Geophysical Survey Report

Buried Metal Search
Dixon Road Site
Kokomo, Indiana

Prepared For:

SESCO Group
1426 West 29th Street
Indianapolis, IN 46208

Prepared By:

Prism GeoImaging, Inc.
11722 Allisonville Rd, Ste 103
Box 144
Fishers, Indiana 46038

Prism Project Number:

00.042.016

Date:

October 2, 2015

Prism GeoImaging

11722 Allisonville Road Ste 103, Box 144
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October 2, 2015

Brad Adams, CHMM #13162
Project Manager
SESCO Group
1426 West 29th Street
Indianapolis, IN 46208

Re: Geophysical Investigation
Buried Metal Survey, Additional Characterization
Dixon Road Site
Kokomo, Indiana
Prism Project No. 00.042.016

Dear Brad,

Prism GeoImaging, Inc. (*Prism*) is pleased to present SESCO with this letter report documenting the geophysical investigation at the above-referenced project site (the "Site").

Introduction

Based on information provided by SESCO it is my understanding that buried drums and other materials of potential concern have been discovered at the Site. There is interest on the part of SESCO to use geophysical techniques to map buried metal debris, which will be used to guide future sampling and characterization activities. To that end, SESCO has contracted Prism to complete a geophysical investigation designed to locate and map subsurface metallic objects. Prism has previously conducted a similar geophysical investigation at the property immediately to the south.

Geophysical Method

High resolution time-domain electromagnetic metal detection (EMD) was selected as the method of investigation for this project. EMD data were collected with an EM61-MK2-HP metal detector manufactured by Geonics Ltd. The HP designation indicates that this instrument has the manufacturer's high-power modification, an optional upgrade that provides an eight-fold increase in the amount of signal received by the instrument, resulting in significant improvements to the signal-to-noise ratio (SNR). Compared to the standard EM61-MK2 (or the older EM61), the HP modification increases the depth of detection by 45%-80% depending on target characteristics. The EM61-MK2-HP consists of two vertically separated 1-meter by 0.5-meter coaxial coils mounted to a wheel assembly. The instrument operator pulls the coil assembly while data is collected nearly continuously. The EM61-MK2-HP is designed to take readings from the bottom coil (designated as channel three) and an additional reading from the top coil. The top and bottom coil readings are then subtracted to selectively filter out the effect from near-surface metal objects (designated as channel difference calculation). The channel three reading is considered to be a measure of all metal both shallow and deep within the detection limits of the instrument, while the channel difference calculation is a measure of predominantly deeper metal only.

EM61 geophysical surveys are commonly used to map the locations of metal objects such as underground storage tanks (USTs), buried drums, relict utilities and infrastructure, former building foundations, construction and industrial debris, and in some situations unexploded ordnance (UXO). EM61 anomalies are generally consistent in character from site to site, independent of the environment. For a relatively large metal object buried at 2 to 4 feet in depth, the magnitude of the channel three anomaly is generally in the upper 100's to near 1,000 millivolts and the channel difference value is generally in the low to mid 100's millivolts. The contrast between the channel three and channel difference values is more subdued for deeper metal objects than for shallow objects. Large metal objects close to the surface (e.g. reinforced concrete, manholes) cause too great of an instrument reading to be filtered out, so the anomalies from such features will remain on the channel difference map.

Data Collection

EM61-MK2 data were collected using a differentially-corrected GPS receiver to record the instrument location in real time. The instrument was towed with an ATV along east-west transects spaced 3-4 feet apart, following the tire tracks from the previous transect (see Figure 1 for data coverage). After the data were collected they were downloaded to a computer for subsequent processing with *Surfer v13* to create the data maps (see Figures 2-3).

Results and Interpretations

The EM61-MK2 channel three map (Figure 2) shows a large number of buried metal anomalies scattered about the Site. Many of these anomalies are filtered out by the channel differencing calculation and so do not appear on the channel difference map (see Figure 3), indicating that these metal objects are shallow or surficial in nature.

Anomalies that remain on the channel difference map (except for objects such as the truck scale) are indicative of the largest and most extensive metal objects in the study area. The channel difference map shows large areas of buried metal anomalies at the Site, these are interpreted as possible systematic burial areas. The boundaries of these areas are denoted on Figure 3 and summarized on Figure 4. If you would like further characterization of these anomalous areas I recommend test pit excavations.

Results Summary

- The data maps indicate that there is a large amount of buried metal at this Site
- The largest and most extensive anomalous areas are denoted as possible systematic burial locations of deeper metal material
- Test pit excavations are recommended if further characterization of the anomalous areas is desired

Limitations

This geophysical survey was intended to locate buried ferrous metal objects. Anomalies of potential interest that are dissimilar to such targets may have gone undetected or uninterpreted by this survey. Areas obscured by features such as buildings and reinforced concrete may conceal additional anomalies of interest that are unknown at this time.

The enclosed maps are considered to be of sufficient accuracy and precision to provide you with positional data for further investigation activities. However the Site features presented on the base maps are for informational purposes only and no representation is made as to the accuracy or completeness of this information. The enclosed maps, while they may indicate locations of utilities, are not to be taken as a map of utility locations and are not a substitute for a private utility locate.

Closing

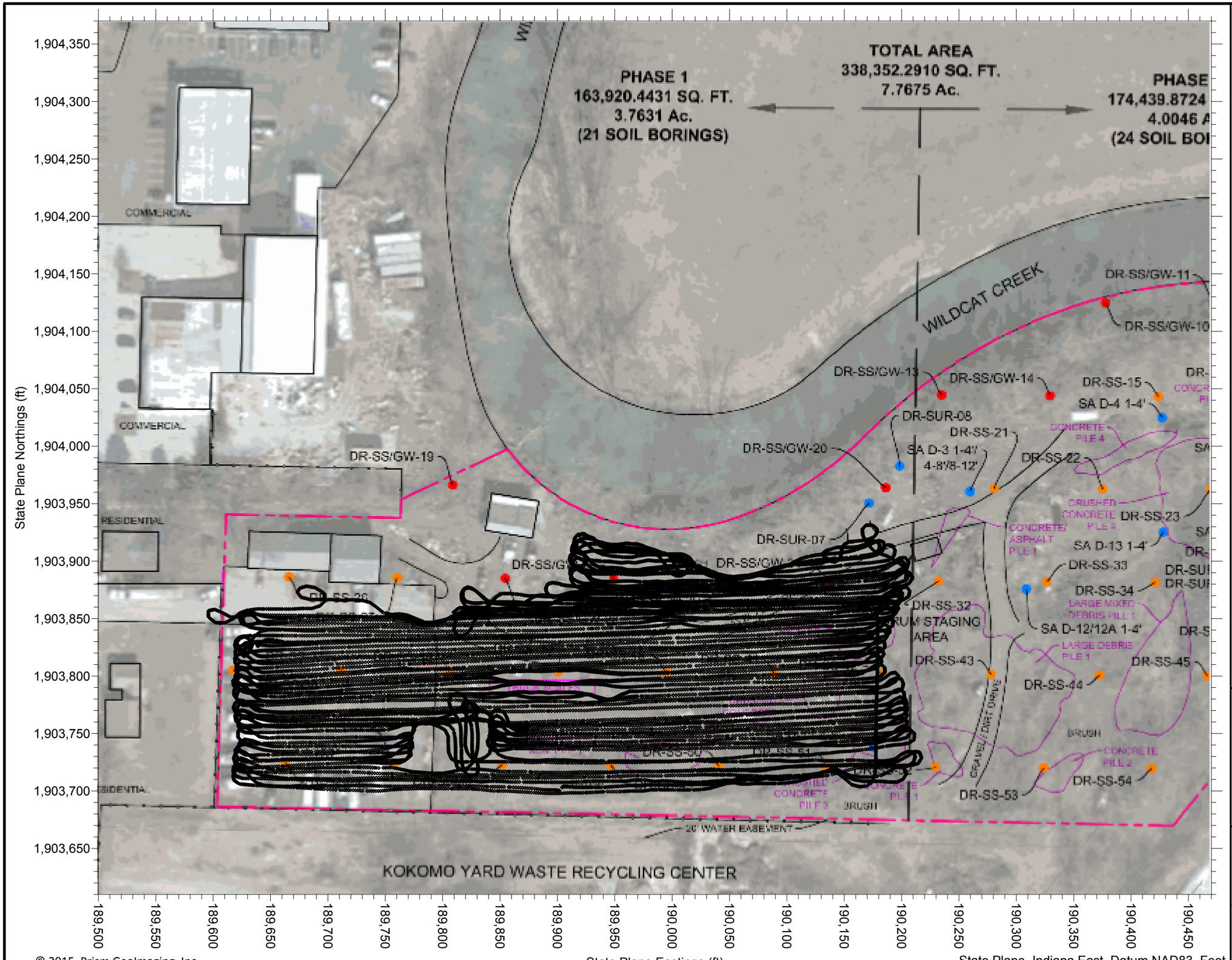
Prism Geoimaging, Inc. appreciates the opportunity to provide SESCO with this geophysical survey, and I look forward to working with you on future projects. If you should have any questions regarding this project, please do not hesitate to contact me.

Sincerely,

Prism GeoImaging, Inc.

John Vanderlaan, LPG, PG
President / Geophysicist

Figure 1.	Site Layout and Data Coverage
Figure 2.	EM61-MK2 Channel Three Map
Figure 3.	EM61-MK2 Difference Map
Figure 4.	Results Summary Map



LEGEND

N

EM61-MK2 Data Point Locations

Scale in Feet

0 25 50 75 100 125 150 175

1" = 80'

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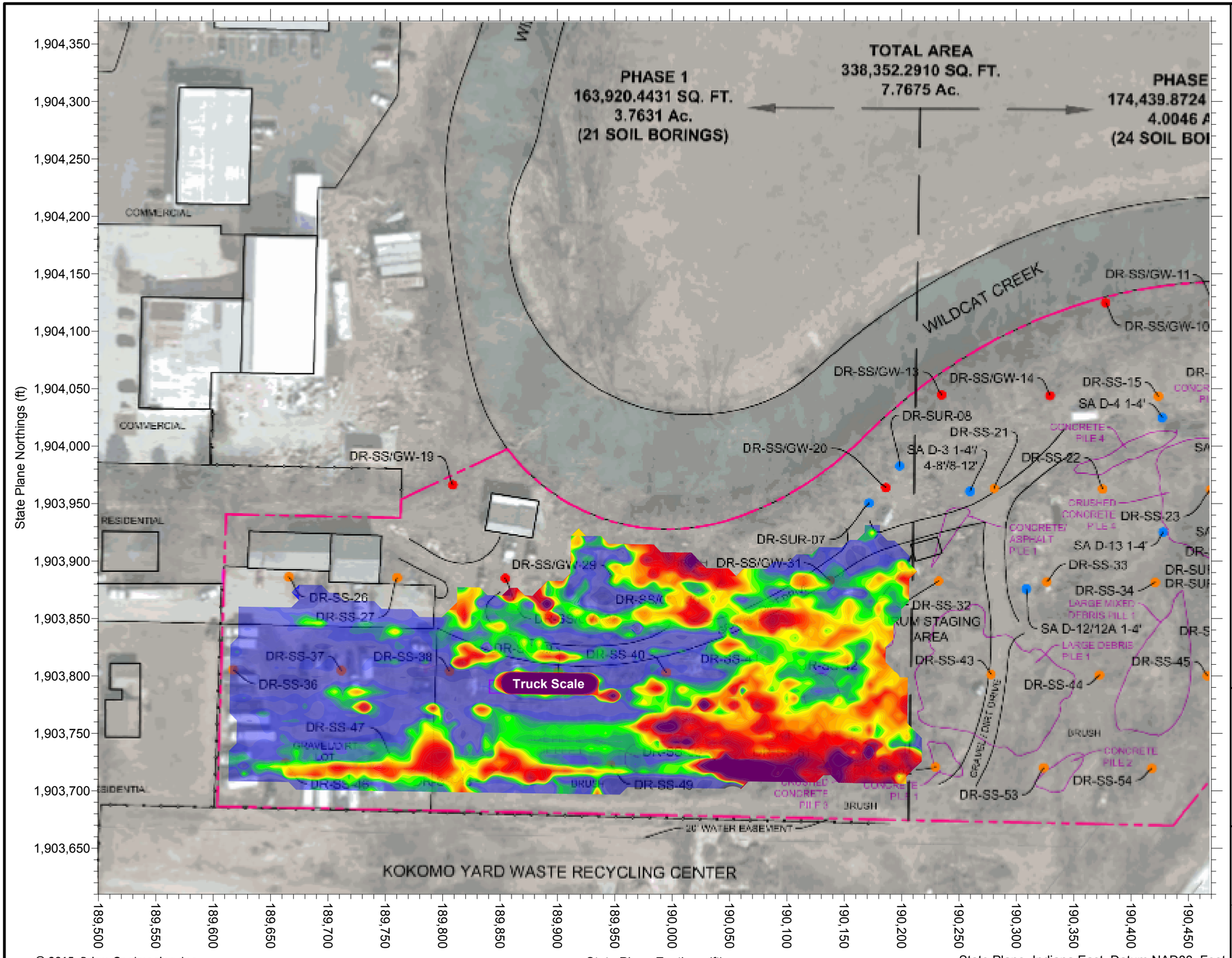
Figure 1

Site Layout And Data Coverage

Dixon Road Site
Kokomo, Indiana
Prism Project No. 00-042-016

State Plane, Indiana East, Datum NAD83, Feet



LEGEND

Ferrous Metal

Background (non-metallic) response

Instrument Response (mV)

1500
1160
1020
940
840
760
680
580
500
420
360
300
240
180
150
110
80
0
-80
-180
-320
-400

N

Scale in Feet

0 25 50 75 100 125 150 175

1" = 80'

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Figure 2

EM1-MK2 Channel Three Map
All Metal Within Detection Limits

Dixon Road Site
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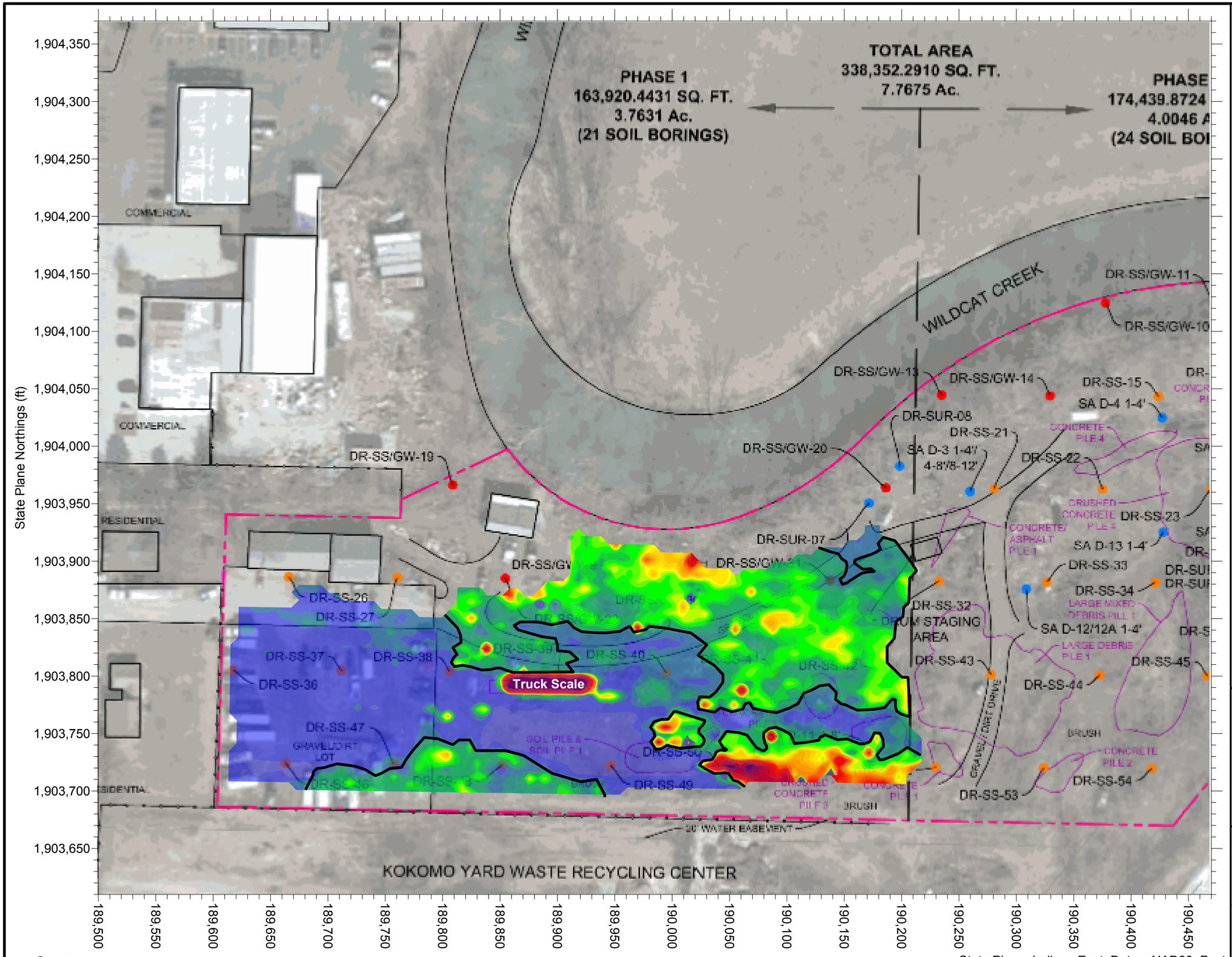

LEGEND

Ferrous Metal

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180
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80
0
-80
-180
-320
-400

Background (non-metallic) response

N

Deeper Metal Anomaly
-possible systematic burial area

Scale in Feet

0 25 50 75 100 125 150 175

1" = 80'

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Figure 3

EM61-MK2 Difference Map
Predominantly Deeper Metal Only

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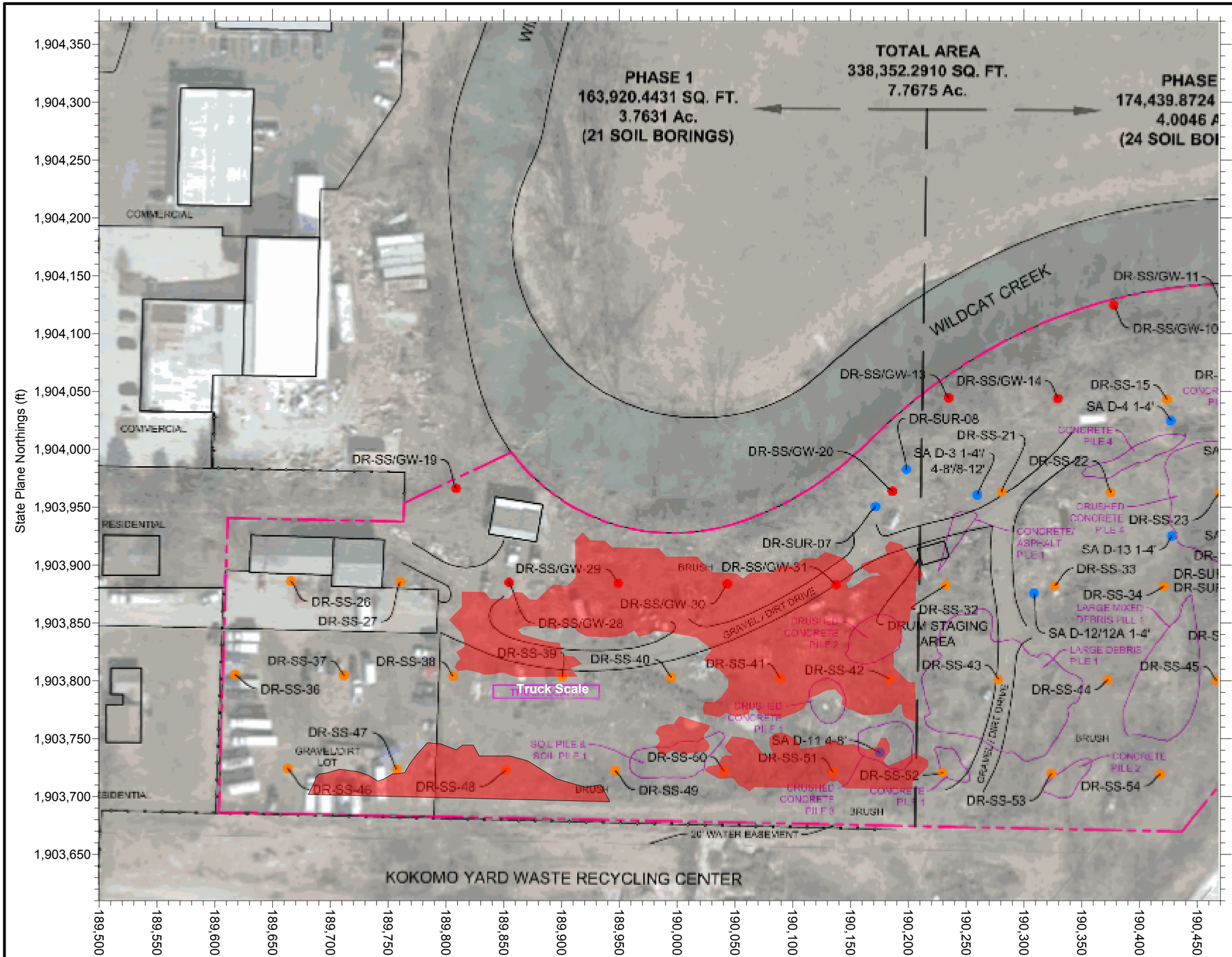

LEGEND

Deeper Metal Anomaly
-possible systematic burial area

N

Scale in Feet

0 25 50 75 100 125 150 175

1" = 80'

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Figure 4

Results Summary Map

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