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From:
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Date:
July 19, 2012

ARCADIS Project No.:
B0064479, 80, 81

Subject:
RFI Phase 2, Characterization Stage Scope of Work
Racer Lansing, Plants 2, 3 and 6

Introduction

The following technical memorandum summarizes the Investigation Areas at the RACER Lansing Site requiring additional investigation. Areas requiring additional investigation were determined according to the guidelines outlined in the RCRA Facility Investigation (RFI), Phase 2 Work Plan approved by the MDEQ in May 2012. For each parameter group (VOCs, SVOCs, PCBs, and metals), results from an Investigation Area were evaluated simultaneously with data from surrounding Areas. If there were no exceedances noted at the assessment borings then no additional work is proposed. However, if assessment borings contained exceedances then the results were compared to surrounding Investigation Areas to determine if the impacts are defined. If there are no surrounding Areas or borings available then additional borings are required to complete the source characterization. If an assessment-phase boring indicated results greater than 100 times the soil or groundwater criteria, then additional step-out borings are proposed as a contingency. Soil and groundwater VOC samples from areas with contingency borings will be run at an expedited turnaround time.

A total of 14 Investigation Areas require additional borings. Metals in soil and groundwater, and groundwater VOC and SVOC impacts will be addressed with a site-wide approach. Additional borings will be placed for these exceedances considering the site-wide results as a whole. Metal exceedances in particular are widespread across all three Plants and the goal of this investigation will be to define metals to (and if necessary, beyond) the property boundaries.

The attached Table 1 (Matrix) includes a summary of the soil and groundwater results by Area, and additional proposed work, if appropriate. Proposed characterization boring locations are provided on Figures 1 and 2. Figure 3 includes a site-wide perspective of the work proposed and also includes complete boring and well location names. The enclosed DVD includes the following:

- PDF of Assessment Phase Milestone Meeting slides
- Excel and PDF versions of analytical tables for soil and groundwater
- 3D data summaries (EVS models) including:
 - Plant 2 LIF/LNAPL/PCB/VOC results (Area 5-2)
 - Plant 3 LIF/LNAPL/VOC results (Area 17)
 - Site-wide analytical results - VOCs, PCBs & SVOCs
 - Metals results – total metals, risk review
 - Metals results – Individual metals
 - Hexavalent Chromium (Area 14)

Areas Requiring Additional Investigation

Area 1

Groundwater results indicate VOCs in groundwater, SVOCs in soil and groundwater, and metals in soil and groundwater are above criteria. An additional boring is needed to the north to complete the characterization.

Area 2

Soil results indicate VOCs in soil and metals in soil and groundwater are above criteria in the assessment phase borings. Additional borings are needed to delineate soil impacts to a depth of 30 feet and define potential groundwater impacts associated with the shallower soil with VOC impacts. The concentration of tetrachloroethene (PCE) in soil at this location is greater than 100X the Drinking Water Protection Criteria necessitating the addition of contingency borings beyond the initial step outs.

Area 5-3

Soil and groundwater results indicate VOCs in soil, SVOCs in soil and groundwater, and metals in soil and groundwater are above criteria in the assessment phase borings. Additional borings are needed to delineate soil VOCs impacts to the south and SVOCs impacts to the southeast.

Area 5-7

Soil and groundwater results indicate VOCs in soil and groundwater, SVOCs in groundwater, and metals in soil and groundwater are above criteria in the assessment phase borings. In particular, additional borings are needed to define the extent of TCE in soil, which was detected at greater than 100X the Drinking Water Protection Criteria in the northern portion of the area necessitating the addition of contingency borings beyond the initial step outs. Additional work will include an off-site boring to define the extent of vinyl chloride in perched groundwater adjacent to the property boundary.

Area 7

Soil and groundwater results indicate VOCs in soil and groundwater, SVOCs in soil and groundwater, and metals in soil and groundwater are above criteria in the assessment phase borings. Additional work will include one addition of a soil boring to a depth of 40 feet with attempted groundwater samples collection at a similar depth to the SVOC exceedance, and off-site borings to the south to define metals and SVOCs in groundwater.

Area 9

Soil and groundwater results indicate VOCs in soil and groundwater and SVOCs in soil are above criteria in the assessment phase borings. Additional work will include one step-out boring north of Area 9 to a depth of 30' to define VOCs in soil.

Area 10

Soil and groundwater results indicate VOCs in groundwater, SVOCs in soil, and metals in groundwater are above criteria in the assessment phase borings. Additional work will include three soil borings to a depth of 5 feet to delineate the extent of SVOCs in soil.

Area 11

Soil and groundwater results indicate VOCs in soil and groundwater, SVOCs in soil, and metals in soil and groundwater are above criteria in the assessment phase borings. Additional work will include 3 additional borings to define SVOC soil impacts on the western part of the area and 4 additional borings to evaluate VOC impacts in perched water in the northeast portion of the area. Although the VOCs in this area do not exceed 100X criteria, contingency borings were planned due to a lack of surrounding data.

Area 15

Soil and groundwater results indicate SVOCs in soil and groundwater, and metals in soil and groundwater are above criteria in the assessment phase borings. The current results indicate delineation is needed for

SVOCs in shallow soils to the west and in perched water to the south and east. Additional work will include three additional borings to collect shallow soil and perched water (if possible) for SVOCs.

Area 16

Soil and groundwater results indicate SVOCs in soil, and metals in soil and groundwater are above criteria in the assessment phase borings. Additional work will include three shallow borings to collect soil for SVOCs.

Area 18

Soil and groundwater results indicate SVOCs in soil, and metals in soil and groundwater are above criteria in the assessment phase borings. The results indicate SVOCs in near-surface soils are not defined to the west or vertically in the central portion of Area 18, and SVOCs in the northern portion are not defined to the north, west, and vertically. Additional work will include four additional borings to collect soil for SVOCs.

Area 19

Soil and groundwater results indicate SVOCs in soil, and metals in soil and groundwater are above criteria in the assessment phase borings. The current results indicate high concentrations of metals on the west side of Area 19 are not defined to the west, and SVOCs are not defined to the south. Additional work will include two borings to the south and west to collect soil for SVOCs and metals.

Area 20

Soil and groundwater results indicate SVOCs in soil, and metals in soil are above criteria in the assessment phase borings. The current results indicate SVOCs are not defined in near-surface soils on the north end of Area 20. Additional work will include three additional borings to collect soil for SVOCs and metals.

Area 21

Current soil and groundwater results indicate metals in soil are above criteria in the assessment phase borings. Additional work will include one additional boring to collect soil for metals.

Site-wide Metals










Current soil and groundwater results indicate metals are above criteria in the assessment phase borings. Additional borings are proposed to delineate metals in soil and groundwater up to or beyond the property

boundary. Specifically these areas include borings property boundary or off-site borings adjacent to Areas 1, 2, 4, 7, 5-8, 5-7, 11, 17, and 18.






Site-wide Groundwater

The primary data gaps in the site-wide groundwater data are 1) the extent of 1,4-dioxane above criteria on the southern portion of Plant 2, 2) the extent of vinyl chloride in overburden at the eastern property boundary on Plant 6, and 3) bedrock groundwater in Area 5-2. Additional HPT/VAP borings and two bedrock monitoring wells are proposed to address these data gaps.

LEGEND

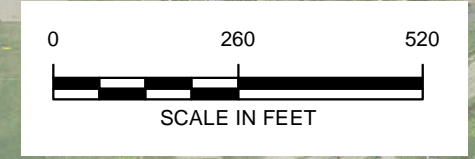
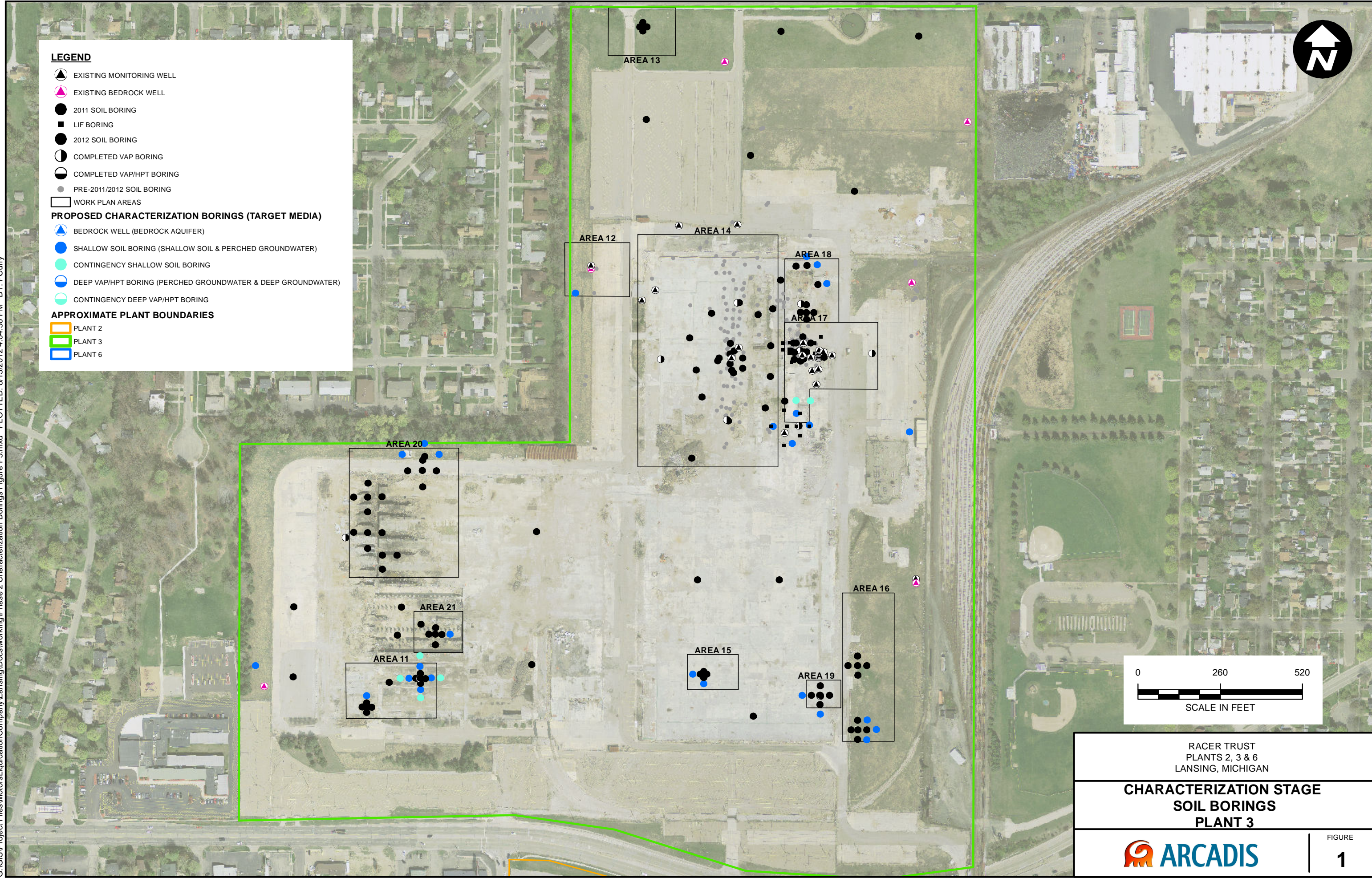
-  EXISTING MONITORING WELL
-  EXISTING BEDROCK WELL
-  2011 SOIL BORING
-  LIF BORING
-  2012 SOIL BORING
-  COMPLETED VAP BORING
-  COMPLETED VAP/HPT BORING
-  PRE-2011/2012 SOIL BORING
-  WORK PLAN AREAS

PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)

-  BEDROCK WELL (BEDROCK AQUIFER)
-  SHALLOW SOIL BORING (SHALLOW SOIL & PERCHED GROUNDWATER)
-  CONTINGENCY SHALLOW SOIL BORING
-  DEEP VAP/HPT BORING (PERCHED GROUNDWATER & DEEP GROUNDWATER)
-  CONTINGENCY DEEP VAP/HPT BORING

APPROXIMATE PLANT BOUNDARIES

-  PLANT 2
-  PLANT 3
-  PLANT 6



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PLANTS 2, 3 & 6
LANSING, MICHIGAN

**CHARACTERIZATION STAGE
SOIL BORINGS
PLANT 3**

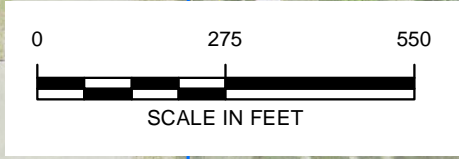
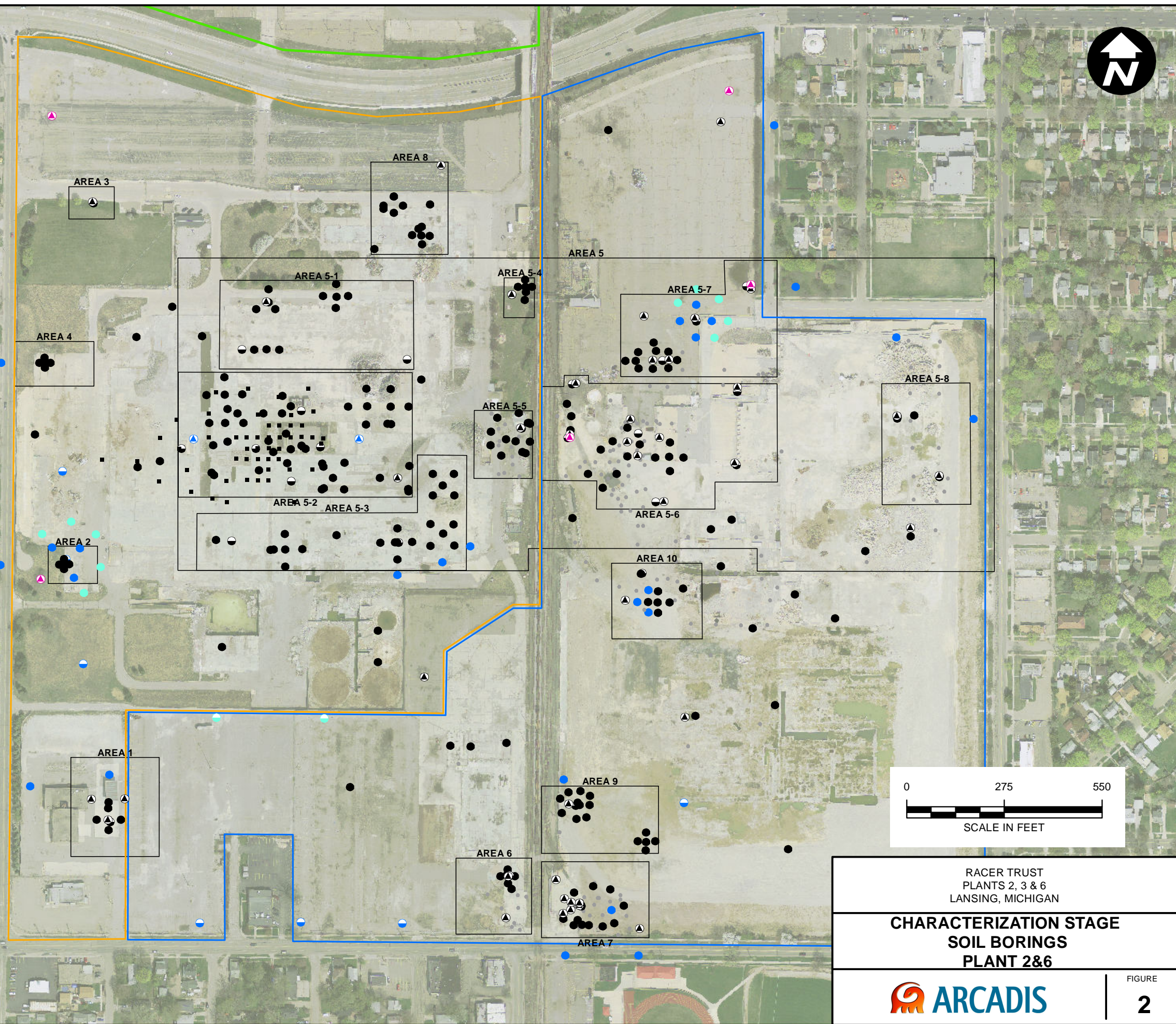


FIGURE
1

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LEGEND

- ▲ EXISTING MONITORING WELL
- ▲ EXISTING BEDROCK WELL
- 2011 SOIL BORING
- LIF BORING
- 2012 SOIL BORING
- COMPLETED VAP BORING
- COMPLETED VAP/HPT BORING
- PRE-2011/2012 SOIL BORING
- WORK PLAN AREAS
- PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)**
- ▲ BEDROCK WELL (BEDROCK AQUIFER)
- SHALLOW SOIL BORING (SHALLOW SOIL & PERCHED GROUNDWATER)
- CONTINGENCY SHALLOW SOIL BORING
- DEEP VAP/HPT BORING (PERCHED GROUNDWATER & DEEP GROUNDWATER)
- CONTINGENCY DEEP VAP/HPT BORING
- APPROXIMATE PLANT BOUNDARIES**
- ▭ PLANT 2
- ▭ PLANT 3
- ▭ PLANT 6



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PLANTS 2, 3 & 6
LANSING, MICHIGAN

**CHARACTERIZATION STAGE
SOIL BORINGS
PLANT 2&6**


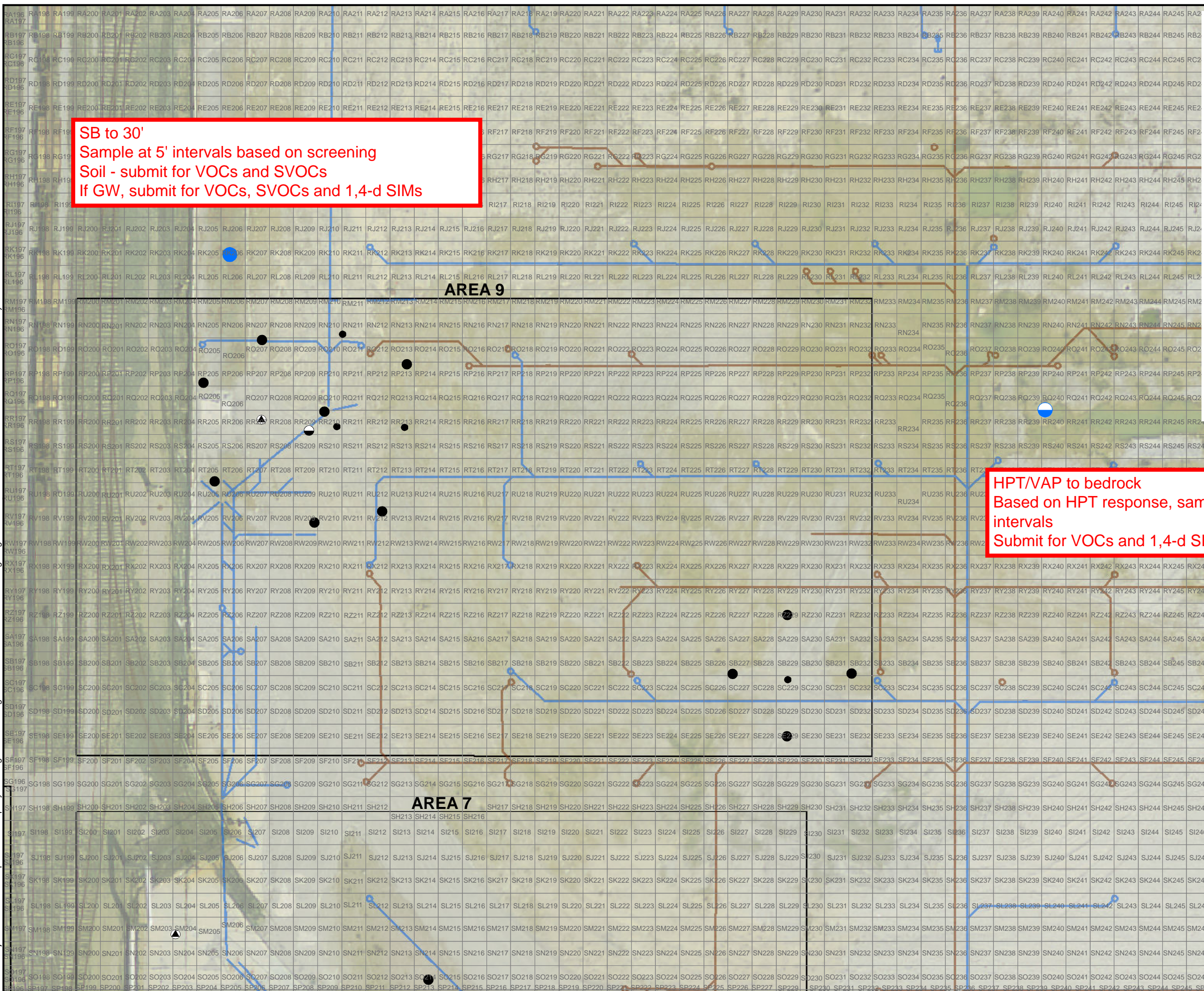


FIGURE
2

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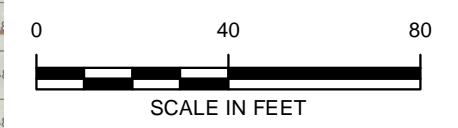


LEGEND

- ▲ EXISTING MONITORING WELL
- ▲ EXISTING BEDROCK WELL
- 2011 SOIL BORING
- LIF BORING
- 2012 SOIL BORING
- COMPLETED VAP BORING
- COMPLETED VAP/HPT BORING
- PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)**
- ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
- SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
- CONTINGENCY SHALLOW SOIL BORING
- DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
- CONTINGENCY DEEP VAP/HPT BORING
- WORK PLAN AREAS
- PLANT 2
- PLANT 3
- PLANT 6
- NATURAL GAS
- ELECTRIC
- SANITARY
- STORM
- WATER
- WASTE OIL

SB to 30'
Sample at 5' intervals based on screening
Soil - submit for VOCs and SVOCs
If GW, submit for VOCs, SVOCs and 1,4-d SIMs

HPT/VAP to bedrock
Based on HPT response, sample GW at nominal 10'
intervals
Submit for VOCs and 1,4-d SIMs

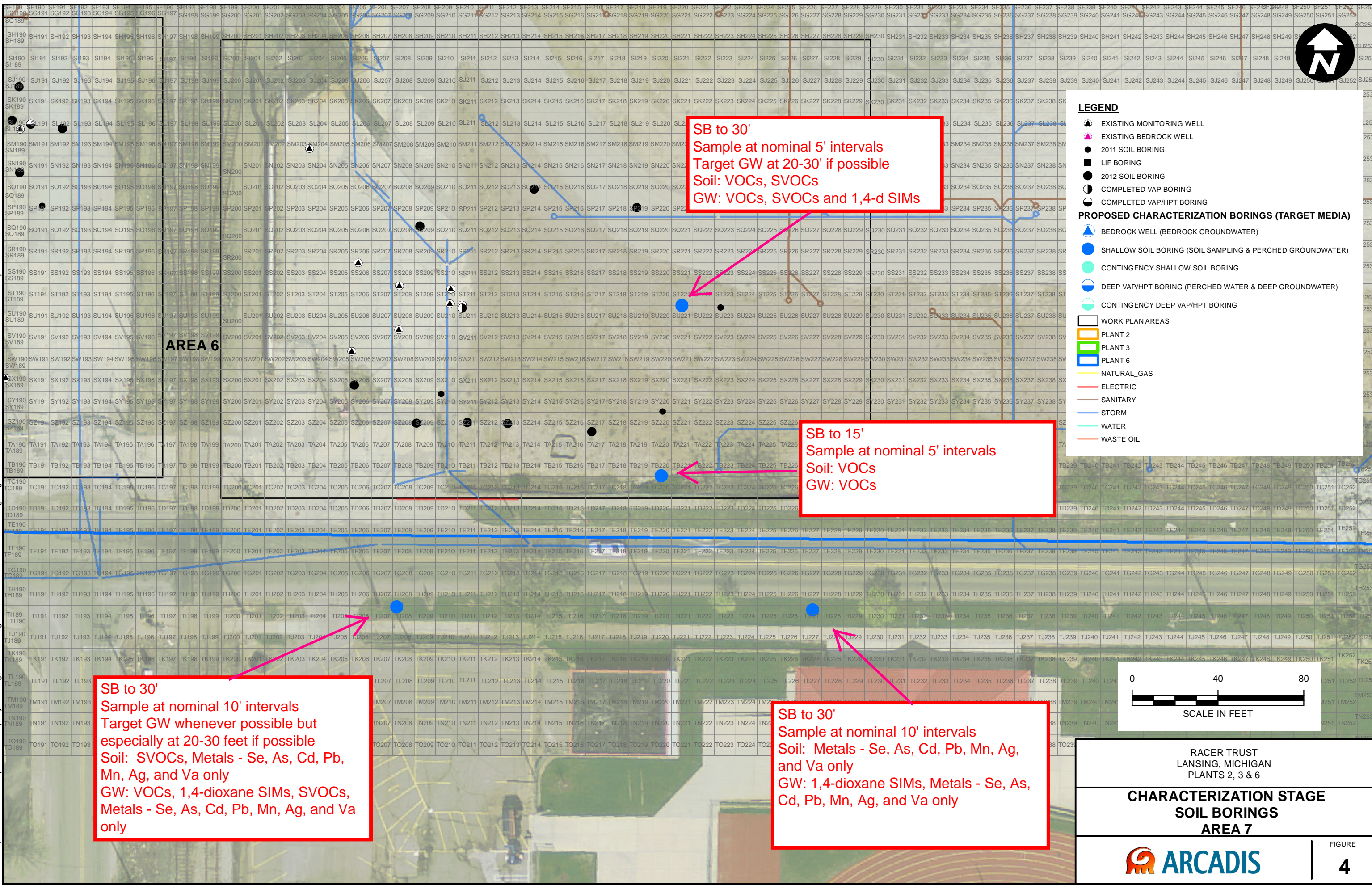


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 PLANTS 2, 3 & 6

**CHARACTERIZATION STAGE
 SOIL BORINGS
 AREA 9**

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FIGURE
3



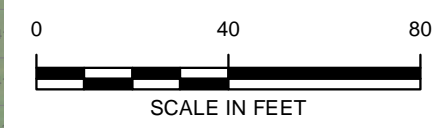
SB to 30'
Sample at nominal 5' intervals
Target GW at 20-30' if possible
Soil: VOCs, SVOCs
GW: VOCs, SVOCs and 1,4-d SIMs

SB to 15'
Sample at nominal 5' intervals
Soil: VOCs
GW: VOCs

SB to 30'
Sample at nominal 10' intervals
Target GW whenever possible but especially at 20-30 feet if possible
Soil: SVOCs, Metals - Se, As, Cd, Pb, Mn, Ag, and Va only
GW: VOCs, 1,4-dioxane SIMs, SVOCs, Metals - Se, As, Cd, Pb, Mn, Ag, and Va only

SB to 30'
Sample at nominal 10' intervals
Soil: Metals - Se, As, Cd, Pb, Mn, Ag, and Va only
GW: 1,4-dioxane SIMs, Metals - Se, As, Cd, Pb, Mn, Ag, and Va only

- LEGEND**
- ▲ EXISTING MONITORING WELL
 - ▲ EXISTING BEDROCK WELL
 - 2011 SOIL BORING
 - 2012 SOIL BORING
 - COMPLETED VAP BORING
 - COMPLETED VAP/HPT BORING
- PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)**
- ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
 - SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
 - CONTINGENCY SHALLOW SOIL BORING
 - DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
 - CONTINGENCY DEEP VAP/HPT BORING
- WORK PLAN AREAS**
- PLANT 2
 - PLANT 3
 - PLANT 6
- UTILITIES**
- NATURAL GAS
 - ELECTRIC
 - SANITARY
 - STORM
 - WATER
 - WASTE OIL



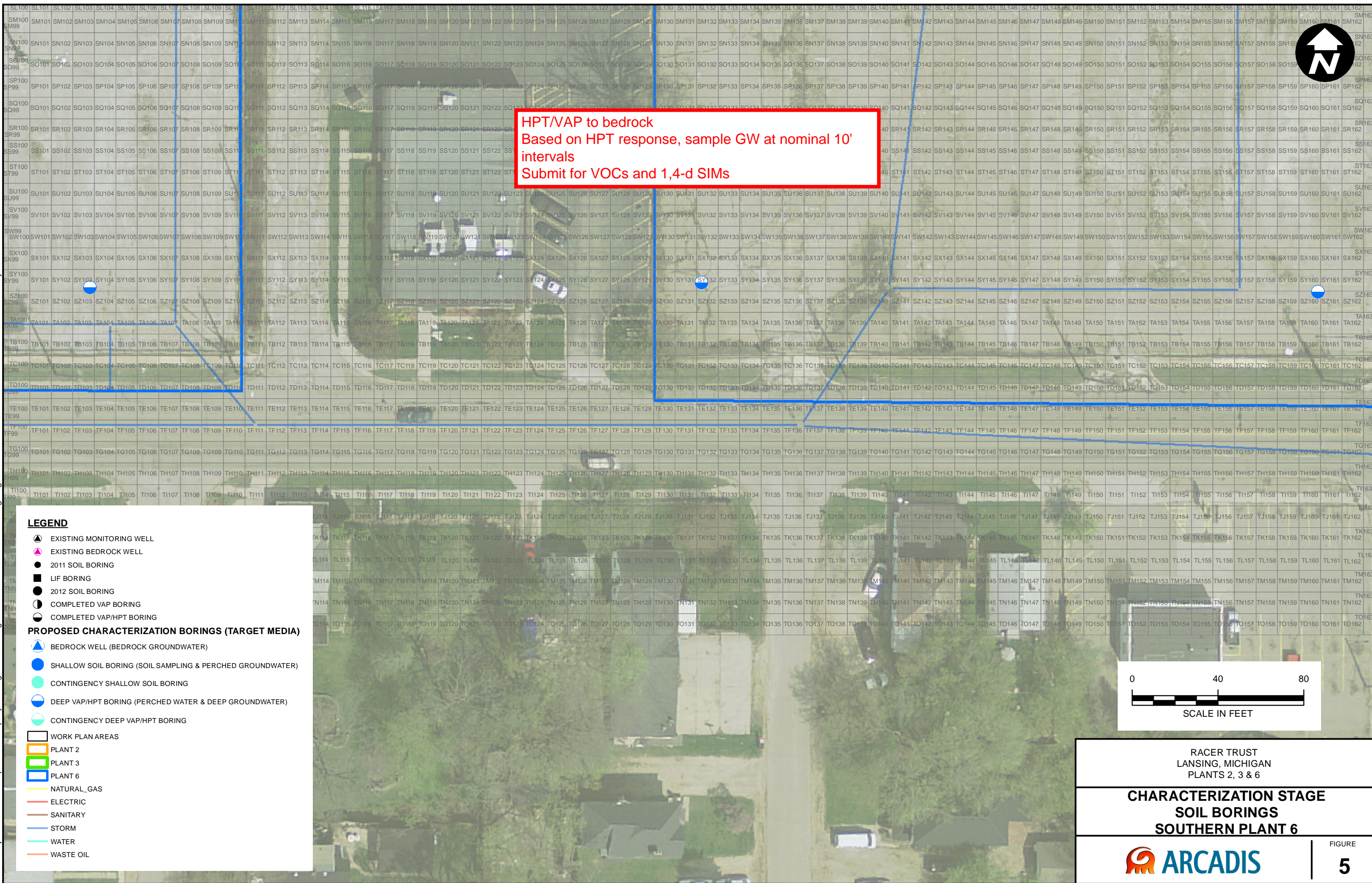
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PLANTS 2, 3 & 6

**CHARACTERIZATION STAGE
SOIL BORINGS
AREA 7**

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FIGURE
4

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HPT/VAP to bedrock
Based on HPT response, sample GW at nominal 10'
intervals
Submit for VOCs and 1,4-d SIMs

- LEGEND**
- ▲ EXISTING MONITORING WELL
 - ▲ EXISTING BEDROCK WELL
 - 2011 SOIL BORING
 - LIF BORING
 - 2012 SOIL BORING
 - COMPLETED VAP BORING
 - COMPLETED VAP/HPT BORING
 - PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)**
 - ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
 - SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
 - CONTINGENCY SHALLOW SOIL BORING
 - DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
 - CONTINGENCY DEEP VAP/HPT BORING
 - ▭ WORK PLAN AREAS
 - ▭ PLANT 2
 - ▭ PLANT 3
 - ▭ PLANT 6
 - NATURAL GAS
 - ELECTRIC
 - SANITARY
 - STORM
 - WATER
 - WASTE OIL

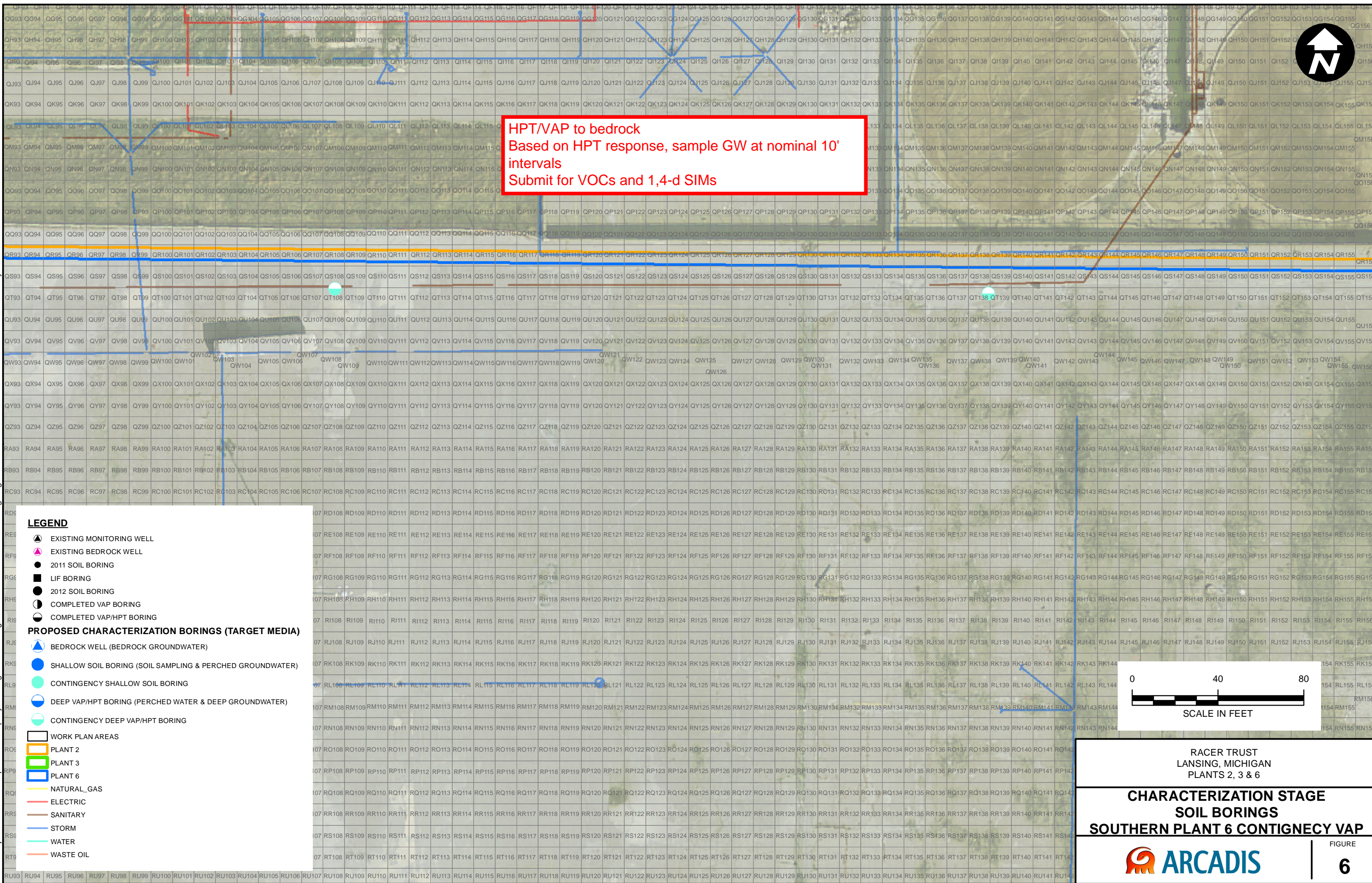
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LANSING, MICHIGAN
PLANTS 2, 3 & 6

**CHARACTERIZATION STAGE
SOIL BORINGS
SOUTHERN PLANT 6**

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FIGURE
5

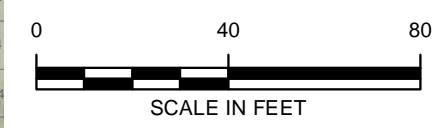
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HPT/VAP to bedrock
Based on HPT response, sample GW at nominal 10'
intervals
Submit for VOCs and 1,4-d SIMs

LEGEND

- ▲ EXISTING MONITORING WELL
- ▲ EXISTING BEDROCK WELL
- 2011 SOIL BORING
- LIF BORING
- 2012 SOIL BORING
- COMPLETED VAP BORING
- COMPLETED VAP/HPT BORING
- PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)**
- ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
- SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
- CONTINGENCY SHALLOW SOIL BORING
- DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
- CONTINGENCY DEEP VAP/HPT BORING
- ▭ WORK PLAN AREAS
- ▭ PLANT 2
- ▭ PLANT 3
- ▭ PLANT 6
- NATURAL GAS
- ELECTRIC
- SANITARY
- STORM
- WATER
- WASTE OIL

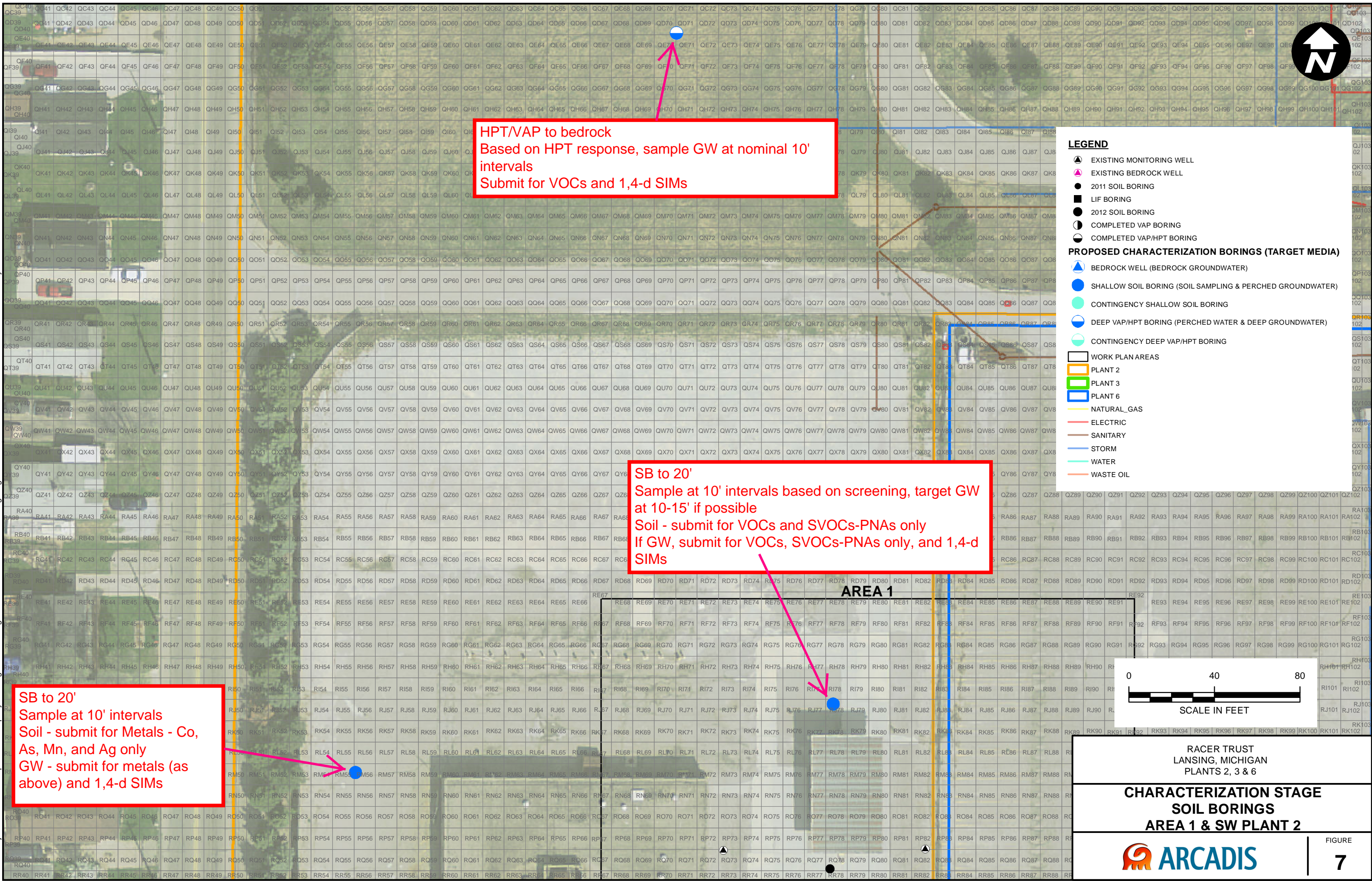


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LANSING, MICHIGAN
PLANTS 2, 3 & 6

**CHARACTERIZATION STAGE
SOIL BORINGS
SOUTHERN PLANT 6 CONTINGENCY VAP**

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FIGURE
6



HPT/VAP to bedrock
 Based on HPT response, sample GW at nominal 10'
 intervals
 Submit for VOCs and 1,4-d SIMs

SB to 20'
 Sample at 10' intervals based on screening, target GW
 at 10-15' if possible
 Soil - submit for VOCs and SVOCs-PNAs only
 If GW, submit for VOCs, SVOCs-PNAs only, and 1,4-d
 SIMs

SB to 20'
 Sample at 10' intervals
 Soil - submit for Metals - Co,
 As, Mn, and Ag only
 GW - submit for metals (as
 above) and 1,4-d SIMs

LEGEND

- ▲ EXISTING MONITORING WELL
- ▲ EXISTING BEDROCK WELL
- 2011 SOIL BORING
- LIF BORING
- 2012 SOIL BORING
- COMPLETED VAP BORING
- COMPLETED VAP/HPT BORING

PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)

- ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
- SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
- CONTINGENCY SHALLOW SOIL BORING
- DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
- CONTINGENCY DEEP VAP/HPT BORING

WORK PLAN AREAS

- PLANT 2
- PLANT 3
- PLANT 6

UTILITIES

- NATURAL GAS
- ELECTRIC
- SANITARY
- STORM
- WATER
- WASTE OIL

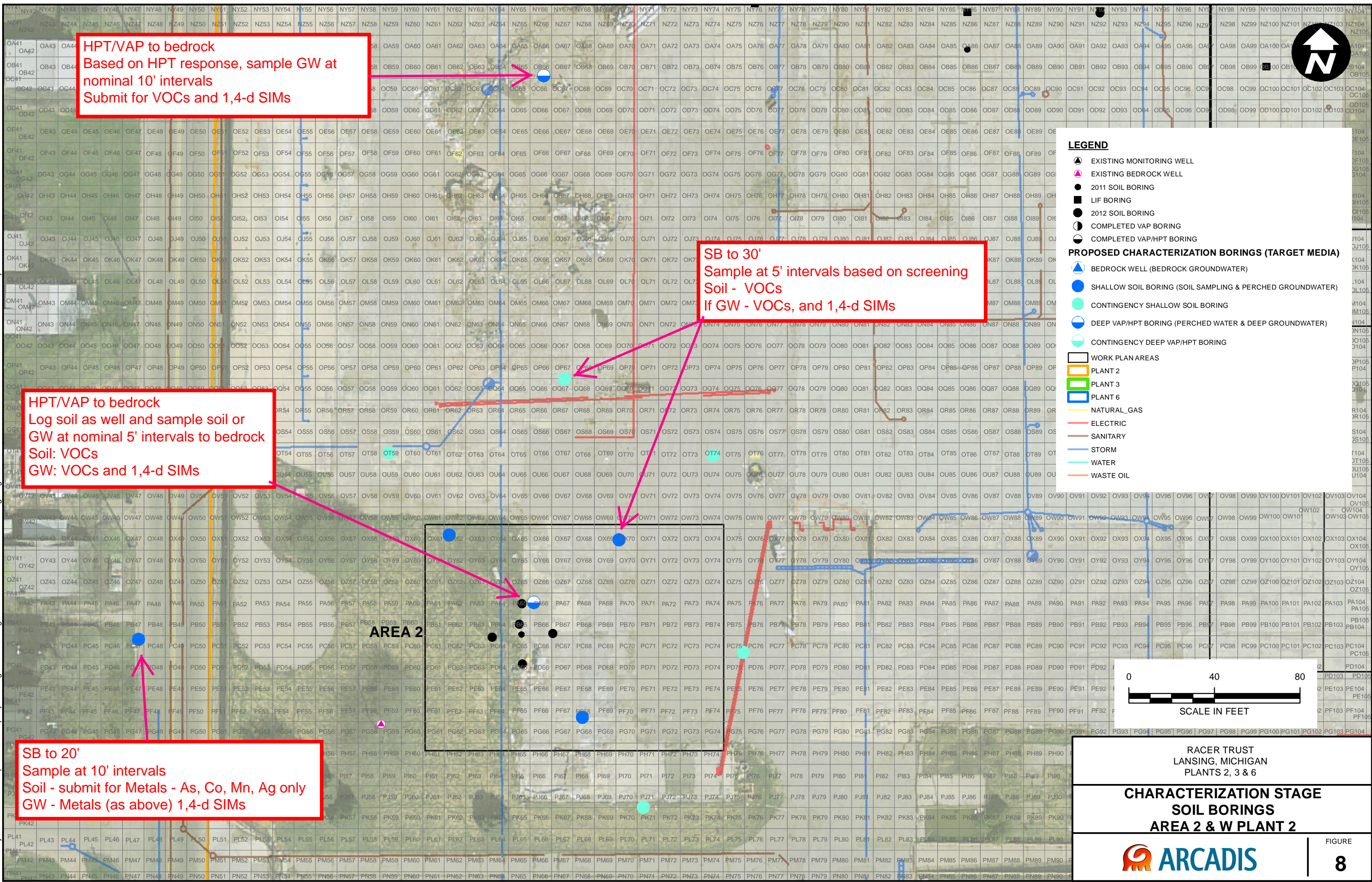


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 PLANTS 2, 3 & 6

**CHARACTERIZATION STAGE
 SOIL BORINGS
 AREA 1 & SW PLANT 2**

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FIGURE
7



HPT/VAP to bedrock
 Based on HPT response, sample GW at nominal 10' intervals
 Submit for VOCs and 1,4-d SIMs

SB to 30'
 Sample at 5' intervals based on screening Soil - VOCs
 If GW - VOCs, and 1,4-d SIMs

HPT/VAP to bedrock
 Log soil as well and sample soil or GW at nominal 5' intervals to bedrock
 Soil: VOCs
 GW: VOCs and 1,4-d SIMs

SB to 20'
 Sample at 10' intervals
 Soil - submit for Metals - As, Co, Mn, Ag only
 GW - Metals (as above) 1,4-d SIMs

LEGEND

- ▲ EXISTING MONITORING WELL
- ▲ EXISTING BEDROCK WELL
- 2011 SOIL BORING
- LIF BORING
- 2012 SOIL BORING
- COMPLETED VAP BORING
- COMPLETED VAP/HPT BORING

PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)

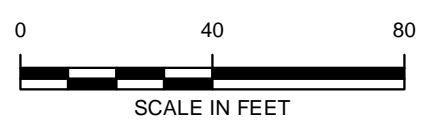
- ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
- SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
- CONTINGENCY SHALLOW SOIL BORING
- DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
- CONTINGENCY DEEP VAP/HPT BORING

WORK PLAN AREAS

- PLANT 2
- PLANT 3
- PLANT 6

UTILITIES

- NATURAL GAS
- ELECTRIC
- SANITARY
- STORM
- WATER
- WASTE OIL

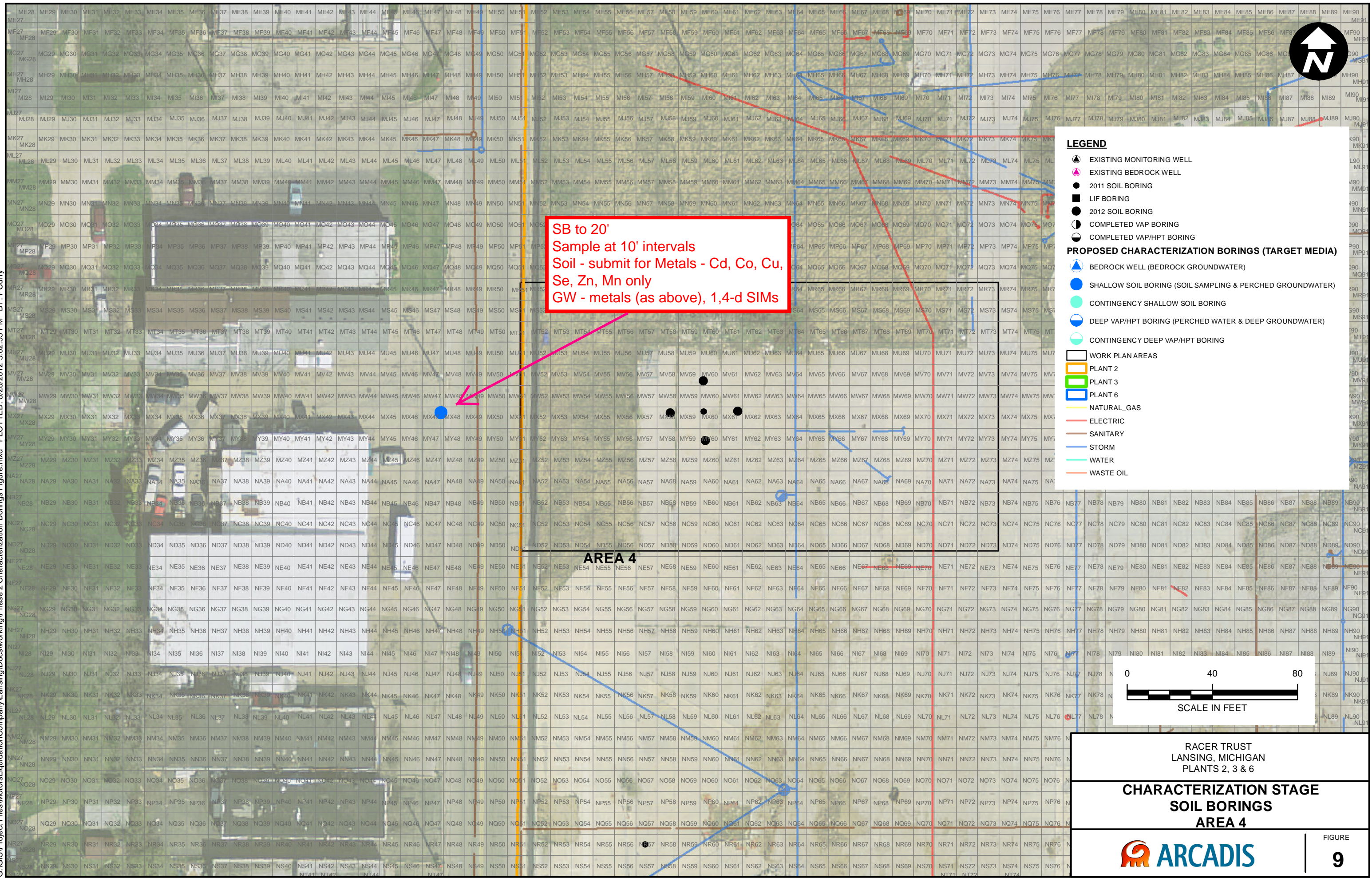


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 PLANTS 2, 3 & 6

**CHARACTERIZATION STAGE
 SOIL BORINGS
 AREA 2 & W PLANT 2**

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FIGURE
8



SB to 20'
Sample at 10' intervals
Soil - submit for Metals - Cd, Co, Cu, Se, Zn, Mn only
GW - metals (as above), 1,4-d SIMs

AREA 4

- LEGEND**
- ▲ EXISTING MONITORING WELL
 - ▲ EXISTING BEDROCK WELL
 - 2011 SOIL BORING
 - LIF BORING
 - 2012 SOIL BORING
 - COMPLETED VAP BORING
 - COMPLETED VAP/HPT BORING
 - PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)**
 - ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
 - SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
 - CONTINGENCY SHALLOW SOIL BORING
 - DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
 - CONTINGENCY DEEP VAP/HPT BORING
 - WORK PLAN AREAS
 - PLANT 2
 - PLANT 3
 - PLANT 6
 - NATURAL GAS
 - ELECTRIC
 - SANITARY
 - STORM
 - WATER
 - WASTE OIL

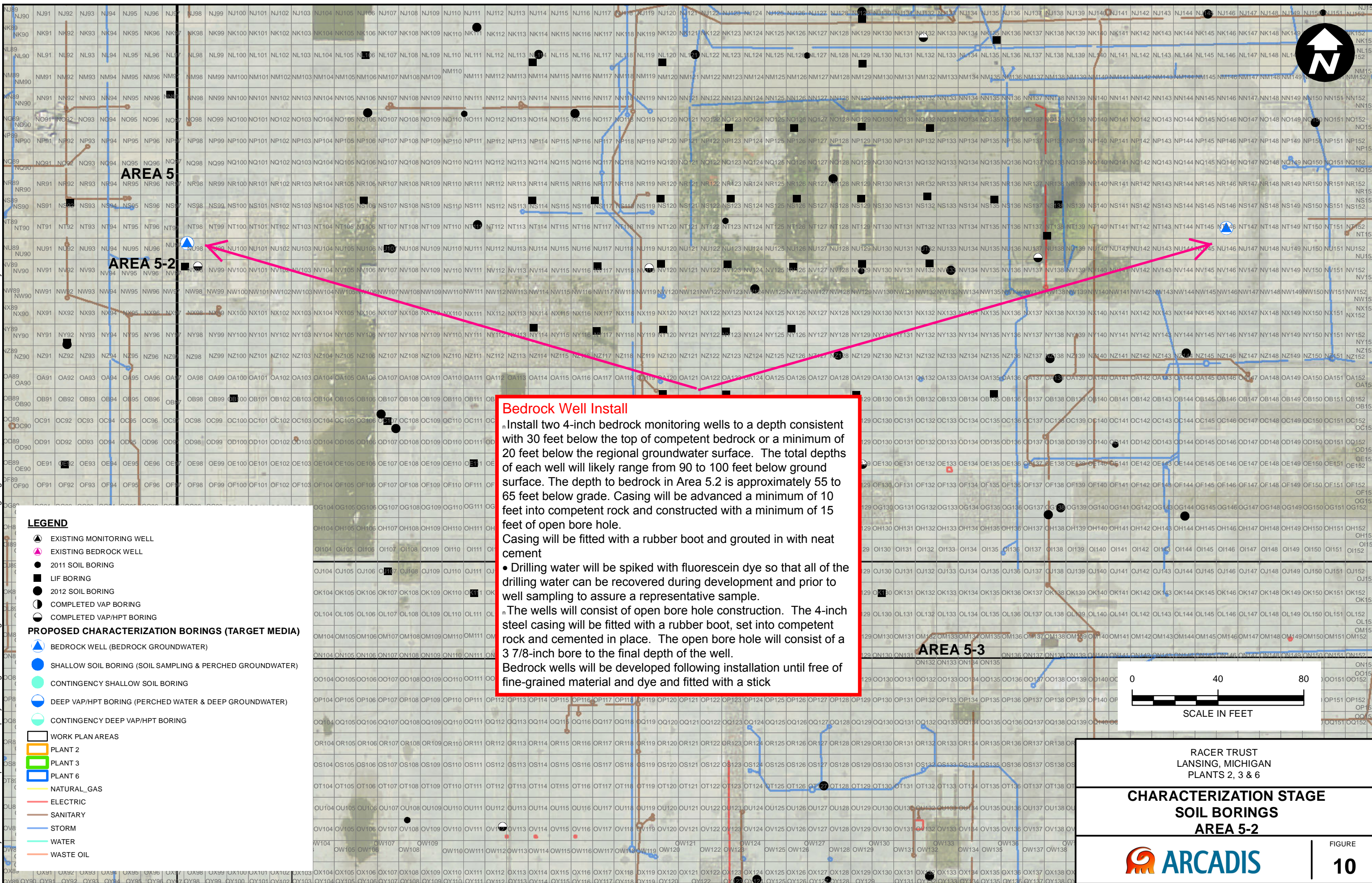


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 LANSING, MICHIGAN
 PLANTS 2, 3 & 6

**CHARACTERIZATION STAGE
 SOIL BORINGS
 AREA 4**

FIGURE
9

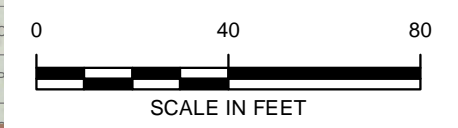
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Bedrock Well Install

- Install two 4-inch bedrock monitoring wells to a depth consistent with 30 feet below the top of competent bedrock or a minimum of 20 feet below the regional groundwater surface. The total depths of each well will likely range from 90 to 100 feet below ground surface. The depth to bedrock in Area 5.2 is approximately 55 to 65 feet below grade. Casing will be advanced a minimum of 10 feet into competent rock and constructed with a minimum of 15 feet of open bore hole. Casing will be fitted with a rubber boot and grouted in with neat cement
- Drilling water will be spiked with fluorescein dye so that all of the drilling water can be recovered during development and prior to well sampling to assure a representative sample.
- The wells will consist of open bore hole construction. The 4-inch steel casing will be fitted with a rubber boot, set into competent rock and cemented in place. The open bore hole will consist of a 3 7/8-inch bore to the final depth of the well. Bedrock wells will be developed following installation until free of fine-grained material and dye and fitted with a stick

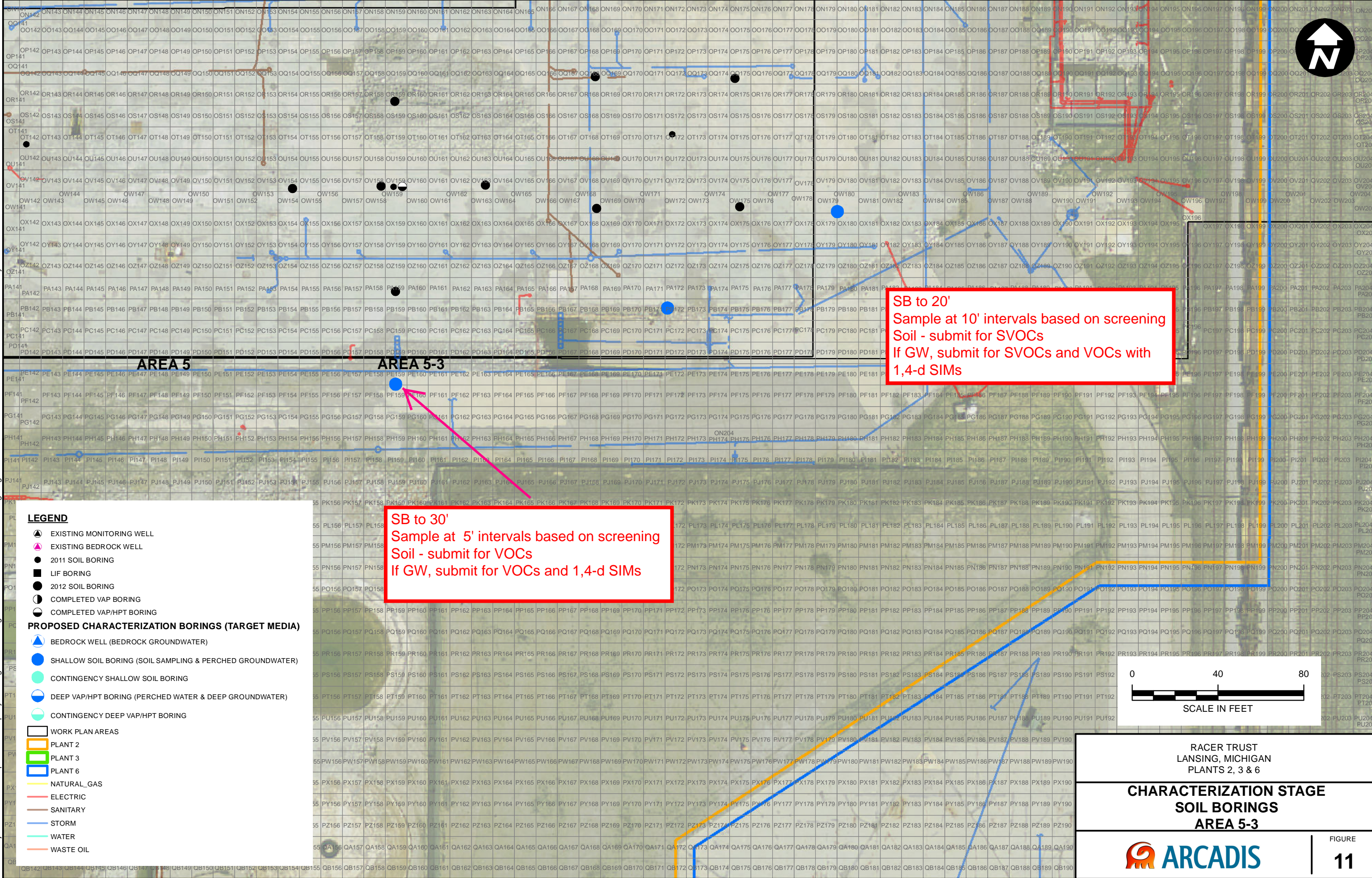
- LEGEND**
- ▲ EXISTING MONITORING WELL
 - ▲ EXISTING BEDROCK WELL
 - 2011 SOIL BORING
 - LIF BORING
 - 2012 SOIL BORING
 - COMPLETED VAP BORING
 - COMPLETED VAP/HPT BORING
 - PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)**
 - ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
 - SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
 - CONTINGENCY SHALLOW SOIL BORING
 - DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
 - CONTINGENCY DEEP VAP/HPT BORING
 - WORK PLAN AREAS
 - PLANT 2
 - PLANT 3
 - PLANT 6
 - NATURAL GAS
 - ELECTRIC
 - SANITARY
 - STORM
 - WATER
 - WASTE OIL



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LANSING, MICHIGAN
PLANTS 2, 3 & 6

**CHARACTERIZATION STAGE
SOIL BORINGS
AREA 5-2**

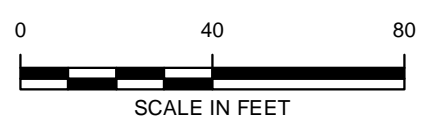
FIGURE
10



SB to 20'
 Sample at 10' intervals based on screening
 Soil - submit for SVOCs
 If GW, submit for SVOCs and VOCs with
 1,4-d SIMs

SB to 30'
 Sample at 5' intervals based on screening
 Soil - submit for VOCs
 If GW, submit for VOCs and 1,4-d SIMs

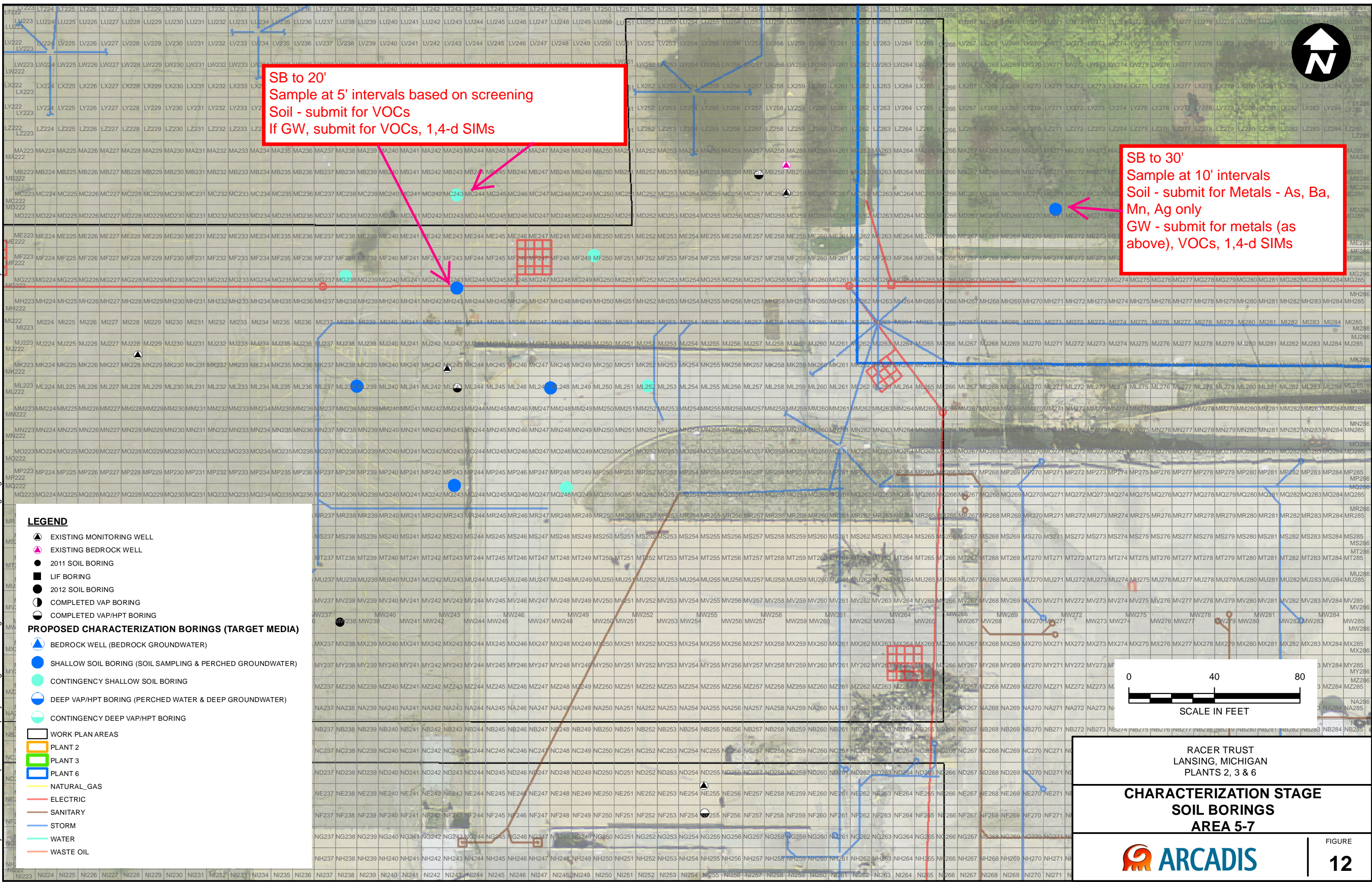
- LEGEND**
- ▲ EXISTING MONITORING WELL
 - ▲ EXISTING BEDROCK WELL
 - 2011 SOIL BORING
 - LIF BORING
 - 2012 SOIL BORING
 - COMPLETED VAP BORING
 - COMPLETED VAP/HPT BORING
- PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)**
- ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
 - SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
 - CONTINGENCY SHALLOW SOIL BORING
 - DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
 - CONTINGENCY DEEP VAP/HPT BORING
- WORK PLAN AREAS**
- PLANT 2
 - PLANT 3
 - PLANT 6
- UTILITIES**
- NATURAL GAS
 - ELECTRIC
 - SANITARY
 - STORM
 - WATER
 - WASTE OIL



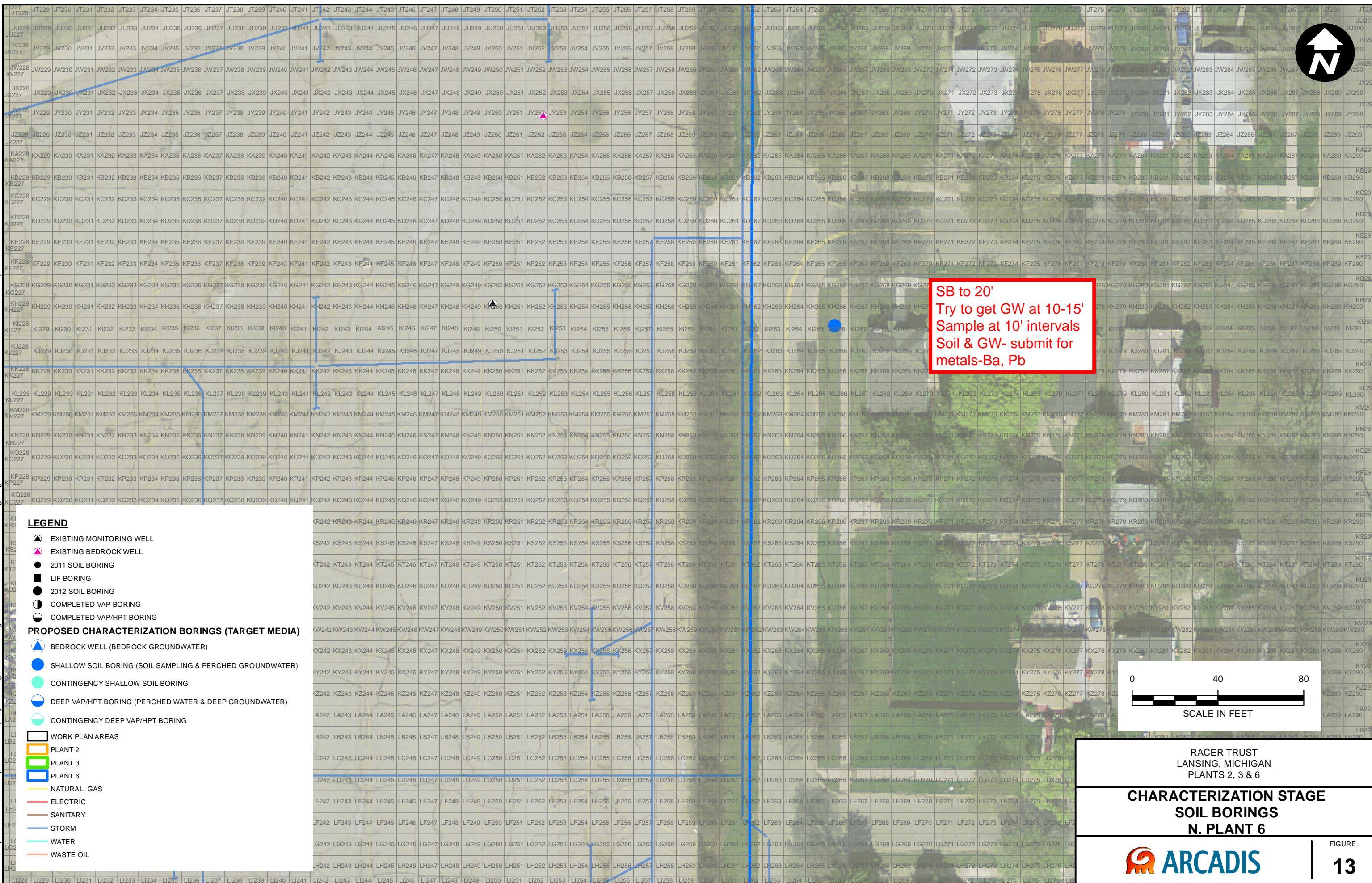
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 PLANTS 2, 3 & 6

**CHARACTERIZATION STAGE
 SOIL BORINGS
 AREA 5-3**

FIGURE
11

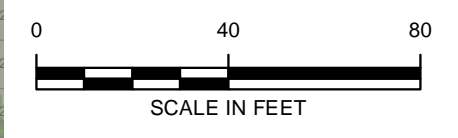


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- LEGEND**
- ▲ EXISTING MONITORING WELL
 - ▲ EXISTING BEDROCK WELL
 - 2011 SOIL BORING
 - LIF BORING
 - 2012 SOIL BORING
 - COMPLETED VAP BORING
 - COMPLETED VAP/HPT BORING
 - PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)**
 - ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
 - SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
 - CONTINGENCY SHALLOW SOIL BORING
 - DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
 - CONTINGENCY DEEP VAP/HPT BORING
 - WORK PLAN AREAS
 - PLANT 2
 - PLANT 3
 - PLANT 6
 - NATURAL GAS
 - ELECTRIC
 - SANITARY
 - STORM
 - WATER
 - WASTE OIL

SB to 20'
Try to get GW at 10-15'
Sample at 10' intervals
Soil & GW- submit for
metals-Ba, Pb



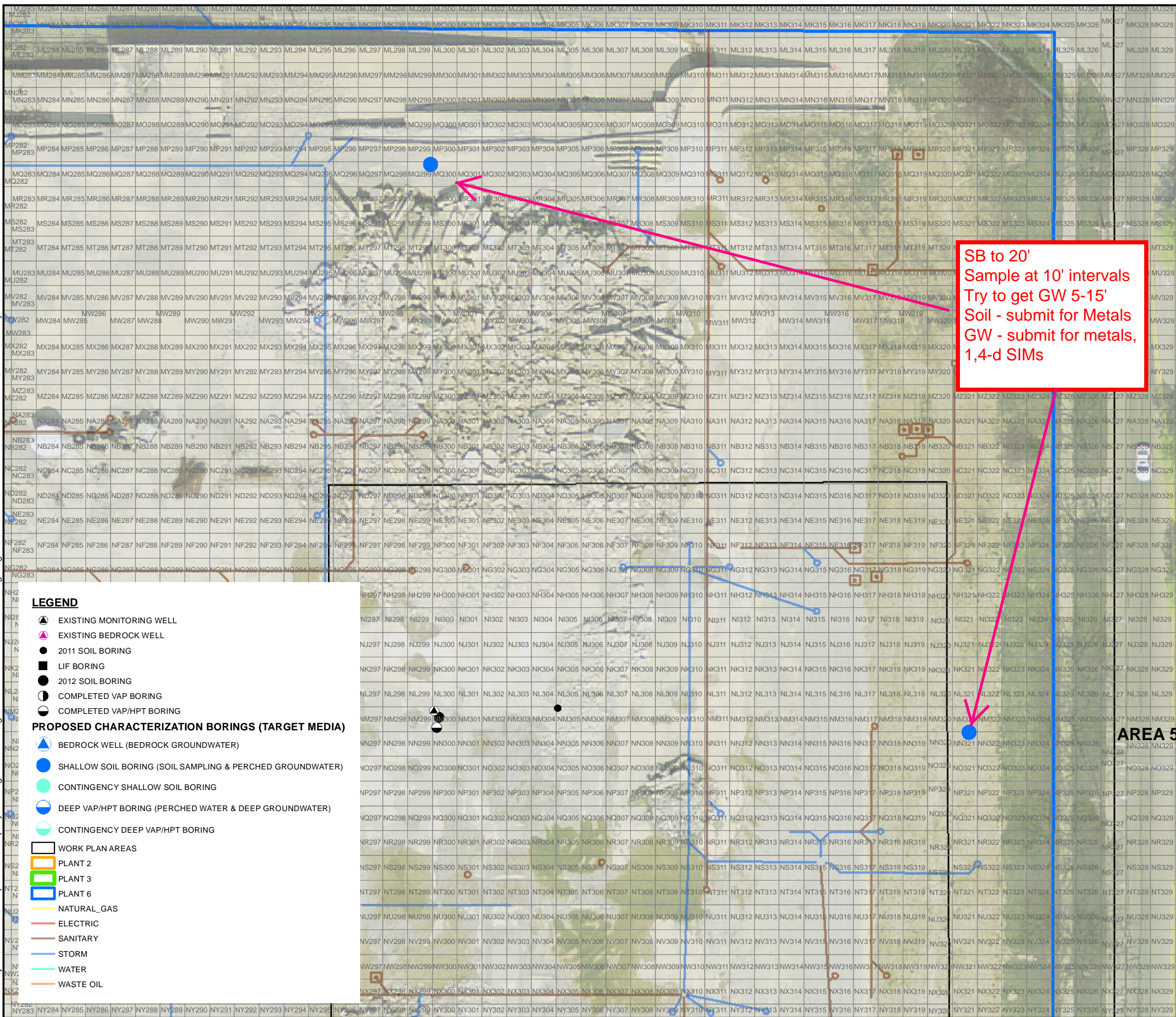
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PLANTS 2, 3 & 6

**CHARACTERIZATION STAGE
SOIL BORINGS
N. PLANT 6**

ARCADIS

FIGURE
13

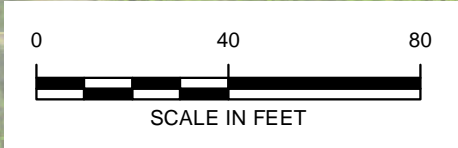
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- LEGEND**
- ▲ EXISTING MONITORING WELL
 - ▲ EXISTING BEDROCK WELL
 - 2011 SOIL BORING
 - LIF BORING
 - 2012 SOIL BORING
 - COMPLETED VAP BORING
 - COMPLETED VAP/HPT BORING
 - PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)**
 - ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
 - SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
 - CONTINGENCY SHALLOW SOIL BORING
 - DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
 - CONTINGENCY DEEP VAP/HPT BORING
 - WORK PLAN AREAS
 - PLANT 2
 - PLANT 3
 - PLANT 6
 - NATURAL GAS
 - ELECTRIC
 - SANITARY
 - STORM
 - WATER
 - WASTE OIL

SB to 20'
Sample at 10' intervals
Try to get GW 5-15'
Soil - submit for Metals
GW - submit for metals,
1,4-d SIMS

AREA 5

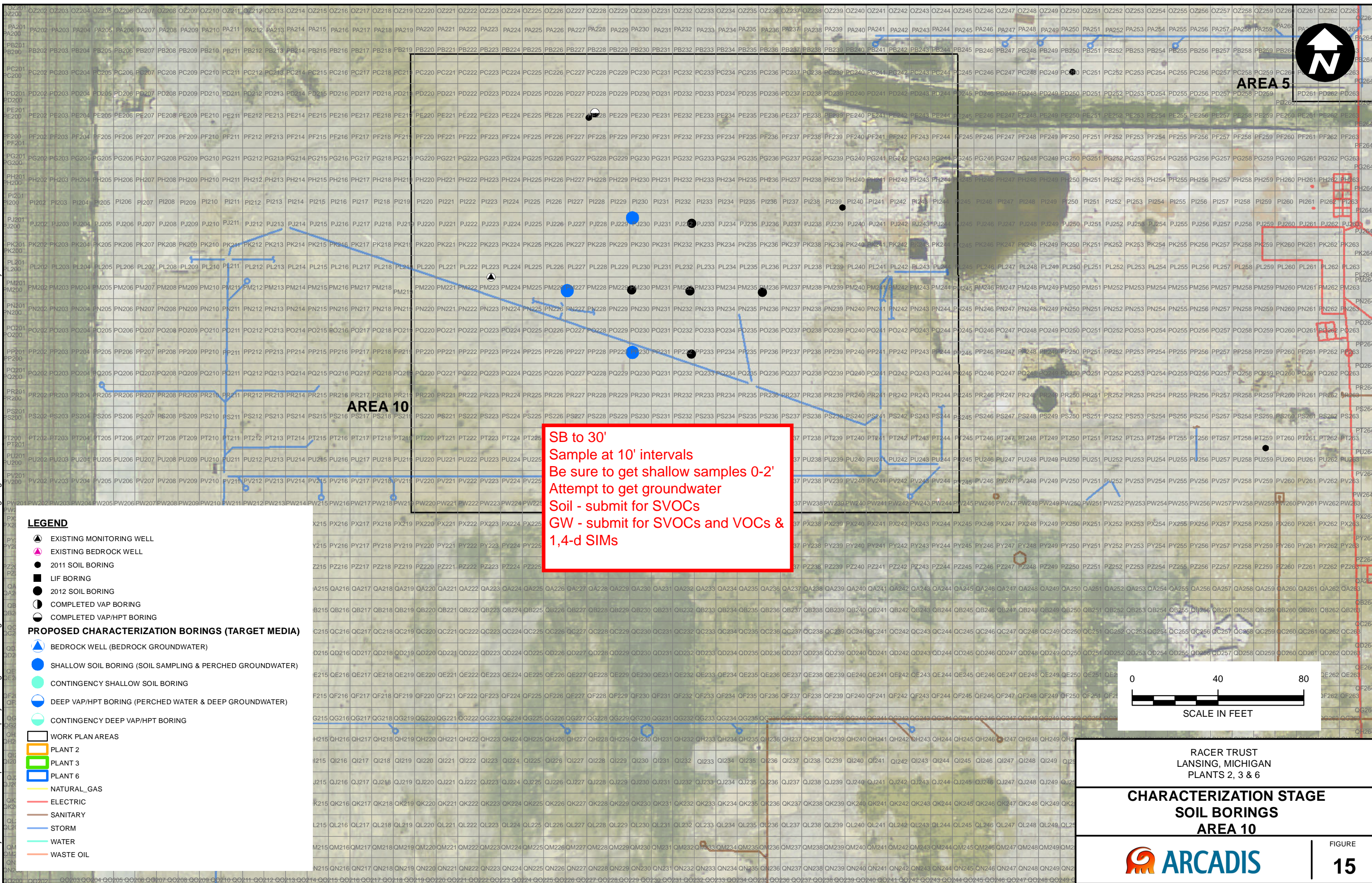


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LANSING, MICHIGAN
PLANTS 2, 3 & 6

**CHARACTERIZATION STAGE
SOIL BORINGS
AREA 5-8**

FIGURE
14

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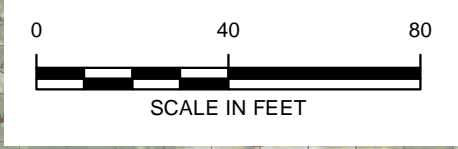


AREA 5

AREA 10

SB to 30'
Sample at 10' intervals
Be sure to get shallow samples 0-2'
Attempt to get groundwater
Soil - submit for SVOCs
GW - submit for SVOCs and VOCs & 1,4-d SIMs

- LEGEND**
- ▲ EXISTING MONITORING WELL
 - ▲ EXISTING BEDROCK WELL
 - 2011 SOIL BORING
 - LIF BORING
 - 2012 SOIL BORING
 - COMPLETED VAP BORING
 - COMPLETED VAP/HPT BORING
 - PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)**
 - ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
 - SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
 - CONTINGENCY SHALLOW SOIL BORING
 - DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
 - CONTINGENCY DEEP VAP/HPT BORING
 - WORK PLAN AREAS
 - PLANT 2
 - PLANT 3
 - PLANT 6
 - NATURAL GAS
 - ELECTRIC
 - SANITARY
 - STORM
 - WATER
 - WASTE OIL



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LANSING, MICHIGAN
PLANTS 2, 3 & 6
**CHARACTERIZATION STAGE
SOIL BORINGS
AREA 10**



FIGURE
15

SB to 20' Name it SB-A11-HA(-28)
 Sample at 10' intervals
 Soil - submit for metals
 GW - submit for metals

SB to 30'
 Sample at 5' intervals based on screening
 Soil - submit for VOCs
 If GW, submit for VOCs and 1,4-d SIMs

SB to 20'
 Sample at 10' intervals based on screening
 Soil - submit for VOCs and SVOCs
 If GW, submit for VOCs, SVOCs and 1,4-d SIMs

SB to 20'
 Sample at 10' intervals
 Soil - submit for metals



LEGEND

- ▲ EXISTING MONITORING WELL
- ▲ EXISTING BEDROCK WELL
- 2011 SOIL BORING
- LIF BORING
- 2012 SOIL BORING
- COMPLETED VAP BORING
- COMPLETED VAP/HPT BORING

PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)

- ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
- SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
- CONTINGENCY SHALLOW SOIL BORING
- DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
- CONTINGENCY DEEP VAP/HPT BORING

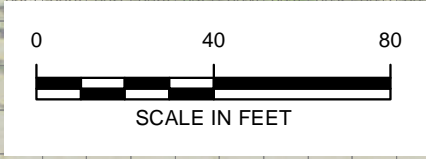
WORK PLAN AREAS

- PLANT 2
- PLANT 3
- PLANT 6

UTILITIES

- NATURAL GAS
- ELECTRIC
- SANITARY
- STORM
- WATER
- WASTE OIL

AREA 11



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 LANSING, MICHIGAN
 PLANTS 2, 3 & 6

**CHARACTERIZATION STAGE
 SOIL BORINGS
 AREA 11 & SW PLANT 3**

FIGURE
16

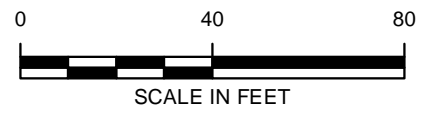


SB to 20'
 Sample at 10' intervals
 Be sure to collect samples at 0-2'
 Soil - submit for SVOCs-PNAs only & metals
 GW - submit for SVOCs-PNAs only & metals

SB to 20'
 Sample at 10' intervals
 Be sure to collect samples at 0-2'
 Soil - submit for SVOCs-PNAs only
 GW - submit for SVOCs-PNAs only

AREA 20

- LEGEND**
- ▲ EXISTING MONITORING WELL
 - ▲ EXISTING BEDROCK WELL
 - 2011 SOIL BORING
 - LIF BORING
 - 2012 SOIL BORING
 - COMPLETED VAP BORING
 - COMPLETED VAP/HPT BORING
 - PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)**
 - ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
 - SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
 - CONTINGENCY SHALLOW SOIL BORING
 - DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
 - CONTINGENCY DEEP VAP/HPT BORING
 - ▭ WORK PLAN AREAS
 - ▭ PLANT 2
 - ▭ PLANT 3
 - ▭ PLANT 6
 - NATURAL GAS
 - ELECTRIC
 - SANITARY
 - STORM
 - WATER
 - WASTE OIL

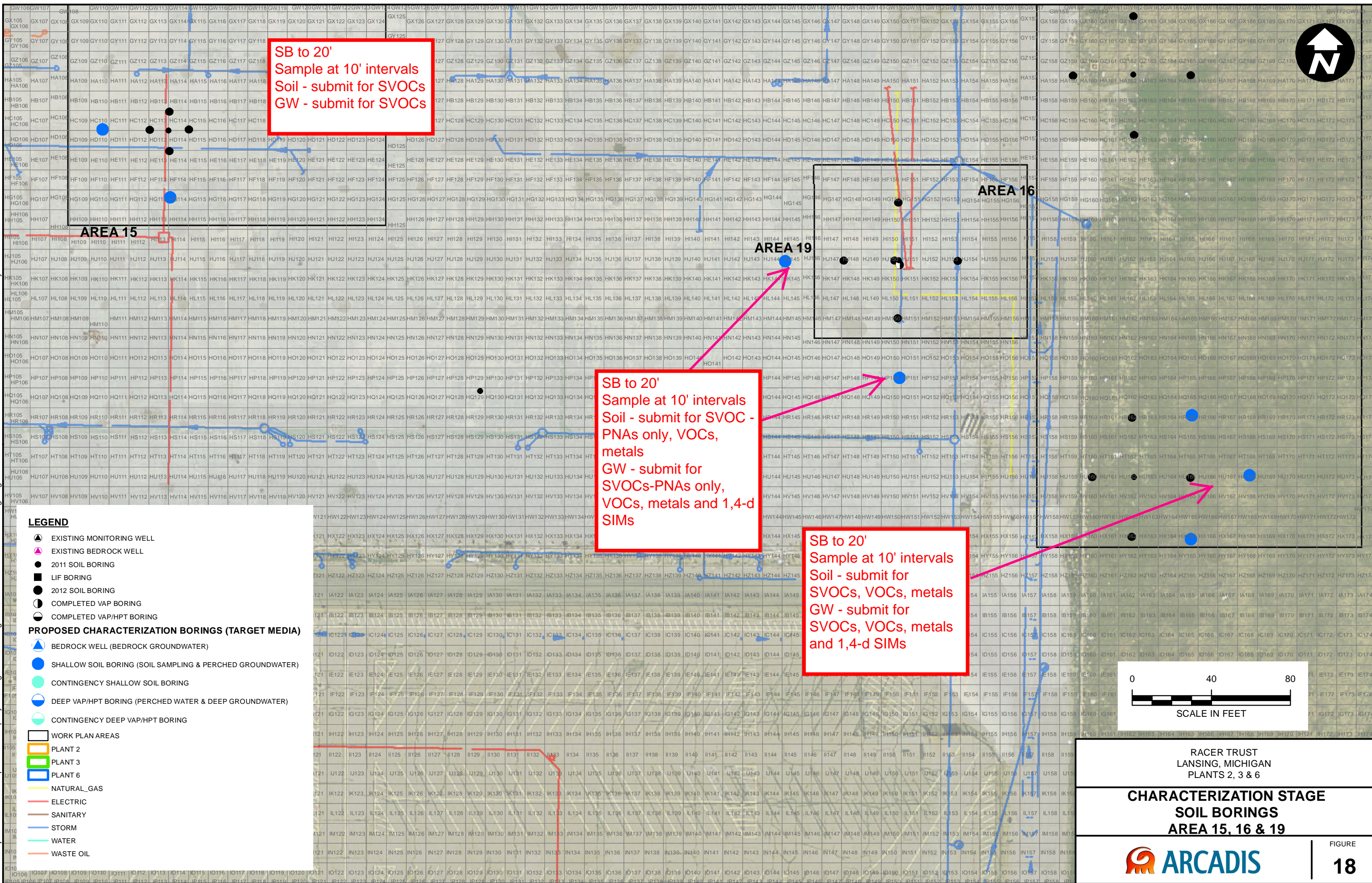


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 PLANTS 2, 3 & 6

**CHARACTERIZATION STAGE
 SOIL BORINGS
 AREA 20**

FIGURE
17

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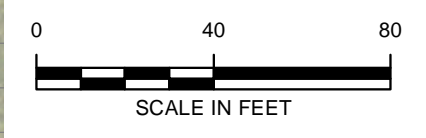


SB to 20'
Sample at 10' intervals
Soil - submit for SVOCs
GW - submit for SVOCs

SB to 20'
Sample at 10' intervals
Soil - submit for SVOC -
PNAs only, VOCs,
metals
GW - submit for
SVOCs-PNAs only,
VOCs, metals and 1,4-d
SIMs

SB to 20'
Sample at 10' intervals
Soil - submit for
SVOCs, VOCs, metals
GW - submit for
SVOCs, VOCs, metals
and 1,4-d SIMs

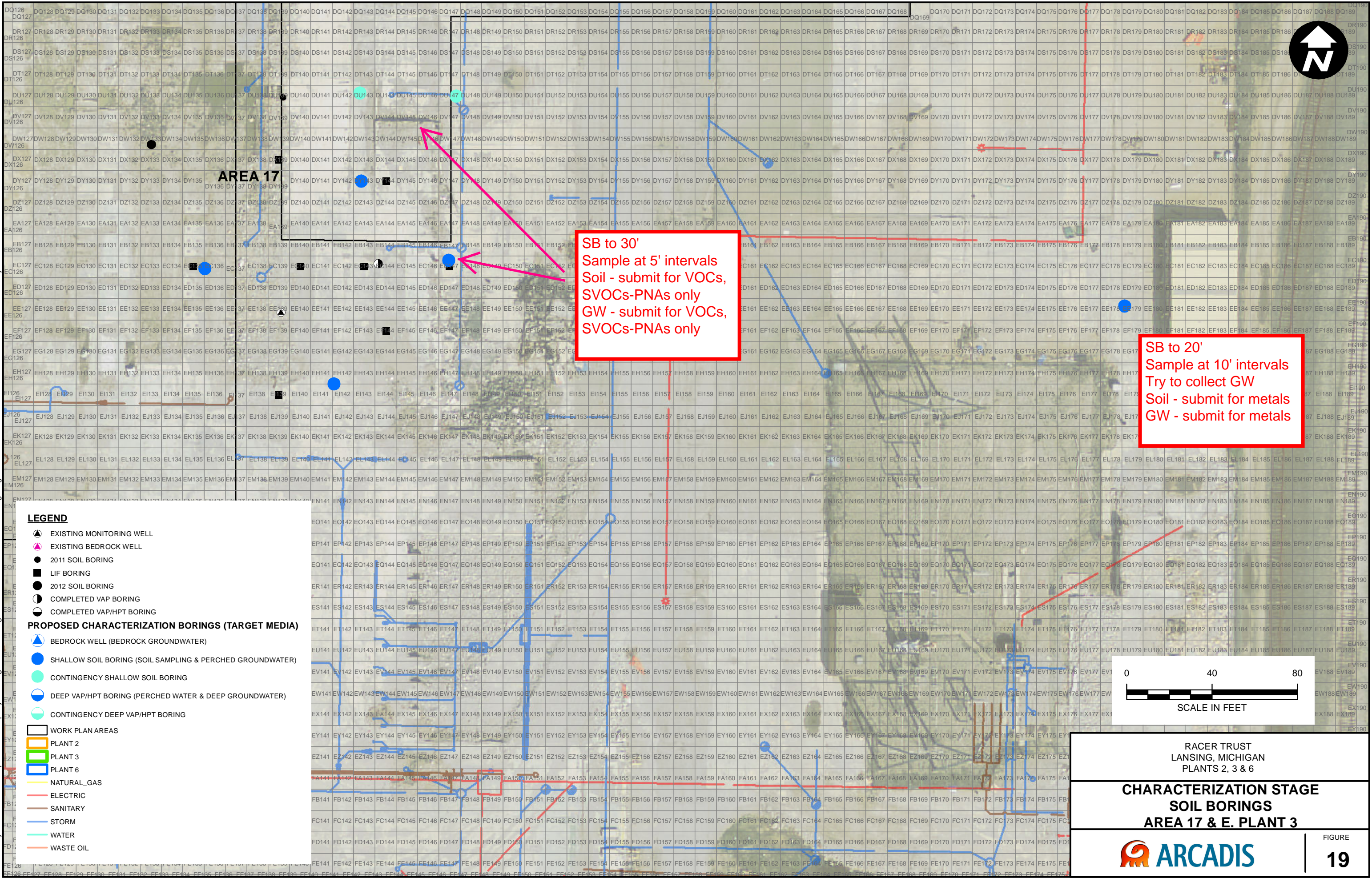
- LEGEND**
- ▲ EXISTING MONITORING WELL
 - ▲ EXISTING BEDROCK WELL
 - 2011 SOIL BORING
 - LIF BORING
 - 2012 SOIL BORING
 - COMPLETED VAP BORING
 - COMPLETED VAP/HPT BORING
 - PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)**
 - ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
 - SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
 - CONTINGENCY SHALLOW SOIL BORING
 - DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
 - CONTINGENCY DEEP VAP/HPT BORING
 - ▭ WORK PLAN AREAS
 - ▭ PLANT 2
 - ▭ PLANT 3
 - ▭ PLANT 6
 - NATURAL GAS
 - ELECTRIC
 - SANITARY
 - STORM
 - WATER
 - WASTE OIL



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LANSING, MICHIGAN
PLANTS 2, 3 & 6

**CHARACTERIZATION STAGE
SOIL BORINGS
AREA 15, 16 & 19**

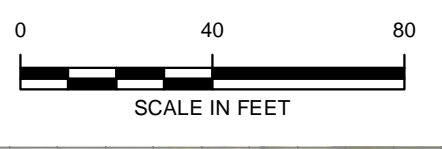
FIGURE
18



SB to 30'
 Sample at 5' intervals
 Soil - submit for VOCs,
 SVOCs-PNAs only
 GW - submit for VOCs,
 SVOCs-PNAs only

SB to 20'
 Sample at 10' intervals
 Try to collect GW
 Soil - submit for metals
 GW - submit for metals

- LEGEND**
- ▲ EXISTING MONITORING WELL
 - ▲ EXISTING BEDROCK WELL
 - 2011 SOIL BORING
 - LIF BORING
 - 2012 SOIL BORING
 - COMPLETED VAP BORING
 - COMPLETED VAP/HPT BORING
 - PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)**
 - ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
 - SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
 - CONTINGENCY SHALLOW SOIL BORING
 - DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
 - CONTINGENCY DEEP VAP/HPT BORING
 - ▭ WORK PLAN AREAS
 - ▭ PLANT 2
 - ▭ PLANT 3
 - ▭ PLANT 6
 - NATURAL GAS
 - ELECTRIC
 - SANITARY
 - STORM
 - WATER
 - WASTE OIL

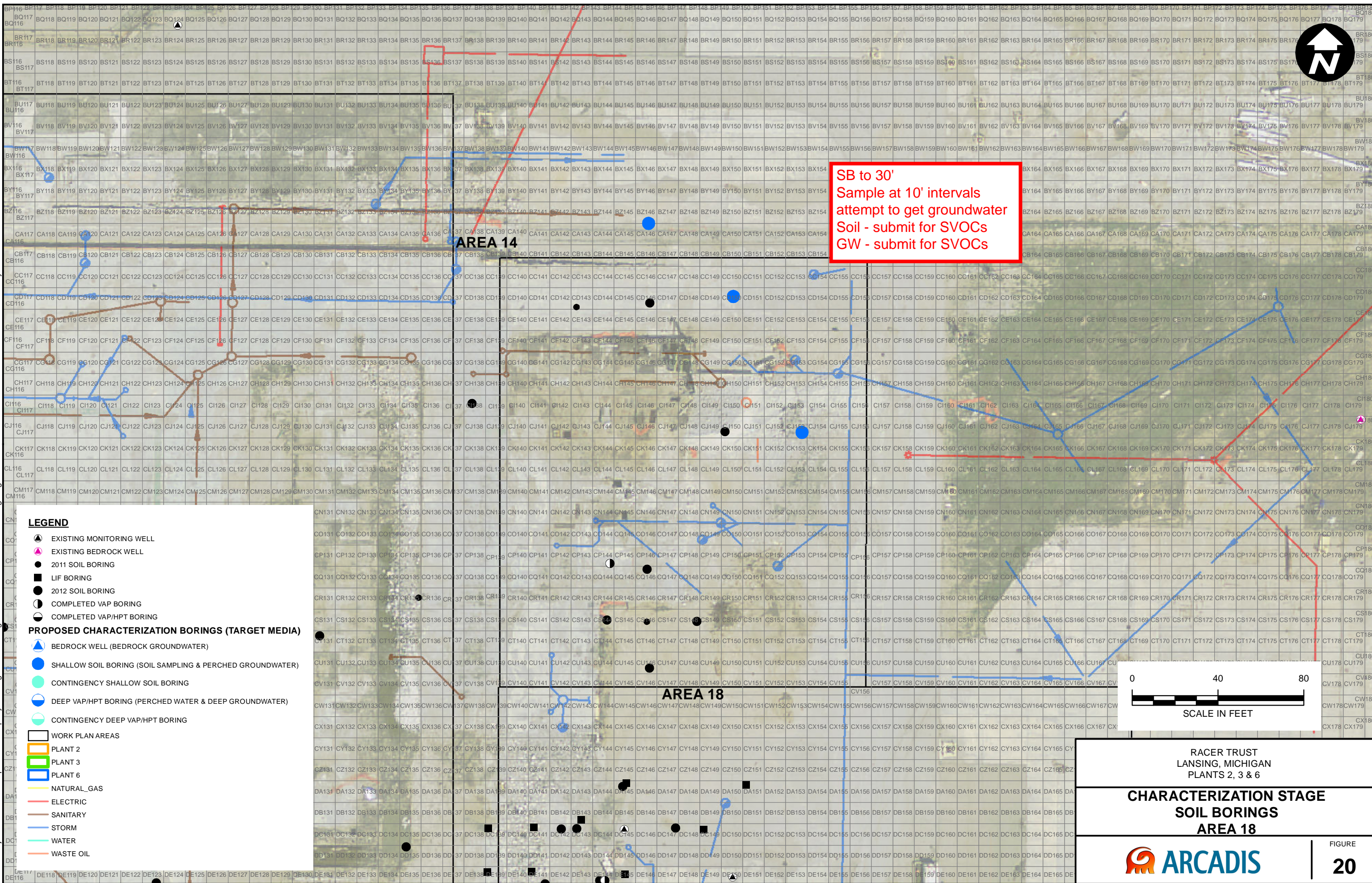


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 LANSING, MICHIGAN
 PLANTS 2, 3 & 6

**CHARACTERIZATION STAGE
 SOIL BORINGS
 AREA 17 & E. PLANT 3**

FIGURE
19

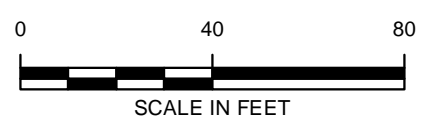
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LEGEND

- ▲ EXISTING MONITORING WELL
- ▲ EXISTING BEDROCK WELL
- 2011 SOIL BORING
- 2012 SOIL BORING
- COMPLETED VAP BORING
- COMPLETED VAP/HPT BORING
- PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)**
- ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
- SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
- CONTINGENCY SHALLOW SOIL BORING
- DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
- CONTINGENCY DEEP VAP/HPT BORING
- ▭ WORK PLAN AREAS
- ▭ PLANT 2
- ▭ PLANT 3
- ▭ PLANT 6
- NATURAL GAS
- ELECTRIC
- SANITARY
- STORM
- WATER
- WASTE OIL

SB to 30'
Sample at 10' intervals
attempt to get groundwater
Soil - submit for SVOCs
GW - submit for SVOCs



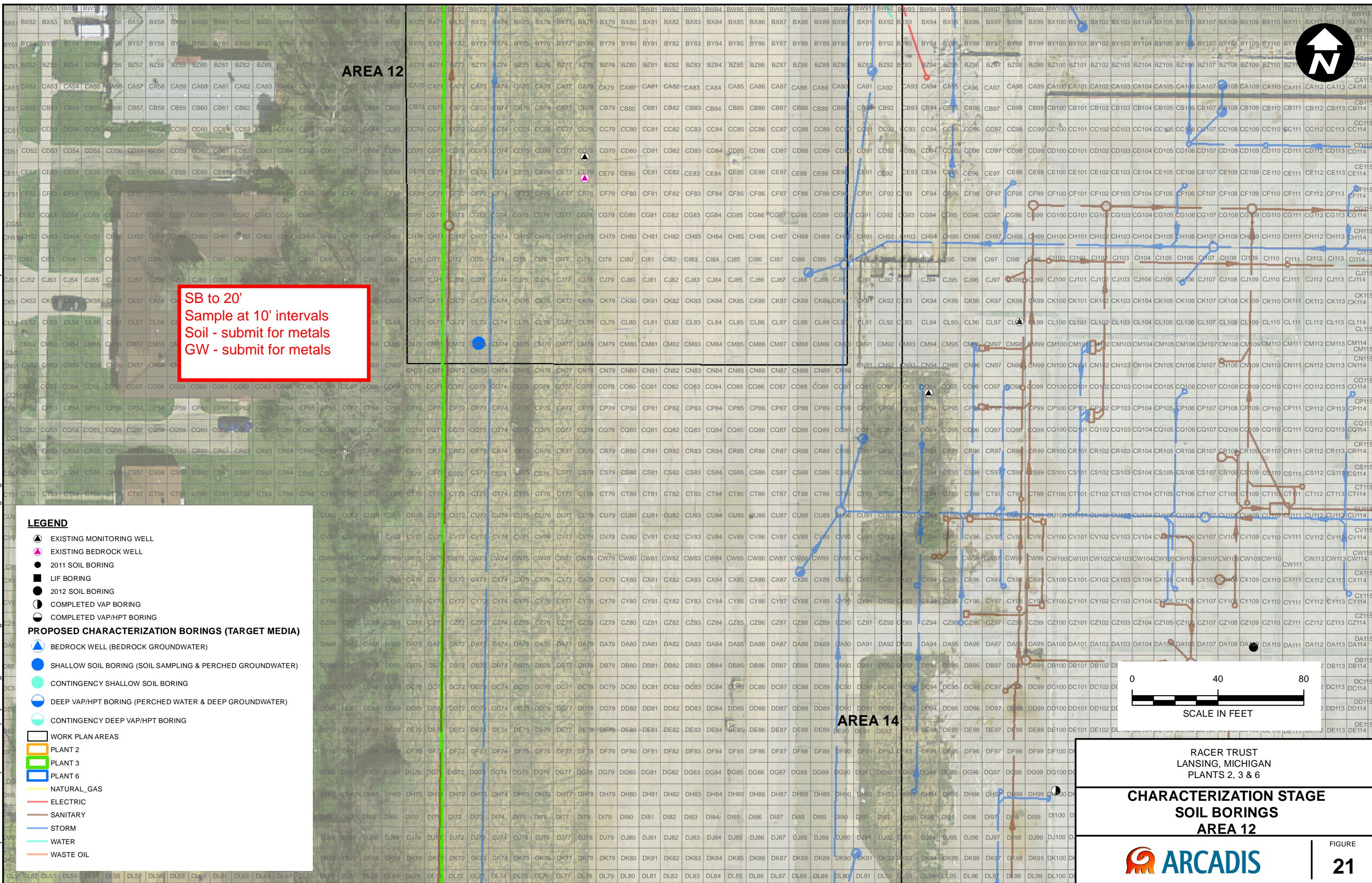
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PLANTS 2, 3 & 6

CHARACTERIZATION STAGE
SOIL BORINGS
AREA 18

ARCADIS

FIGURE
20

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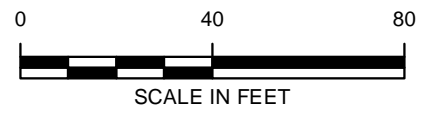


AREA 12

AREA 14

SB to 20'
Sample at 10' intervals
Soil - submit for metals
GW - submit for metals

- LEGEND**
- ▲ EXISTING MONITORING WELL
 - ▲ EXISTING BEDROCK WELL
 - 2011 SOIL BORING
 - 2012 SOIL BORING
 - COMPLETED VAP BORING
 - COMPLETED VAP/HPT BORING
 - PROPOSED CHARACTERIZATION BORINGS (TARGET MEDIA)**
 - ▲ BEDROCK WELL (BEDROCK GROUNDWATER)
 - SHALLOW SOIL BORING (SOIL SAMPLING & PERCHED GROUNDWATER)
 - CONTINGENCY SHALLOW SOIL BORING
 - DEEP VAP/HPT BORING (PERCHED WATER & DEEP GROUNDWATER)
 - CONTINGENCY DEEP VAP/HPT BORING
 - WORK PLAN AREAS
 - PLANT 2
 - PLANT 3
 - PLANT 6
 - NATURAL GAS
 - ELECTRIC
 - SANITARY
 - STORM
 - WATER
 - WASTE OIL



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PLANTS 2, 3 & 6

**CHARACTERIZATION STAGE
SOIL BORINGS
AREA 12**

FIGURE
21