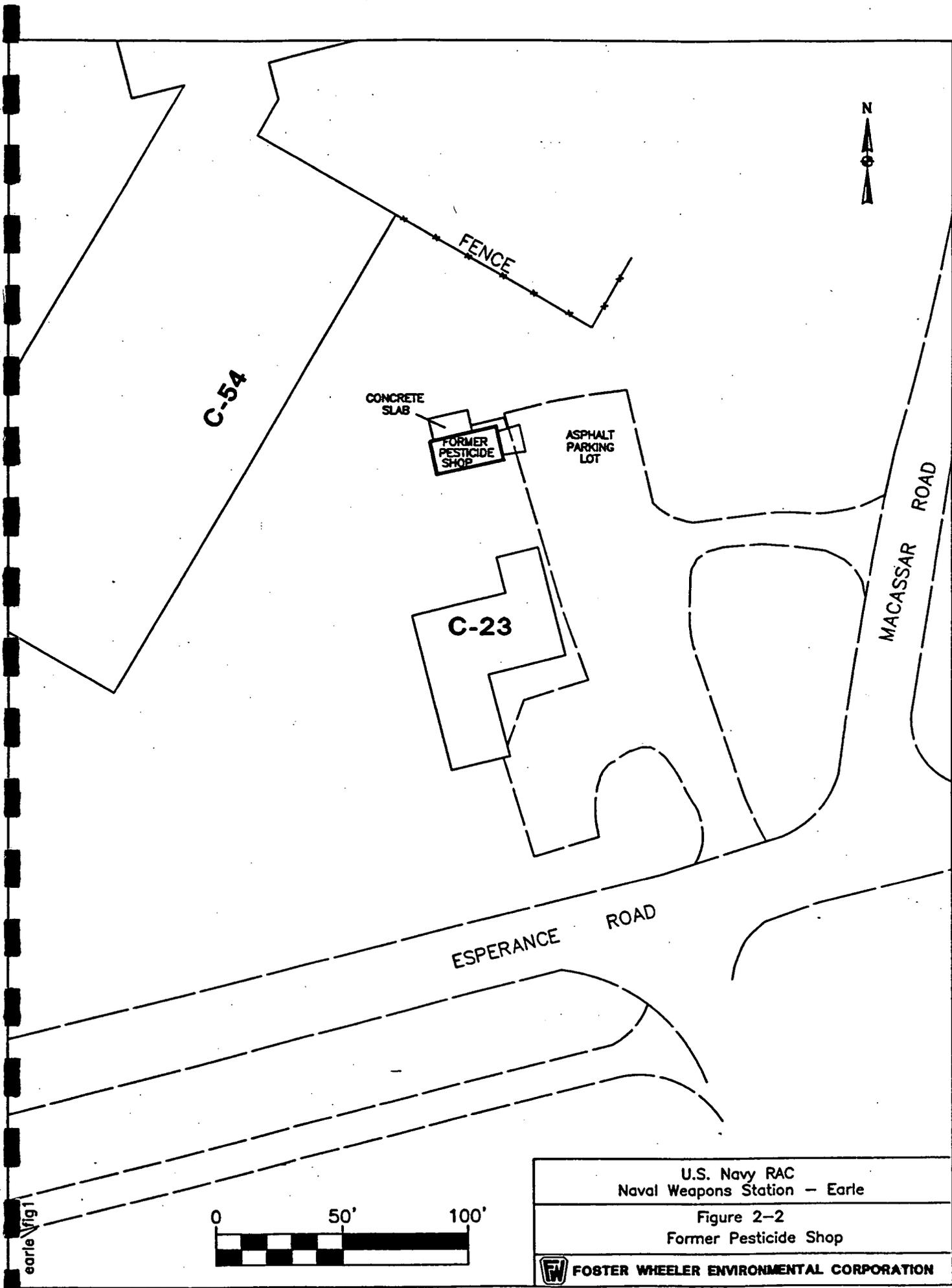
Reference: Federal Register/ Vol. 55, No. 61/ June 29 1990. Rules and Regulations. Appendix II. Toxicity Characteristic Leaching Procedure (TCLP).

APPENDIX B
MAPS/FIGURES



NOT TO SCALE

U.S. Navy RAC NWS-Earle, Colts Neck, N.J.
Figure 2-1 Regional Site Map
 FOSTER WHEELER ENVIRONMENTAL CORPORATION



U.S. Navy RAC
Naval Weapons Station - Earle

Figure 2-2
Former Pesticide Shop

 FOSTER WHEELER ENVIRONMENTAL CORPORATION

earle/fig1

	DDE	DDT	Chlordane
SS-28	17	29	430
SB-20-01			20
SB-20-03			4

	DDT	Chlordane
SS-21	17	680
SB-21-01		17

	DDT	Chlordane
SS-23		1300
SB-23-01	2	53
SB-23-03		10

	Chlordane
SS-27	650
SB-27-01	28
SB-27-03	5

	DDE	DDT
SS-26	710	19000
SB-26-01	340	6300
SB-26-03	420	590

	DDE	DDT	Chlordane
SS-30		350	27000
SB-30-01	200	840	210
SB-30-03	4	9	13

	DDE	Chlordane
SS-32		580
SB-32-01	59	
SB-32-03	3	20

	Chlordane
SS-25	34000
SB-25-01	180
SB-25-03	180

	Chlordane
SS-22	170000
SB-22-01	18000
SB-22-03	300

	DDT	Chlordane
SS-19		6600
SB-19-01		320
SB-19-01	3	56

	Chlordane
SS-18	180000
SB-18-01	1200
SB-18-03	42000

	DDE	DDT
SS-16	90	99
SB-16-01	26	28
SB-16-03	2	2

	DDE	DDT
SS-17	160	200

TCLP SAMPLE PS99SS03

	DDE	DDT	Chlordane
SS-31		12	170
SB-31-01			7500000
SB-31-03	38	100	2000

	DDT	Chlordane
SS-28	52000	140000
SB-28-01	380	1900
SB-28-03	5	9

	Chlordane
SS-24	30000
SB-24-01	180
SB-24-03	28

	Chlordane
SS-10	31000
SB-10-01	450
SB-10-03	4

	DDD	DDE	DDT	Chlordane
SS-11	19	150	850	330

	Chlordane
SS-12	20000
SB-12-01	1200
SB-12-03	250

	DDD	DDE	DDT	Chlordane
SS-13	1500	360	12000	720
SS-13RE			13000	
SB-13-01	50	9	510	23
SB-13-03	3		8	4

	DDD	DDE	DDT	Chlordane
SS-14	49	320	360	180
SB-14-01		2	2	

	DDD	DDE	DDT	Chlordane
SS-15	290	1000	1700	2600
SB-15-01		32	41	130
SB-15-03			2	

LEGEND

- SS SURFACE SOIL
- SB SOIL BORING
- GW GROUNDWATER
- * EXCEEDS NJDEP GROUNDWATER QUALITY STANDARDS (ug/l)
- 12000 EXCEEDS NJDEP RESIDENTIAL STANDARD
- 20000 EXCEEDS NJDEP NON-RESIDENTIAL SOIL STANDARD
- DDD 4,4' DDD
- DDE 4,4' DDE
- DDT 4,4' DDT
- ADDITIONAL SOIL SAMPLE LOCATIONS
- ▨ ANTICIPATED EXCAVATION AREA
- TCLP SAMPLE PS99SS01
- TCLP SAMPLE PS99SS02

NOTE: ALL SOIL RESULTS IN UG/KG



Sources: DELINEATION SAMPLING ANALYSIS REPORT, FORMER PESTICIDE SHOP. NUS, Brown & Root, Feb. 1998
 REPORT FOR PESTICIDE INVESTIGATION, FOSTER WHEELER ENVIRONMENTAL CORPORATION, March, 1999.

U.S. Navy RAC
 Naval Weapons Station - Earle
 Figur 3-1
 Former Pesticide Shop
 Anticipated Soil Removal Area

FOSTER WHEELER ENVIRONMENTAL CORPORATION

earle\fig4-1.dwg

APPENDIX C

ENGINEERING EVALUATION/COST ANALYSIS

ENGINEERING EVALUATION/COST ANALYSIS

FORMER PESTICIDE SHOP
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

Prepared by: Mike Heffron
Project Manager
Foster Wheeler Environmental Corporation
February 2000

1.0 EXECUTIVE SUMMARY

An Engineering Evaluation/Cost Analysis (EE/CA) is a comparative analysis of remedial options for a National Priority List (NPL) site. The EE/CA enables the development, evaluation, and selection of alternatives that will provide an effective interim remedy which is consistent with anticipated final remediation goals.

Naval Weapons Station Earle (NWS-Earle), Former Pesticide Shop, which is no longer in service, was used to mix and store pesticides and herbicides used on the base. Apparently, containers and spraying containers were periodically rinsed out and some of the wastewaters were deposited outside the building. According to Navy personnel, the pesticides shop operated prior 1976, before RCRA regulations.

The objectives of the remedial action remove the impacted soils and dispose of them at an appropriate facility. The soil excavation will include the excavation of the former septic tank, and all associated pipes, sludge, and contaminated soils. The scope also includes the demolition and removal of the former pesticide building. The analytical results of soil samples collected around the Former Pesticide Shop revealed concentrations of pesticides in the shallow soils above the NJDEP Non-Residential Cleanup Criteria. At least one of the soil samples revealed a concentration of pesticides (chlordan) characterizing the soil in some areas as hazardous waste.

The site is currently located in a secure area. There is no near term or long term plan to convert this area to residential use; the current military-unique land use in the area of the site is expected to prevail.

This EE/CA has been prepared to provide documentation in the NWS-Earle administrative record for the remedial action selected at the Former Pesticide Shop. Following a 30-day public comment period, a responsiveness summary will be prepared to address any concerns that may arise.

2.0 SITE CHARACTERIZATION AND BACKGROUND

2.1 SITE DESCRIPTION AND BACKGROUND

The Former Pesticide Shop is located on the Mainside portion of the base, north of the intersection of Esperance and Macassar Roads. The building served as the Former Base Pesticide Shop, but is no longer in service. Apparently, containers and spraying containers were periodically rinsed out and some of the wastewaters were deposited outside the building. According to Navy personnel, the pesticides shop operated prior 1976, before RCRA regulations.

The Former Pesticide Shop (the shop) is located in a grassy wooded area between Building C-54 and Building C-23. The shop consists of a small concrete block building

(25 ft. x 12 ft.) with an asbestos transite roof. The block building sits atop a poured concrete slab. There is also a 15 ft by 8 ft. concrete pad on the northwestern side of the building. The shop is bordered to the east by an asphalt parking lot, to the south by a grassy area and Building C-23, to the west by a grassy, wooded area and Building C-54, and to the north by a wooded area. The shop sits atop a small knoll, which slopes to the north and northwest. An in-ground former septic leach tank is located approximately 15 feet north of the shop. It is assumed that piping from the septic tank leads back to the shop. The primitive septic tank consists of a concrete block in-ground structure, approximately 4 feet deep. The concrete blocks are spaced apart on the bottom to allow seepage to the surrounding area. A concrete lid covers the top of the tank. There are no drawings or plans available for the septic tank, but if it is similar to other tanks excavated at the facility, pea gravel or other more permeable material surrounds the concrete-block pit. An underground electrical line from Building C-23 supplies power to the shop. There is a former overhead telephone line entering the building. There are no other known utilities entering the shop.

The laboratory analyses of soil samples collected during previous investigations at the Former Pesticide Shop revealed that the shallow soils (0- 1.5 ft) in the surrounding area contained concentrations of pesticides above the NJDEP Non-Residential Cleanup Criteria.

2.2 PREVIOUS REMEDIAL ACTIONS

There have been no known remedial actions at the site.

2.3 SOURCE, NATURE AND EXTENT OF CONTAMINATION

Chlordane was found in 20 of 23 surface soil samples collected from the soils surrounding the Former Pesticide Shop; and 4,4' DDT was found in 13 of 23 surface soil samples. The majority of the pesticide contamination is concentrated in the first 1.5 feet of the soils. Pesticides are typically non-mobile, and tend to bind to the organic matter in soils. The suspected area of contamination at the site is approximately ¼ acre. The actual extent of the surficial soil contamination shall be determined as part of this remedial action.

There are also allegations that herbicides were deposited in the soils. In particular, 2,4,5-T may have been deposited at the site. Laboratory analyses of herbicides shall be performed on the soils during the remedial action. If elevated levels of 2,4,5-T are detected the determination will be made to analyze the soils for dioxins.

2.4 ANALYTICAL DATA

Brown and Root Environmental conducted a soil investigation at the Former Pesticide Shop on April 21 and 22, 1998. Twenty-three soil borings around the Former Pesticide

Shop were sampled from three discrete depths (surface, one and three-feet below grade). The soil samples were analyzed for chlorinated organic pesticides by SW-846 Method 8081A. Chlordane and 4,4'-DDT were the most frequently detected pesticides found in the soil samples. Chlordane was found in 20 of 23 surface soil samples; and 4,4' DDT was found in 13 of 23 surface soil samples. The laboratory analyses of soil samples collected in the area around the pesticide shop revealed the presence of: chlordane (up to 75,000 ppm); 4,4' DDD (up to 1.5 ppm); 4,4' DDE (up to 1 ppm); and 4,4' DDT (up to 52 ppm).

On December 4, 1998 and January 9, 1999, Foster Wheeler Environmental conducted a soil and groundwater investigation at the Former Pesticide Shop. The project objectives included utilizing direct-push methods to collect soil samples and groundwater samples for the laboratory analyses of pesticides. The purpose of the sample collection was twofold. Soil samples were collected to further delineate the vertical extent of pesticide contamination in the soils at the previously identified "hotspots". Groundwater samples were collected at the site to determine if pesticides impacted the groundwater. The soil investigation determined that the majority of the pesticide contamination in the soils was restricted to the upper 2 feet of soils. No pesticides migrated to the groundwater. One herbicide (Endosulfan I) was detected in two of nine groundwater samples obtained at the site at a concentration above the NJDEP Groundwater Quality Criteria.

On April 4, 1999, Foster Wheeler collected soil samples in order to obtain preliminary waste classification information for the soils at the Former Pesticide Shop. The soil samples were analyzed for TCLP pesticides and volatile organics. The laboratory analysis of one soil sample revealed concentrations of chlordane at the hazardous concentration (D020).

2.5 SITE RISK ASSESSMENT

Actual or threatened releases of pollutants or contaminants from the Former Pesticide Shop, if not addressed by implementing a remedial action, may present an imminent and substantial endangerment to public health, or welfare, or the environment. Chlordane is a persistent insecticide that was used to kill insects on contact and ingestion. Chlordane is classified as a probable human carcinogen. Chlordane is typically absorbed into the body through lungs, stomach, and skin. Acute or chronic exposure to chlordane may effect the central nervous system, liver and cause blood disorders. Chlordane is highly persistent in soils, but very immobile. Chlordane is highly toxic to bees and earthworms, moderately to slightly toxic to birds, and highly toxic to fresh water invertebrates and fish.

3.0 IDENTIFICATION OF REMEDIAL ACTION OBJECTIVES

3.1 STATUTORY LIMITS IN REMOVAL ACTIONS

Removal actions are generally limited by statute to a maximum cost of two million dollars and a maximum duration of 12 months, except as provided for under two types of

exemptions available (emergency and consistency). The 12-month time limit and two million dollar statutory limit are governed by applicable portions of CERCLA Section 104 (b) (1). As described in this report, the proposed removal action is to incur costs of less than two million dollars and occur within a time period less than 12 months.

3.2 DETERMINATION OF REMEDIAL SCOPE

The scope of work for the Former Pesticide Shop includes an asbestos abatement of a transite roof, disconnecting electrical and telephone lines, the demolition of the existing building, clearing of trees and vegetation, excavation of the former septic tank, and the excavation and removal of soils with pesticide and herbicide concentrations greater than the NJDEP Non-Residential Cleanup Criteria.

3.3 DETERMINATION OF REMEDIAL SCHEDULE

The planned remedial action will occur from March 13, 2000 through April 11, 2000. The post-remedial report will be submitted May 5, 2000.

4.0 IDENTIFICATION OF REMEDIAL ACTION ALTERNATIVES

4.1 NO ACTION

No action is not a technology, but it is an option. This option entails taking no remedial measures. "No action" does not include future monitoring or future migration assessment. This option is generally considered as a baseline for comparison to other remedial actions.

Initial Screening

The analytical results of the soil samples indicate that the site could present an immediate direct contact threat. The lack of action would not decrease the potential for direct contact exposure and potential mobilization of contaminants in soils and sediments via surface water runoff.

4.2 INSTITUTIONAL CONTROLS

Institutional controls and containment is a group of options that would slow or stop the contaminant exposure to receptors, and in some cases, the environment. These options include land use restrictions, capping with various materials, and containment via stabilization and solidification.

4.2.1 Land Use Restrictions

Land use restriction is the official limiting of access to the site, either by Naval instruction, or local code. The Pesticide Shop is within a Naval installation that presently has limited public access.

Initial Screening

Land use restriction would provide limited protection and assessment of future land use and property ownership and control can not be firmly established. Even under limited access, the contaminants may be transported via erosion/depositional processes.

4.2.2 Capping

Capping would consist of the construction of a cap over the soils at the Former Pesticide Shop using one of the available capping methods, such as asphalt, concrete, clay, bentonite, or synthetic membranes, to provide a low permeability cover.

Initial Screening

The geographic setting of the site would lend itself to capping within reasonable constraints. The capping would require clear cutting trees and vegetation as well as grading and placement of sub-base material. There are still areas of soil contamination that have concentrations of chlordane that would require excavation due to the hazardous classification. Capping was a potential alternative, but would still require much of the same construction activities that would be employed for the source removal.

4.2.3 In-Situ Containment by Stabilization/Solidification

In solidification, a reagent is added to transform the contaminated soil into a solid like material. In stabilization, a reagent is added to transform the material so that the hazardous constituents are in a less mobile form. When both solidification and stabilization are performed, the handling and physical characteristics of the waste are improved. The surface area of the waste mass across which the transfer of loss of contaminants can occur is decreased. Also, the solubility of the hazardous constituent is limited.

Initial Screening

Although this option is technically feasible and may be effective in binding the contaminants in place, leaching of contaminants may not be prevented, and hazardous concentrations of soils would still be required. Therefore, this option has been eliminated from further consideration.

4.3 EXCAVATION AND OFF SITE DISPOSAL OF SOILS

Implementation of this alternative assures the removal of the potential contaminant source and is a common cost effective remedial alternative. The impacted soils will be excavated, transported, and disposed of off site at an appropriate disposal facility. Post-excavation sample collection will ensure that the removal action was effective. Upon receipt of the analytical results, concentrations will be compared to the NJDEP Non-Residential Direct Contact Soil Cleanup Criteria. If the sample concentrations are below the cleanup criteria, the excavated areas will be backfilled with certified clean fill material and topsoil, regraded, and seeded. If the concentrations exceed the NJDEP Non-Residential Direct Contact Soil Cleanup Criteria, the removal of soils will continue until clean conditions are achieved, and confirmed by sample analysis.

Initial Screening

This option will provide for an effective remedy to remove the source of contamination, and thereby, reduce or remove the risks associated with the contamination. The total potential volume of soil to be excavated, transported, and disposed of is approximately 500 cubic yards.

5.0 COMPARATIVE ANALYSIS OF REMEDIAL ACTION ALTERNATIVES

Based on the initial screening of alternatives, the most effective alternative is described in Section 4.3. Exhibit 1 is the cost estimate for the total effort. This is the only alternative that effectively removes the source. This alternative includes the demolition of the existing pesticide shop building, something that would have also been addressed under some of the other alternatives.

6.0 RECOMMENDED REMEDIAL ACTION ALTERNATIVE

The alternative described in **Section 4.3** is the recommended alternative. The recommended alternative provides excellent protection to human health and the environment by removing the soils with the elevated concentrations of pesticide contamination, while also removing the former septic tank area as a source of future contamination. This reduces the potential risk to the environment and the environmental receptors.

EXHIBIT 1

Remedial Action Cost Estimate

Bank Stabilization at Sites 6 and 17
Installation Restoration Program
Naval Weapons Station Earle

April 1999

Remediation Labor	
Preparation, Planning, Procurement, Documentation	\$11,500
Site Labor	<u>\$38,000</u>
Subtotal Remediation Labor	\$49,500
Equipment/Supplies and Materials/Laboratory Cost	\$77,067
Transportation/Disposal	\$125,425
Total Job	\$251,992