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Infrastructure, environment, buildings

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Mr. Ken Mallary
USEPA Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth Street, S.W.
Atlanta, GA 30303-8960

Subject
VCC Winston-Salem Site: Soil Screening and Sampling Event Summary Report
Winston-Salem, North Carolina

Date:
January 23, 2008

Contact
Matthew Pelton

Phone.
919.415.2308

Email.
matthew.pelton@
arcadis-us.com

Our ref
B0085732

Dear Mr. Mallary:

This Soil Screening and Sampling Event Summary Report (Report) has been prepared by ARCADIS U.S., Inc. (ARCADIS) on behalf of Exxon Mobil Environmental Services Company (ExxonMobil) to document the soil screening and sampling activities that were recently conducted at the former Virginia-Carolina Chemical Corporation (VCC-2) phosphate/fertilizer plant located in Winston-Salem, Forsyth County, North Carolina (the Site, see Figure 1). Soil screening and sampling activities were performed as discussed during the June 19, 2008 meeting between the North Carolina Department of Environment and Natural Resources (NCDENR), the North Carolina Department of Transportation (NCDOT), S&ME, ExxonMobil, and ARCADIS.

The soil screening and sampling activities were conducted during geotechnical boring activities conducted by S&ME, and were intended to determine the extent of arsenic and lead concentrations in soil that potentially lie within or adjacent to the Site boundaries and beneath U.S. Highway 52. These sampling activities were intended to identify and mitigate potential risk for exposure to arsenic and lead impacted soil prior to earth moving activities during the NCDOT roadway expansion project which is projected to begin in August 2009.

A summary of the sampling activities and resulting analytical data is provided below. A discussion of upcoming Removal Site Evaluation (RSE) sampling activities is also provided.

Summary of Soil Sampling Activities

Soil sampling activities were conducted at the Site between November 19 and November 21, 2008. Work activities conducted by ARCADIS included the collection of soil samples that were field-screened using an X-ray fluorescence field analyzer (XRF). Select samples were also submitted to, and analyzed by, TestAmerica, Inc. of Nashville, Tennessee for confirmatory analyses. All drilling, traffic control, surveying, utility location, waste handling, and waste disposal activities were performed by S&ME on behalf of NCDOT.

A total of 38 soil samples were collected from two locations (B1-C and EB2-D) at the Site. The initial sampling plan had originally indicated that six locations would be sampled by ARCADIS; however, a change in the S&ME/DOT investigation scope resulted in only two borings (B1-C and EB2-D shown on Figure 2) being available for sampling. At the other DOT boring locations, Cone Penetrometer Testing (CPT) was performed rather than augering and split spoon sampling; therefore, no soil samples were available for screening/sampling at these locations.

At locations B1-C and EB2-D, 6.25-inch outside diameter (OD) hollow stem augers (HSAs) were advanced by S&ME, and select soil depth intervals were collected with 24-inch split spoon samplers. ARCADIS screened and collected soil samples from 0 to 4 feet below ground surface (bgs), or below bottom of concrete for location EB2-D, which was located in the southbound lane of Highway 52. Below 4 feet, S&ME advanced one 24-inch split spoon sampler a depth of 18-inches for every 2.5 feet of HSA advancement. ARCADIS screened and collected soil samples for each 18-inch interval that was collected by S&ME down to the top of the apparent water table. The depth to water table below ground surface varied significantly between the two locations because boring B1-C was located below a Highway 52 overpass, and boring EB2-D was located in the southbound traffic lane of Highway 52, approximately 30 feet higher in elevation. Physical descriptions of the soil samples collected are provided in Table 1.

All soil samples were screened for arsenic and lead in the field using an XRF. Samples from the top 4 feet of each boring were also submitted to the laboratory (TestAmerica) and analyzed for arsenic, lead, and pH. In addition, due to the detection of a potentially elevated arsenic concentration in sample WS-EB2-D (38.5-40) during XRF screening, samples WS-EB2-D (36-37.5), WS-EB2-D (38.5-40), and WS-EB2-D (41-42.5) were also submitted to the laboratory for analysis of arsenic

and lead to verify XRF screening results. Results of XRF screening and laboratory analysis are discussed below.

Summary of Soil Screening and Sampling Data

XRF field-screening and laboratory analytical results were compared to the United States Environmental Protection Agency (USEPA) Region 4 soil screening levels of 27 milligrams per kilogram (mg/kg) and 800 mg/kg, respectively, for arsenic and lead. XRF screening results are provided in Table 2, and laboratory analytical data are provided in Table 3. XRF screening results were below screening levels in all samples except one. Sample WS-EB2-D (38.5-40) had a detected arsenic concentration of 53 ± 5 mg/kg on the XRF. Laboratory analytical results for this sample measured an arsenic concentration of 121 mg/kg.

All other XRF and laboratory results for arsenic and lead were below screening levels. Laboratory analytical data confirmed XRF results for those samples analyzed

Schedule for RSE Activities

ARCADIS is currently preparing an RSE work plan on behalf of ExxonMobil that proposes additional sampling activities at the Site. This work plan will be submitted to USEPA for review and approval in December 2008. Following approval by USEPA, ARCADIS will contact property owners and implement activities to obtain access for sampling. It is anticipated that sampling activities will take place during the first quarter of 2009, pending receipt of required property access.

If you have any questions or concerns, please feel free to call me or Steve Schmidt of ExxonMobil at 703.846.1005.

Sincerely,

ARCADIS

Matthew T. Pelton, P.E.
Senior Project Engineer II

Copies:
David Mattison, NCDENR
Collin Day, NCDENR
Steve Schmidt, ExxonMobil
Buddy Riggs, S&ME
Cyrus Parker, NCDOT
Geoff Germann, ARCADIS

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Tables

TABLE 1
SOIL SAMPLE CHARACTERIZATION LOG
SOIL SCREENING AND SAMPLING EVENT SUMMARY REPORT
VCC-WINSTON-SALEM, WINSTON-SALEM, NORTH CAROLINA

Soil Boring Identification	Depth Interval (ft bgs)	Soil Description/Physical Observations
WS-B1-C	0-0.5	0-2"gravel, silty SAND, dark brown, medium stiff, dry, no odor
	0.5-2	(0.5'-1.5') FILL, black, (1.5'-2') silty CLAY, reddish brown, soft, moist, no odor
	2-4	silty CLAY, reddish brown, mica flakes, medium stiff, moist, no odor
	6-7.5	clayey SILT, reddish brown, trace fine SAND, medium stiff, damp, no odor
	8.5-10	clayey SILT, reddish brown, medium stiff, dry, no odor
	11-12.5	SILT, reddish and light brown mottled, soft, dry, no odor
	13.5-15	SILT, reddish brown, soft, dry, no odor
	16-17.5	clayey SILT, reddish brown, trace quartz and mica, medium stiff, damp, no odor
	18.5-20	clayey SILT, light reddish brown, trace quartz and mica, medium stiff, dry, no odor
	21-22.5	silty SAND, reddish brown, fine grained, trace quartz and mica, medium stiff, dry, no odor
	23.5-25	silty SAND, reddish brown, fine grained, trace quartz and mica, medium stiff, moist, no odor
	26-27.5	silty SAND, reddish brown, fine grained, trace quartz and mica, medium stiff, moist to wet below 26.5', no odor
	28.5-30	silty SAND, reddish and light brown mottled, fine grained, trace CLAY, quartz, and mica, piece of saprolite in bottom of split spoon, no odor
	31-32.5	silty SAND, reddish and light brown mottled, fine to medium grained, trace quartz and mica, pieces of saprolite (<1"), medium stiff, wet, no odor
WS-EB2-D	1-1.5	(0-1') concrete with rebar, (1-1.5') FILL (silty CLAY), light brown, stiff to medium stiff, trace gravel, wet, no odor
	1.5-3	FILL (silty CLAY), light brown, stiff to medium stiff, trace gravel, wet, no odor
	3-5	FILL (silty CLAY), light brown, stiff, trace gravel, moist, no odor
	6-7.5	FILL (clayey SILT), reddish brown, medium stiff, trace mica, damp, no odor
	8.5-10	FILL (clayey SILT), reddish brown, medium stiff, damp, no odor
	11-12.5	FILL (clayey SILT), reddish brown, medium stiff, damp, no odor
	13.5-15	FILL (clayey SILT), reddish brown, medium stiff, damp, no odor
	16-17.5	FILL (clayey SILT), reddish brown, medium stiff, damp, no odor
	18.5-20	FILL (clayey SILT), reddish brown, medium stiff, damp, no odor
	21-22.5	FILL (clayey SILT), reddish brown, medium stiff, damp, no odor
	23.5-25	FILL (silty CLAY), reddish brown, medium stiff, damp, no odor
	26-27.5	FILL (silty CLAY), reddish brown, medium stiff, damp, no odor
	28.5-30	FILL (silty CLAY), reddish brown, medium stiff, damp, no odor
	31-32.5	FILL (silty CLAY), reddish brown, medium stiff, damp, no odor
	33.5-35	(33.5-34.5) FILL (silty CLAY), reddish brown, medium stiff, damp, no odor, (34.5-35) clayey SAND, light brown, fine grained, medium stiff, moist to wet, no odor
	36-37.5	silty CLAY, reddish brown, medium stiff, moist, no odor
	38.5-40	silty CLAY, reddish brown, very stiff, moist, no odor

TABLE 1
SOIL SAMPLE CHARACTERIZATION LOG
SOIL SCREENING AND SAMPLING EVENT SUMMARY REPORT
VCC-WINSTON-SALEM, WINSTON-SALEM, NORTH CAROLINA

Soil Boring Identification	Depth Interval (ft bgs)	Soil Description/Physical Observations
WS-EB2-D	41-42.5	clayey SILT, reddish brown, medium stiff to stiff, moist, no odor
	43.5-45	clayey SILT, reddish brown, medium stiff to stiff, moist, no odor
	46-47.5	clayey SILT, reddish brown, medium stiff to stiff, moist, no odor
	48.5-50	clayey SILT, reddish brown, medium stiff to stiff, some weathered rock fragments, moist, no odor
	51-52.5	clayey SILT, reddish brown, medium stiff, relic rock structure and weathered rock fragments, moist, no odor
	53.5-55	clayey SILT and SAND, reddish brown, fine grained, stiff, relic rock structure and weathered rock fragments, moist, no
	56-57.5	SAND, light brown, fine to medium grained, some SILT and CLAY, relic rock structure, soft/loose, wet, no odor

Notes:
ft bgs - feet below ground surface

TABLE 2
SUMMARY OF SOIL SAMPLING RESULTS - XRF SCREENING DATA
SOIL SCREENING AND SAMPLING EVENT SUMMARY REPORT
VCC-WINSTON-SALEM, WINSTON-SALEM, NORTH CAROLINA

Sample ID	XRF Result	
	Arsenic (mg/kg)	Lead (mg/kg)
WS-B1-C (0-0.5)	ND < 28	290
WS-B1-C (0.5-2)	ND < 16	80
WS-B1-C (2-4)	ND < 12	18
WS-B1-C (6-7.5)	ND < 11	17 +/- 3
WS-B1-C (8.5-10)	ND < 9	12 +/- 3
WS-B1-C (11-12.5)	ND < 9	19 +/- 3
WS-B1-C (13.5-15)	ND < 9	17 +/- 3
WS-B1-C (16-17.5)	ND < 9	17 +/- 3
WS-B1-C (18.5-20)	ND < 9	14 +/- 3
WS-B1-C (21-22.5)	ND < 9	16 +/- 3
WS-B1-C (23.5-25)	ND < 9	11 +/- 3
WS-B1-C (26-27.5)	ND < 9	17 +/- 3
WS-B1-C (28.5-30)	ND < 7	ND < 8
WS-B1-C (31-32.5)	ND < 9	16 +/- 3
WS-EB2-D (1-1.5)	ND < 12	34 +/- 4
WS-EB2-D (1.5-3)	ND < 12	34 +/- 4
WS-EB2-D (3-5)	ND < 9	12 +/- 3
WS-EB2-D (6-7.5)	ND < 9	32 +/- 3
WS-EB2-D (8.5-10)	ND < 9	22 +/- 4
WS-EB2-D (11-12.5)	ND < 13	32 +/- 3
WS-EB2-D (13.5-15)	ND < 9	24 +/- 4
WS-EB2-D (16-17.5)	ND < 11	20 +/- 3
WS-EB2-D (18.5-20)	ND < 11	20 +/- 3
WS-EB2-D (21-22.5)	ND < 11	21 +/- 4
WS-EB2-D (23.5-25)	ND < 13	45 +/- 4
WS-EB2-D (26-27.5)	ND < 12	28 +/- 4
WS-EB2-D (28.5-30)	ND < 14	52 +/- 4
WS-EB2-D (31-32.5)	ND < 12	34 +/- 4
WS-EB2-D (33.5-35)	ND < 11	52 +/- 4
WS-EB2-D (36-37.5)	ND < 16	53 +/- 5
WS-EB2-D (38.5-40)	53 +/- 5	34 +/- 4
WS-EB2-D (41-42.5)	ND < 10	14 +/- 3
WS-EB2-D (43.5-45)	ND < 11	19 +/- 3
WS-EB2-D (46-47.5)	ND < 11	18 +/- 3
WS-EB2-D (48.5-50)	ND < 11	19 +/- 3
WS-EB2-D (51-52.5)	ND < 13	34 +/- 4
WS-EB2-D (53.5-55)	ND < 10	30 +/- 3
WS-EB2-D (56-57.5)	ND < 13	30 +/- 4

TABLE 2
SUMMARY OF SOIL SAMPLING RESULTS - XRF SCREENING DATA
SOIL SCREENING AND SAMPLING EVENT SUMMARY REPORT
VCC-WINSTON-SALEM, WINSTON-SALEM, NORTH CAROLINA

Notes:

mg/kg - milligrams per kilogram

Shaded values exceed USEPA Region 4 screening levels

TABLE 3
SUMMARY OF SOIL SAMPLING RESULTS - LABORATORY ANALYTICAL DATA
SOIL SCREENING AND SAMPLING EVENT SUMMARY REPORT
VCC-WINSTON-SALEM, WINSTON-SALEM, NORTH CAROLINA

Sample ID	Laboratory Result	
	Arsenic (mg/kg)	Lead (mg/kg)
WS-B1-C (0-0.5)	ND [ND]	185 J [163]
WS-B1-C (0.5-2)	ND	57.3
WS-B1-C (2-4)	ND	18.1
WS-EB2-D (1-1.5)	1.54	27 J
WS-EB2-D (1.5-3)	2.19	24.9 J
WS-EB2-D (3-5)	ND	278 J
WS-EB2-D (36-37.5)	ND	37 J
WS-EB2-D (38.5-40)	121	17.6 J
WS-EB2-D (41-42.5)	15.5	16.5 J

Notes:

mg/kg - milligrams per kilogram

Shaded values exceed USEPA Region 4 screening levels

[ ] - blind duplicate sample result

J - the concentration is an estimated value

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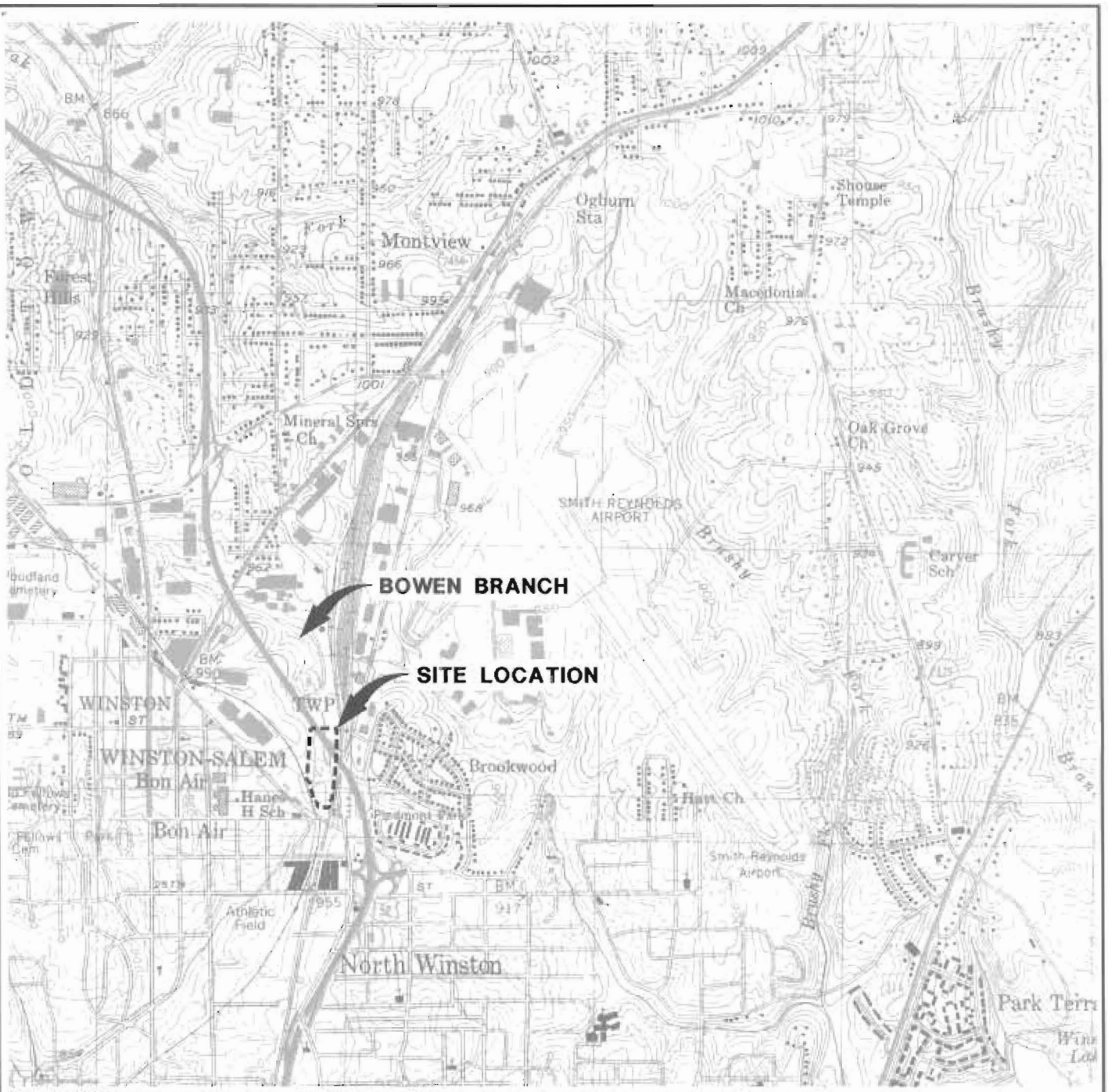
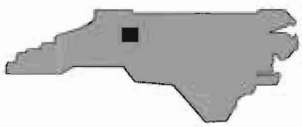
Figures



REFERENCE: USGS 7.5 MIN. QUAD., WALKERTOWN/WINSTON-SALEM EAST, N.C., 1951 PHOTOREVISED 1997

LEGEND:

- - - - - APPROXIMATE LOCATION OF FORMER PLANT FENCE LINE (APPROXIMATE BOUNDARIES OF THE FIRST LOT OF THE ORIGINAL PLACE)



AREA LOCATION

NOTE:

1. BASED ON AVAILABLE CHAIN-OF-TITLE INFORMATION, IT IS ESTIMATED THAT VCC-2 OWNED CLOSE TO 180 ACRES OF PROPERTY IN FORSYTH COUNTY. THE ONLY PORTION OF THIS PROPERTY WHOSE LOCATION COULD NOT BE READILY ASCERTAINED AND MAPPED (WITH A DEGREE OF CERTAINITY) WAS THE "FIRST LOT OF THE ORIGINAL PLACE". THE FORMER VCC-2 PLANT FENCE LINE APPROXIMATES THE BOUNDARY OF THE FIRST LOT OF THE ORIGINAL PLACE.

0 2000' 4000'

APPROXIMATE GRAPHIC SCALE

EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
WINSTON-SALEM, FORSYTH COUNTY, NORTH CAROLINA
SOIL SCREENING AND SAMPLING EVENT SUMMARY REPORT

SITE LOCATION MAP

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FIGURE 1

CITY:ELLIS DIV/GROUP 41 DB:LELLIS LD:(Opt) PIC:(Opt) PM:(Read) TM (Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\CADACTIVITY\85732\002\000004\MAP\REPORT\NONE\85732N01.dwg LAYOUT 1 SAVED 12/10/2008 3:39 PM ACADVER 17.1S (LMS TECH) PAGESETUP — PLOTSTYLETABLE PLTFULL.CTB PLOTTED 12/18/2008 3:28 PM BY ELLIS, LEKOREY
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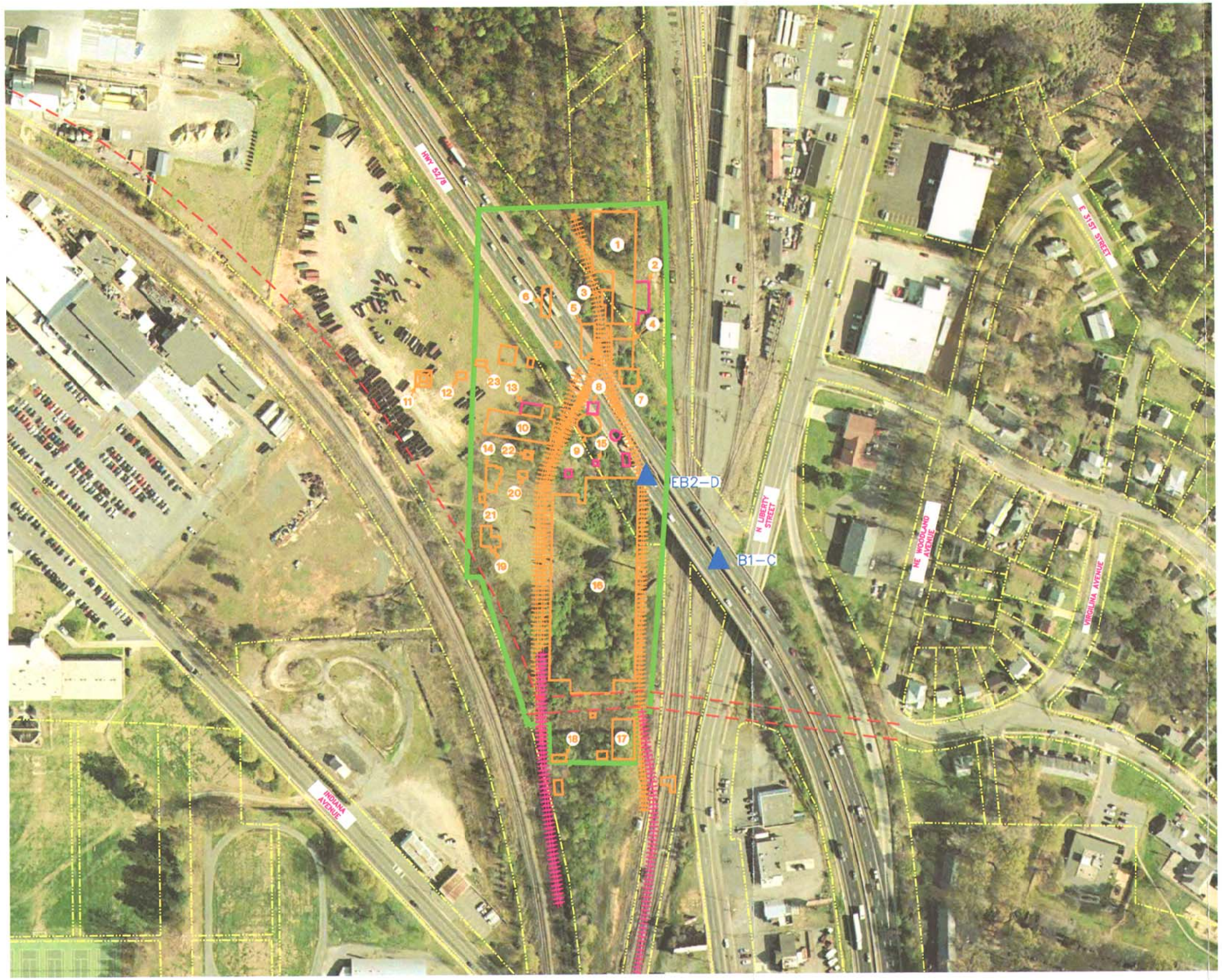
85732X01 85567X11.jpg
85567X12.jpg



0 200' 400'

GRAPHIC SCALE

LEGEND:

- APPROXIMATE LOCATION OF THE FORMER VCC-2 PLANT FENCE LINE (APPROXIMATE BOUNDARIES OF THE FIRST LOT OF THE ORIGINAL PLACE)
- APPROXIMATE LOCATION OF FORMER FERTILIZER PLANT FEATURES (1907)
- APPROXIMATE LOCATION OF FORMER FERTILIZER PLANT FEATURES (1917 ADDITIONS)
- APPROXIMATE LOCATION OF FORMER RAILROAD SIDINGS (1907 & 1917 PLANT FEATURES)
- CURRENT TAX PARCEL BOUNDARIES
- 30' POWER TRANSMISSION RIGHT-OF-WAY
- SOIL BORING LOCATION (ARCADIS, 2008)

NOTES:

1. HISTORICAL SITE FEATURES DIGITIZED FROM 1907 & 1917 SANBORN MAPS.
2. 2002 AERIAL PHOTOGRAPH OF WINSTON - SALEM PROVIDED BY UNITED STATES GEOLOGICAL SURVEY.
3. PARCEL BOUNDARIES DIGITIZED FROM 2004 FORSYTH COUNTY COMPILATION OF RECORDED PLATS.
4. BASED ON AVAILABLE CHAIN-OF-TITLE INFORMATION, IT IS ESTIMATED THAT VCC-2 OWNED CLOSE TO 180 ACRES OF PROPERTY IN FORSYTH COUNTY. THE ONLY PORTION OF THIS PROPERTY WHOSE LOCATION COULD NOT BE READILY ASCERTAINED AND MAPPED (WITH A DEGREE OF CERTAINITY) WAS THE "FIRST LOT OF THE ORIGINAL PLACE". THE FORMER VCC-2 PLANT FENCE LINE APPROXIMATES THE BOUNDARY OF THE FIRST LOT OF THE ORIGINAL PLACE.
5. ALL LOCATIONS ARE APPROXIMATE.

HISTORICAL BUILDING KEY: (#)

1. ACID CHAMBER (BUILT ON AN OLDER ACID CHAMBER, AS SHOWN IN 1900 SANBORN MAP)
2. COMPRESSOR ROOM
3. BURNERS
4. BURNER ROOM (BUILT ON AN OLDER BURNER ROOM, AS SHOWN IN 1900 SANBORN MAP)
5. PYRITES HOUSE
6. NITRE HOUSE
7. BOILER ROOM
8. PUMP HOUSE
9. 100,000 GALLON RESERVOIR
10. TOBACCO STEM WAREHOUSE
11. 54,000 GALLON WATER TOWER
12. STORAGE
13. DRYER
14. OFFICE
15. OIL HOUSE
16. MILL BUILDING (GRINDING, MIXING, STORAGE AND BAGGING OF FERTILIZER)
17. BAG HOUSE
18. LIME HOUSE
19. STORAGE
20. TRANSFORMER HOUSE
21. SCALES
22. 8,000 GALLON TANK
23. CORN CRIB

FORMER STREET NAMES:

INDIANA AVE. (FKA INVERNESS AVE.)
LIBERTY ST. (FKA WALKERTOWN RD.)

EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
WINSTON-SALEM, FORSYTH COUNTY, NORTH CAROLINA
SOIL SCREENING AND SAMPLING EVENT SUMMARY REPORT

PROPOSED SAMPLE LOCATION MAP

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FIGURE 2

CITY:CARY DIV/GROUP:41 DB:LELLIS LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Cary\ACT\B0085732\0002\000041\MAP\REPORTWONE\85732B01.dwg LAYOUT: 2 SAVED: 1/22/2009 10:38 AM ACADVER: 17.1S (LMS TECH) PAGESETUP: — PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 1/22/2009 10:39 AM BY: ELLIS, LEKOREY
XREFS: IMAGES: PROJECTNAME: —
85732X00 85732X00LOW.jpg