

△

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 4, SCIENCE and ECOSYSTEM SUPPORT DIVISION
ATHENS, GEORGIA 30605-2720

4SESD-EIB

MEMORANDUM

SUBJECT: Draft Expanded Site Investigation Report
Payne Road Solvents Site
Bessemer City, North Carolina.
SESD Project No: 07-0171 and 07-0185.

FROM: Jonathan Vail
Air and Superfund Section
Environmental Investigations Branch

THRU: Danny France, Chief
Air and Superfund Section
Environmental Investigations Branch
Science and Ecosystem Support Division

TO: Matt Huyser, RPM
North Site Management Branch
Waste Management Division

Please find attached the above reference document for your review. If you have any questions or comments, please do not hesitate to contact me at 706 355-8611

Expanded Site Investigation Report

FOR

Payne Road Solvents Site Bessemer City, North Carolina

Investigation Conducted January, 2007



Prepared May, 2007 by:
U. S. Environmental Protection Agency, Region 4,
Science and Ecosystem Support Division
980 College Station Road
Athens, Georgia 30605-2720
(706) 355-8500



Introduction

On January 30 and 31, 2007, the United States Environmental Protection Agency (EPA), Science and Ecosystem Support Division (SESD) conducted an Integrated Site Inspection and Removal Assessment at the Payne Road Solvents Site. The site consists of a several parcels of property centered around the address of 107 Payne Road, Bessemer City, North Carolina 28016 (Figure 1.) This investigation was requested by the EPA, Region 4, Emergency Remedial and Response Branch, Removal Operations Section through a letter to the EPA from the North Carolina Department of Environment and Natural Resources (NCDENR).

The soil and groundwater investigation was conducted under the authority of the Comprehensive Environmental Response and Liability Act (CERCLA, also known as Superfund). All soil samples were analyzed for Volatile organic compounds (VOCs), Semi-volatile organic compounds (SVOCs), metals and cyanide, except for two locations, and the groundwater samples were analyzed for VOCs only. The purpose of the investigation was to determine source areas of chlorinated solvents (VOCs) and possible chrome plating wastes for potential removal action. Marty Allen and Jonathan Vail (SESD) conducted the investigation with assistance from Mike Crowe (Integrated Laboratory Services) and Jeanette Stanley (NCDENR).

Background

The site is located in Bessemer City, North Carolina centered around the address: 107 Payne Road and is geographically located at 35.2667 north latitude and 81.3209 west longitude. The property at 105 Payne Road has been used as a chrome plating shop and is currently used to store building materials.

Subsurface Soil and Groundwater Investigation Summary

Subsurface soil samples were collected from locations surrounding the 107 Payne Road address (See Figures 1, 2, and 3). Table 1, 2, and 3 lists the chlorinated solvents that were detected in the soil samples: i.e., 1,1,1-Trichloroethane, 1,1-Dichloroethene, Methylene Chloride, p-Isopropyltoluene, sec-Butylbenzene, Tetrachloroethene, and Toluene. Significant concentrations of chlorinated solvents were detected in the soil from three locations (location 1, 2, and 3), north, east and west respectively around the 105 Payne Road building. Location 3 had the highest concentrations during this investigation and is just outside the door of the former chrome plating shop. The NC Aquifer Protection Section found chlorinated solvents at depths of 3 and 6 feet from location 3 on the west side of the building in 2006. Elevated concentrations of chromium were also detected at this same location. The semi-volatile organic compounds (SVOCs), that were detected at low concentrations in the surface soils (0" – 6") and the subsurface soils (6' – 6' 6") do not appear to be significant.

Groundwater samples were collected from four locations (Figure 4). Only two of the four wells had detectable concentrations on chlorinated solvents. The Westmoreland well, at 107

Payne Road, is approximately 75 feet southwest of the 105 Payne Road building, and continues to have relatively high concentrations of chlorinated solvents. This same well had high levels of chlorinated solvents detected in May 2006. The Duke well at the Hilltop Tie Facility (1385 Bessemer City/Kings Mtn. Hwy), east of the 105 Payne Road building was the only other well, that was sampled, where concentrations of chlorinated solvents were detected.

Based on the results of this investigation, it appears that the source of contamination may be coming from the building at 105 Payne Road. This determination is due to the highest concentrations of chlorinated solvents detected in the soil were from the three depths at location 3 which is outside the door of the building. Groundwater contaminated with chlorinated solvents was detected east and west of this building.

Discussion – Surface Soil (0”- 6”)

Surface soil samples were collected from five locations (Figure 1) during the investigation from a depth of 0”-6”. Chlorinated solvents were detected at four of the five locations. The two samples from locations closest to the building at 105 Payne Road (PR002SL and PR003SL) had the highest concentrations of chlorinated solvents from this depth. The highest concentration of chromium at 0”-6” was found in sample PR003SL at location 3. Relatively low concentrations of Semi-volatile organic compounds (SVOCs) were detected at location 3 and 10.

Discussion – Surface Soil (3’- 3’ 6”)

Seven subsurface soil samples were collected from a depth of 3’-3’ 6” (Figure 2). Chlorinated solvents were found at three of the seven locations with sample PR103SL (location 3) showing the highest chlorinated solvents concentrations from a depth of 3 feet to 3 feet 6 inches. Chromium was also elevated at this location and depth. No SVOCs were detected in the samples at this depth.

Discussion – Surface Soil (6’- 6’ 6”)

Six of the seven subsurface soil samples collected from a depth of 6’ – 6’ 6” had notable concentrations of chlorinated solvents detected. The highest chlorinated solvent and chromium concentrations for this depth were found at location 3 in sample PR203SL. Location 2, 4, and 6 had the same SVOC detected.

Discussion – Groundwater

Three temporary wells (out of five planned) were installed to the depth of refusal, or approximately 32 to 40 feet, in an attempt to sample the groundwater at this depth. All three wells were dry after waiting for groundwater recovery overnight.

Upon gaining permission, four permanent wells were sampled for VOCs. Two of the four wells had detectable concentrations of chlorinated solvents: (the Westmoreland well at 107

Payne Rd. and the Duke well at the Hilltop Tie Facility (1385 Bessemer City/Kings Mtn. Hwy).
The other two wells were clean: (East King Mtn. Church of God and 161 Flea Market)

Methodology

The investigation was conducted by U.S. EPA Region 4, Science and Ecosystem Support Division personnel in accordance with the requirements and procedures specified in the U.S. EPA, Region 4, Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EIBSOPQAM), November, 2001. All analyses and quality control and quality assurance procedures were conducted according to the Contract Laboratory Program (CLP) Statement of Work or the EPA, Region 4, *Analytical Support Branch Laboratory Operations and Quality Assurance Manual* (ASBLOQAM), November, 2004.

The soil sampling locations and the groundwater sample locations were selected and mapped in the field using Global Positioning System (GPS) techniques utilizing a Trimble Pathfinder GeoXT GPS unit.

References

United States Environmental Protection Agency, Region 4, Science and Ecosystem Support Division, *Environmental Investigations Standard Operating Procedures and Quality Assurance Manual* (EIBSOPQAM), November, 2001.

United States Environmental Protection Agency, Region 4, Science and Ecosystems Support Division, *Analytical Support Branch Laboratory Operations and Quality Assurance Manual* (ASBLOQAM), November, 2004.

TABLES

**TABLE 1. ANALYTICAL DATA SUMMARY OF SURFACE SOIL SAMPLES (0"-6")
PAYNE ROAD SOLVENTS SITE, BESSEMER CITY, NORTH CAROLINA**

Sample ID:		PR002SL	PR003SL	PR005SL	PR006SL	PR010SL
Depth:		0"-6"	0"-6"	0"-6"	0"-6"	0"-6"
Date:		1/30/2007	1/31/2007	1/31/2007	1/31/2007	1/31/2007
Time:		1255	940	1000	850	1105
VOLATILES						
1,1,1-Trichloroethane	UG/KG	0.46 U	1.2	0.2 J	0.49 U	0.66 U
p-Isopropyltoluene	UG/KG	7.9	0.57 U	0.49 U	0.49 U	0.093 J
sec-Butylbenzene	UG/KG	1.7	0.57 U	0.49 U	0.49 U	0.66 U
Tetrachloroethene	UG/KG	0.17 J	5.5	1	0.49 U	0.66 U
Toluene	UG/KG	0.39 J	0.57 U	0.49 U	0.49 U	0.66 U
EXTRACTABLES						
Acetophenone	UG/KG	380 U	55 J	400 U	360 U	460 U
Benzo(g,h,i)perylene	UG/KG	38 U	41 U	40 U	36 U	260 J
Pentachlorophenol	UG/KG	380 U	410 U	400 U	360 U	120 J
Phenol	UG/KG	380 U	410 U	400 U	360 U	230 J
METALS						
% Solids	%	86	74	82	91	71
Aluminum	MG/KG	3900 J	22000	9800	6800	13000
Antimony	MG/KG	7 U, R	2.1 R	3.8 R	1.5 J	2.9 J
Arsenic	MG/KG	3 J	25 J	14 J	19 J	23 J
Barium	MG/KG	8.1 J	26 J	37	16 J	53
Beryllium	MG/KG	0.07 J	0.24 J	0.19 J	0.24 J	0.29 J
Cadmium	MG/KG	0.2 J	0.37 R	0.92	0.48 J	1
Calcium	MG/KG	300 J	1400 J	830 J	2600 J	4900 J
Chromium	MG/KG	43 J	93 J	72 J	63 J	86 J
Cobalt	MG/KG	0.47 J	2.3 J	2.4 J	9.7	11
Copper	MG/KG	10	40	33	160	99
Iron	MG/KG	9000	81000	43000	20000	84000
Lead	MG/KG	7.7	10	41	130	52
Magnesium	MG/KG	68 J	270 J	210 J	1500	1700
Manganese	MG/KG	28	76	130	180	460
Mercury	MG/KG	0.023 U, J	0.074 U, J	0.13	0.038 U, J	0.056 U, J
Nickel	MG/KG	28	14	16	230	29
Potassium	MG/KG	81 J	370 J	260 J	430 J	830
Selenium	MG/KG	4.1 R	2.6 R	1.1 R	0.89 J	3.2 R
Silver	MG/KG	0.59 R	3.7	2.5	1.3	4.3
Sodium	MG/KG	240 J	230 J	1000	960	800
Thallium	MG/KG	2.9 U, R	3.4 U, R	3 U, R	2.7 U, R	3.5 U, R
Vanadium	MG/KG	25	220	99	34	100
Zinc	MG/KG	42	19	370 J	360	230
CLASSICALS						
Cyanide	MG/KG	2.9 U	3.4 U	0.25 U, J	0.22 U, J	0.6 U, J

Data Qualifiers

U-Analyte not detected at or above reporting limit.

J-Identification of analyte is acceptable; reported value is an estimate.

UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.

NA-Not Analyzed.

R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

TABLE 2. ANALYTICAL DATA SUMMARY OF SURFACE SOIL SAMPLES (3'-3' 6")
PAYNE ROAD SOLVENTS SITE, BESSEMER CITY, NORTH CAROLINA

Sample ID:	PR102SL	PR103SL	PR105SL	PR106SL	PR107SL	PR109SL	PR102SL
Depth:	3'-3' 6"	3'-3' 6"	3'-3' 6"	3'-3' 6"	3'-3' 6"	3'-3' 6"	3'-3' 6"
Date:	1/30/2007	1/31/2007	1/31/2007	1/31/2007	1/31/2007	1/31/2007	1/30/2007
Time:	1255	955	1015	905	1300	1300	1640
VOLATILES							
1,1,1-Trichloroethane	UG/KG	0.55 U	130	0.61 U	0.57 U	0.65 U	0.58 U
1,1-Dichloroethane	UG/KG	0.55 U	7.3	0.61 U	0.57 U	0.65 U	0.58 U
Methylene Chloride	UG/KG	0.55 U	0.62 U	0.61 U	0.57 U	0.39 J	0.58 U
Tetrachloroethane	UG/KG	0.55 U	980	0.61 U	0.57 U	0.65 U	0.58 U
Trichloroethane	UG/KG	0.55 U	3.6	0.61 U	0.57 U	0.65 U	0.58 U
METALS							
% Solids		82	75	85	79	81	74
Aluminum	MG/KG	7200	13000	15000	12000	8800	18000
Antimony	MG/KG	1.1 R	1.6 J	1.6 R	1.7 R	1.5 R	1.9 J
Arsenic	MG/KG	4.6 J	18 J	9.4 J	31 J	6.7 J	16 J
Barium	MG/KG	4.7 J	7.6 J	8.2 J	9.2 J	5.6 J	13 J
Beryllium	MG/KG	0.3 J	0.14 J	0.06 J	0.3 J	0.26 J	0.3 J
Cadmium	MG/KG	0.61 U	0.28 R	0.59 U, R	0.63 U	0.61 U	0.67 J
Calcium	MG/KG	100 J	440 J	370 J	120 J	160 J	550 J
Chromium	MG/KG	46 J	76 J	56 J	53 J	40 J	77 J
Cobalt	MG/KG	0.97 J	1.9 J	1.3 J	1.2	2 J	1.5 J
Copper	MG/KG	63	31	17	36	20	33
Iron	MG/KG	44000	72000	49000	57000	62000	64000
Lead	MG/KG	5.5	9.1	6.5	5.9	14	9
Magnesium	MG/KG	48 J	130 J	80 J	81 J	96 J	160 J
Manganese	MG/KG	20	71	30	85	200	58
Mercury	MG/KG	0.024 U, J	0.04 U, J	0.047 U, J	0.063 U, J	0.043 U, J	0.1 U, J
Nickel	MG/KG	9.5	29	3.8 J	6	4 J	5.5
Potassium	MG/KG	170 J	210 J	100 J	170 J	120 J	420 J
Selenium	MG/KG	1.4 J	3.5 J	1.6 J	1.9 R	1.7 R	1.6 J
Silver	MG/KG	2.4	3.4	2.6	3.1	3	3.3
Sodium	MG/KG	570 J	260 J	270 J	230 J	220 J	270 J
Thallium	MG/KG	3 R	3.3 U, R	2.9 U, R	3.2 U, R	3.1 U, R	3.4 U, R
Vanadium	MG/KG	89	180	140	130	110	170
Zinc	MG/KG	8.9	12	37	11	9.1	12

TABLE 2 (continued). ANALYTICAL DATA SUMMARY OF SURFACE SOIL SAMPLES (3'-3' 6")
PAYNE ROAD SOLVENTS SITE, BESSEMER CITY, NORTH CAROLINA

Sample ID:	PR102SL	PR103SL	PR105SL	PR106SL	PR107SL	PR109SL	PR012SL
Depth:	3'-3' 6"	3'-3' 6"	3'-3' 6"	3'-3' 6"	3'-3' 6"	3'-3' 6"	3'-3' 6"
Date:	1/30/2007	1/31/2007	1/31/2007	1/31/2007	1/31/2007	1/31/2007	1/30/2007
Time:	1255	955	1015	905	1300	1300	1640
CLASSICALS							
Cyanide	3 U	3.3 U	2.9 U	3.2 U	3.1 U	0.27 U, J	NA

Data Qualifiers

U-Analyte not detected at or above reporting limit.

J-Identification of analyte is acceptable; reported value is an estimate.

UU-Analyte not detected at or above reporting limit. Reporting limit is an estimate.

NA-Not Analyzed.

R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

TABLE 3. ANALYTICAL DATA SUMMARY FOR SURFACE SOIL SAMPLES (6'-6" 6")
PAYNE ROAD SOLVENTS SITE, BESSEMER CITY, NORTH CAROLINA

Sample ID:	PR101SL	PR202SL	PR203SL	PR204SL	PR205SL	PR206SL	PR011SL
Depth:	6'-6" 6"	6'-6" 6"	6'-6" 6"	6'-6" 6"	6'-6" 6"	6'-6" 6"	6'-6" 6"
Date:	1/30/2007	1/30/2007	1/31/2007	1/31/2007	1/31/2007	1/31/2007	1/30/2007
Time:	910	1320	1010	850	1040	930	1045
VOLATILES							
1,1,1-Trichloroethane	UG/KG	1.4	0.57 U	12	0.7	0.61 U	0.5 U
1,1-Dichloroethane	UG/KG	0.57 U	0.57 U	0.44 J	0.3 J	0.61 U	0.5 U
Methyl T-Butyl Ether	UG/KG	0.57 U	0.6 U	0.6 U	0.6 U	0.7 U	0.32 J
Tetrachloroethane	UG/KG	0.2 J	4.5	0.83	0.18 J	0.2 J	0.5 U
Trichloroethane	UG/KG	0.57 U	1.3	0.6 U	0.61 U	0.7 U	0.5 U
EXTRACTABLES							
Isophorone	UG/KG	NA	79 J	430 U	79 J	360 U	100 J
METALS							
% Solids	NA	83	76	75	90	NA	NA
Aluminum	MG/KG	3700	7300	8100	2800	4200	NA
Antimony	MG/KG	7.2 U, R	7.8 U, R	1.3 J	6.7 R	7.4 U, R	NA
Arsenic	MG/KG	2.5 J	10 J	130 J	3 J	12 J	NA
Barium	MG/KG	3 J	4.9 J	3.8 J	2.2 J	3.6 J	NA
Beryllium	MG/KG	0.4 J	0.17 J	0.5 J	0.1 J	0.13 J	NA
Cadmium	MG/KG	0.6 U	0.65 U	0.67 U	0.56 U	0.62 U, R	NA
Calcium	MG/KG	66 J	71 J	110 J	130 J	62 U, J	NA
Chromium	MG/KG	21 J	50 J	40 J	39 J	27 J	NA
Cobalt	MG/KG	0.79 J	1.3 J	2.7 J	0.98 J	0.67 J	NA
Copper	MG/KG	53	18	27	8.7	25	NA
Iron	MG/KG	35000	49000	60000	33000	28000	NA
Lead	MG/KG	4.6	7.6	6.4	1.9	3.6	NA
Magnesium	MG/KG	29 J	49 J	58 J	32 J	34 J	NA
Manganese	MG/KG	35	37	60	10	43	NA
Mercury	MG/KG	0.036 U, J	0.026 U, J	0.04 U, J	0.11 U	0.018 U, J	NA
Nickel	MG/KG	14	4.9 J	8.2	2.8 J	4.1 J	NA
Potassium	MG/KG	200 J	250 J	61 J	71 J	88 J	NA
Selenium	MG/KG	1.6 J	2.2 J	3.1 J	1.4 J	4.3 U, R	NA
Silver	MG/KG	1.8	2.4	2.5	1.6	1.5	NA
Sodium	MG/KG	310 J	210 J	260 J	150 J	180 J	NA
Thallium	MG/KG	NA	3 U, R	3.3 U, R	2.8 U, R	3.1 U, R	NA

TABLE 3 (continued). ANALYTICAL DATA SUMMARY FOR SURFACE SOIL SAMPLES (6'-6" 6")
PAYNE ROAD SOLVENTS SITE, BESSEMER CITY, NORTH CAROLINA

Sample ID:	PR101SL	PR202SL	PR203SL	PR204SL	PR205SL	PR206SL	PR011SL
Depth:	6'-6" 6"	6'-6" 6"	6'-6" 6"	6'-6" 6"	6'-6" 6"	6'-6" 6"	6'-6" 6"
Date:	1/30/2007	1/30/2007	1/31/2007	1/31/2007	1/31/2007	1/31/2007	1/30/2007
Time:	910	1320	1010	850	1040	930	1045
METALS (continued)							
Vanadium	NA	59	120	180	97	56	NA
Zinc	NA	7.6	5.2 J	16	3.8 J	7.1 J	NA
CLASSICALS							
Cyanide	NA	3 U	3.3 U	3.4 U	2.8 U	3.1 U	NA

Data Qualifiers

U-Analyte not detected at or above reporting limit.

J-Identification of analyte is acceptable; reported value is an estimate.

UU-Analyte not detected at or above reporting limit. Reporting limit is an estimate.

NA-Not Analyzed.

R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

**TABLE 4. ANALYTICAL DATA SUMMARY OF GROUND WATER SAMPLES
PAYNE ROAD SOLVENTS SITE, BESSEMER CITY, NORTH CAROLINA**

Sample ID:		PR009GW	PR00FGW	PR00GGW	PR00HGW	PR00iGW
Date:		1/30/2007	1/31/2007	1/30/2007	1/30/2007	1/30/2007
Time:		1600	1615	1420	1440	1510
VOLATILES						
1,1,1-Trichloroethane	ug/L	8.7	9.1	0.5 U	0.5 U	85
1,1-Dichloroethane	ug/L	3	2.9	0.5 U	0.5 U	11
1,1-Dichloroethene	ug/L	17	17	0.5 U	0.5 U	130
Chloroform	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.24 J
cis,1,2-Dichloroethene	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	11
Tetrachloroethene	ug/L	4.4	4.5	0.5 U	0.5 U	65
Trichloroethene	ug/L	2.6	2.5	0.5 U	0.5 U	17
FIELD PARAMETERS						
pH	units	6.09	6.09	5.46	5.6	4.5
Temperature	C	16.3	16.3	18.9	16.8	18.3
Specific Conductivity	mS/cm	88	88	94	46	47
Turbidity	nTU	5.17	5.17	3.54	13.2	0.33

Explanation of Sample ID

PR009GW	Duke Well Hilltop Tie Facility, 1385 Bessemer City/Kings Mtn. Hwy
PR00FGW	Same as above (Duplicate)
PR00GGW	East King Mtn. Church of God
PR00HGW	161 Flea Market
PR00iGW	Westmoreland Well, 107 Payne Road

Data Qualifiers

U-Analyte not detected at or above reporting limit.

J-Identification of analyte is acceptable; reported value is an estimate.

FIGURES

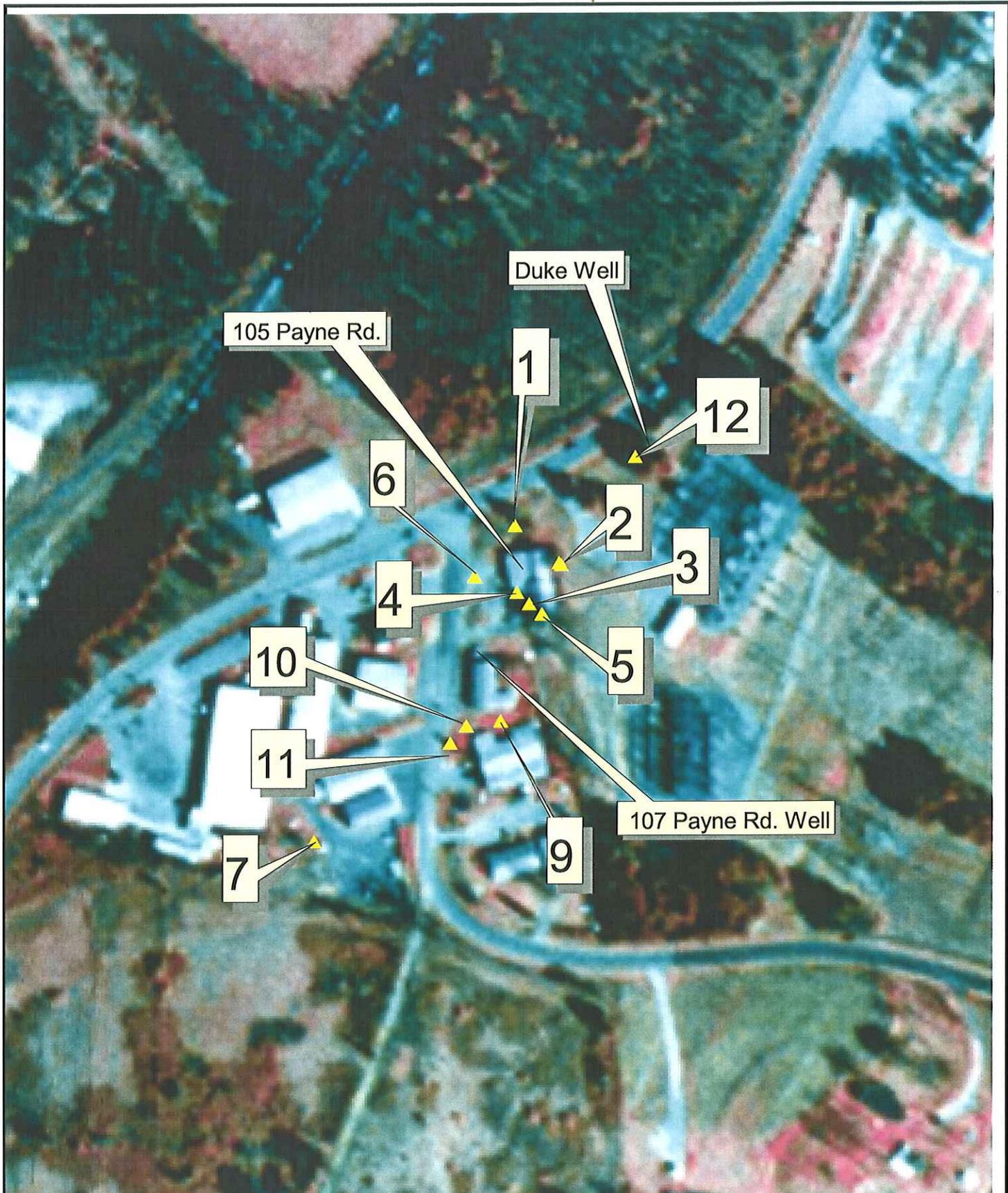
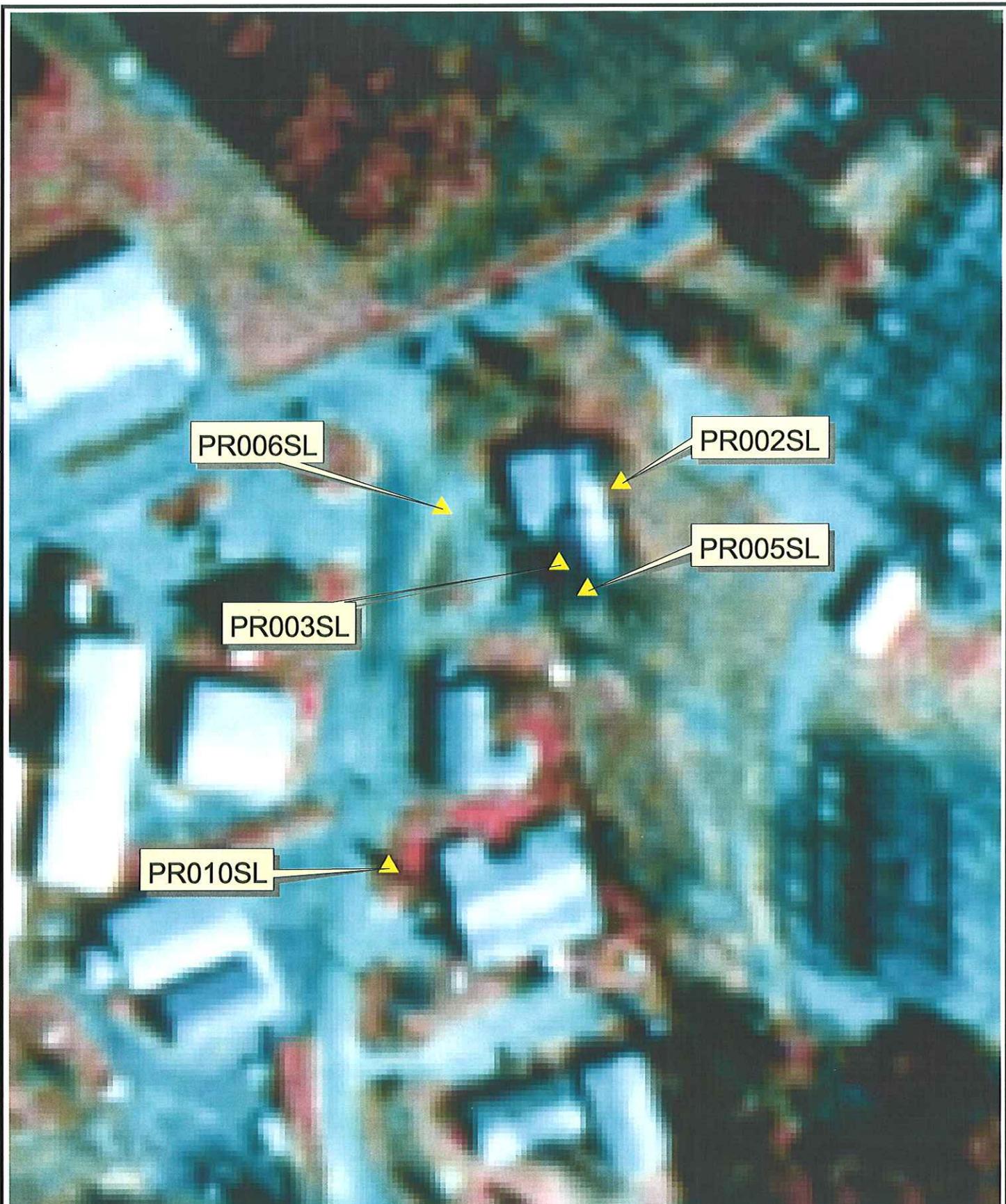


Figure 1. Soil and Groundwater Sample Locations
Payne Road Solvents Site, Bessemer City, North Carolina





PR006SL

PR002SL

PR005SL

PR003SL

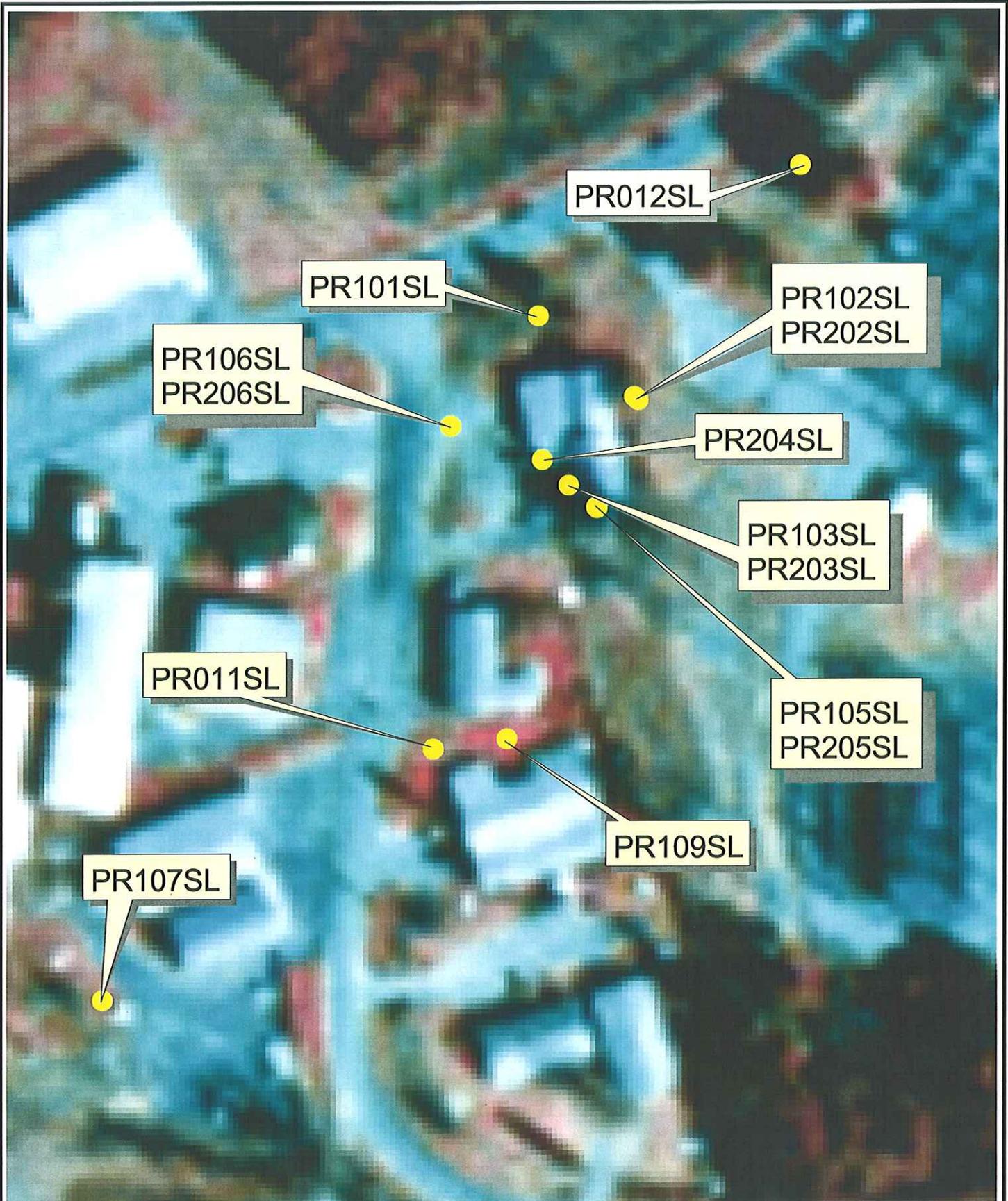
PR010SL

50 0 50 100 150 200 Feet



**Figure 2. Surface Soil (0"-6") Locations
Payne Road Solvents Site, Bessemer City, North Carolina**





50 0 50 100 150 200 Feet



**Figure 3. Subsurface Soil (3'-3' 6" and 6'-6' 6") Locations
Payne Road Solvents Site, Bessemer City, North Carolina**





PR009GW
PR00FGW

PR00IGW

PR00HGW

PR00GGW

200 0 200 400 600 800 Feet



**Figure 4. Ground Water Sample Locations
Payne Road Solvents Site, Bessemer City, North Carolina**

