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ENVIRONMENT

Ms. Karen Kromar and
Ms. Stacey Hendry-Van Patten
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Subject:
Supplemental Phase II - Exterior Investigation Work Plan
Ford Twin Cities Assembly Plant, St. Paul, Minnesota
MPCA VIC Project Number VP23530
MPCA PBP Number PB3682

Date:
May 13, 2008

Contact:
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Our ref:
MN000593.0003

Dear Ms. Kromar:

On behalf of Ford Motor Company (Ford), ARCADIS has prepared this *Supplemental Phase II - Exterior Investigation Work Plan* (Work Plan) for the Twin Cities Assembly Plant (TCAP) in accordance with the requirements of the Minnesota Pollution Control Agency (MPCA) Voluntary Investigation and Cleanup (VIC) Program and Petroleum Brownfields Program (PBP).

This work plan describes the investigation activities to be completed to further evaluate Features identified during the Phase I and the Initial Phase II - Exterior Investigation. All utility clearance, sampling protocols, quality assurance/quality control (QA/QC) measures, decontamination procedures, surveying protocols, and data management procedures will be completed in accordance with the field sampling plan (FSP) dated June 18, 2007 and the site-specific health and safety plan (HASP) dated March 12, 2007 that have been prepared for the TCAP site.

Background

Property Location and Description

TCAP is located at 966 South Mississippi River Boulevard in St. Paul, Ramsey County, Minnesota at the approximate easting coordinate 484562.5 meters (m) and northing coordinate 4973822.5 m. TCAP is located in a mixed industrial-, commercial-, and residential-use area on the eastern shore of the Mississippi River, along the east side of South Mississippi River Boulevard, south of Ford Parkway and west of South Cleveland Avenue.

Scope of Work

The scope of work is described in detail in the *Supplemental Phase II – Exterior Work Plan Table 1*, *Supplemental Phase II – Exterior Work Plan – Historical Features Table 2*, and *Supplemental Phase II – Exterior Investigation Scope Matrix presented in Table 3*. Below is a summary of the means and methods to be utilized during the investigation.

Feature Investigations

The majority of the Features represent former or current aboveground storage tanks (ASTs) or underground storage tanks (USTs), former disposal areas, areas of staining, or railroad spurs. The Features are presented on Figures 2 through 31.

A full utility clearance will be performed prior to initiating any subsurface work at the Site. The total number of borings to be advanced, the depth of exploration, and analytical sampling requirements were developed based on the use of each Feature; previous investigations; and input from the MPCA during a meeting held between Ford, ARCADIS, and the MPCA on April 22, 2008. Analytical sampling requirements for each Feature were also based on the type of known or potential chemical usage and the applicable MPCA guidance based on the Feature type. Detailed sampling and analysis information is presented in Tables 1, 2, and 3. Where Features overlap, borings will be colocated and samples submitted for all of the analytical parameters identified within the overlapping Features.

Boreholes will be advanced with a nominal 4.25-inch inner diameter hollow-stem auger (HSA) drilling method until the depth requirements for the Feature have been reached or competent bedrock is encountered. Soil samples will be collected, and soil boring logs will be prepared for each boring in accordance with MPCA and Minnesota Department of Health (MDH) requirements and will present the United Soil Classification System (USCS) classification of the materials encountered. Each soil sample will be screened in the field with a photoionization detector (PID).

At each boring location, soil sample(s) will be collected for laboratory analysis as presented in Tables 1 and 2. Sample depths are also detailed in Tables 1 and 2.

Soil sampling techniques will be consistent with State requirements or guidelines. See the site-specific FSP for further details. Soil samples collected for laboratory analysis will be placed in a cooler with wet ice and transported to the laboratory by

the laboratory courier, following standard chain-of-custody procedures. Soil samples will be submitted for one or more of the following analytes: volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Method 8260, semi-volatile organic compounds (SVOCs) using USEPA Method 8270, gasoline range organics (GRO) using the Wisconsin Modified Method, diesel range organics (DRO) using the Wisconsin Modified Method, metals using USEPA Method 6010, and polychlorinated biphenyls (PCBs) using USEPA Method 8082. Specific analyte information is summarized in Tables 1 and 2.

Several sample locations for Features listed in Tables 1 and 2 state that the interval will be either zero to two feet or two to four feet below ground surface (bgs). These are historical Features in which impacts most likely would have been surface spills, leaks, etc. which may have caused impacts to the site. Since the site has been re-graded, additional fill materials added to the site, etc. the exact depth of the historical Feature is unknown. As such, a field determination will be made on the sample depth based upon visual observations (i.e. staining), elevated PID readings, or other evidence of impacts or of the historical surface material.

In the event that potential impacts appear to extend to the water table (based on visual observations, odors, or PID readings), temporary monitoring wells may be installed and a groundwater grab sample collected and analyzed. Groundwater samples will be submitted for one or more of the following analytes: VOCs using USEPA Method 8260, SVOCs using USEPA Method 8270, GRO using the Wisconsin Modified Method, DRO using the Wisconsin Modified Method, metals using USEPA Method 6010, and PCBs using USEPA Method 8082. See Tables 1 and 2 for details on the number and locations of proposed temporary monitoring wells. In the event that sufficient groundwater cannot be recovered for the analysis of all parameters, the groundwater grab samples will be collected in the following order: VOCs, SVOCs, metals, PCBs, GRO, and DRO, omitting parameters that are not required for a given Feature. In accordance with MDH well code, temporary wells will be properly abandoned within 48 hours of installation.

All analytical data collected will be verified and/or validated. Full (Level IV) validation will be completed on approximately 10 percent of all field sample data.

Permanent Groundwater Monitoring Wells

Select soil borings will be converted to groundwater monitoring wells. The monitoring wells will be used to evaluate groundwater quality within Features that

had exceedances of the MDH Health Risk Limits (HRLs) from temporary monitoring wells during the Initial Phase II - Exterior Investigation. The permanent monitoring wells will be installed within the unconsolidated sediments to evaluate the perched groundwater quality.

Boreholes will be drilled using either a nominal 4.25-inch inner diameter HSA drilling methods or sonic drilling methods using a dual-casing methodology in which the inner casing is drilled past the outer casing. Well construction and soil boring logs will be prepared as described above, and each soil sample will be screened in the field with a PID.

Two-inch diameter monitoring wells will be installed. The wells will be developed (bailing and surging techniques or air lifting) and permitted in accordance with MDH requirements and in accordance with the standard operating procedures (SOPs) outlined in the FSP. Each monitoring well will be completed as a flush-mount well or as an aboveground stick-up well with protective posts. The well location, ground surface, and top–of-casing elevation for each well will be surveyed to the Ramsey County coordinates and 1929 United States Geological Survey (USGS) Vertical Datum.

Static water levels will be measured from the surveyed top of casing using an electronic water-level meter. After collecting static water-level data, the newly installed wells along with existing wells will be sampled during the third quarter of 2008. All of the monitoring wells will be sampled in accordance with the FSP. Wells will be sampled using a disposable bailer or submersible pump; collected into clean, laboratory-supplied sample containers; and placed in a cooler filled with ice. Field parameters will be measured using a multi-parameter probe for pH, dissolved oxygen, oxidation reduction potential, and specific conductance. Groundwater samples will be submitted for one or more of the following analytes: VOCs using USEPA Method 8260, SVOCs using USEPA Method 8270, GRO using the Wisconsin Modified Method, DRO using the Wisconsin Modified Method, metals using USEPA Method 6010, and PCBs using USEPA Method 8082. The samples will be submitted to the laboratory using appropriate "chain-of-custody" procedures as outlined in the FSP.

Quality Assurance Program

The QA/QC protocols for the work described in this Work Plan will meet or exceed the standards of care required by the State of Minnesota and by Ford. The QA/QC

protocols will be completed in accordance with those presented in the Phase B Exterior Work Plan (ARCADIS, June 2007), including the FSP and the site-specific HASP.

Decontamination

The decontamination protocols will be completed in accordance with those presented in the FSP and the site-specific HASP.

Reporting

The results of the Supplemental Phase II - Exterior Investigation will be submitted to the MPCA. The report will discuss information collected during the site characterization activities and will include a technical overview of the site characterization execution, results, findings, and recommendations.

Schedule

Site investigation activities will be scheduled approximately one and a half to two month after approval of this Work Plan by the MPCA. The start date for field activities will be dependent on contractor schedule and availability.

We appreciate your assistance with this project. If you have questions or need additional information, please call Bryan Zinda of ARCADIS at your convenience.

Sincerely,

ARCADIS

Bryan Zinda, PE Project Manager	Andrew Fiskness, PG Staff Geologist	Eric Carman Principal In Charge Vice President

Copies:
Ms. Barbara Rusinowski, Ford Motor Company, Dearborn, Michigan
Mr. John Meyers, Ford Twin Cities Assembly Plant, St. Paul, Minnesota

Table 1. Supplemental Investigation Summary - Exterior Features
Supplemental Phase II – Exterior Investigation
Twin Cities Assembly Plant, Saint Paul, Minnesota

	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Former Test Track Feature 1 Eastern Portion of TCAP Property Figure 2	Based on a review of aerial photographs, the former test track was historically used to test vehicles from prior to 1953 until prior to 1974. The test track was sprayed with oil for dust control based on information provided through interviews with TCAP personnel.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole. Borings and Wells: Two Hollow Stem Auger borings (ASB-033, ASB-046). Sample depths were 2-4 and 0-2 ft bgs, respectively. Field Measurements: Organic Vapor using a PID. The highest PID reading at ASB-033 was 2.8 ppm at 2-4 ft bgs The highest PID reading at ASB-046 was 1.5 ppm at 0-2 ft bgs. Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) DRO (Wisconsin Modified Method) RCRA Metals (Method 6010) PCBs (Method 8082) Results: Soil: ASB-033 and ASB-046 no SRV exceedances. DRO detected at 97 mg/kg and 330 mg/kg.	Additional investigation of the test track to characterize the area for evidence of dust control activities. Refer to Figure 2 for soil boring and well locations.	Complete **seven soil borings** in the area of the former test track to further investigate the area. Eight borings will be located approximately 660 feet apart along the track. Borings shall extend up to 12 feet below ground level; until bedrock is encountered; or until native materials are encountered and no visual, olfactory, or PID evidence of impacts is observed, whichever is shallower.	Field Measurements: Organic Vapor using a PID. Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. At each of the borings soil samples will be collected from either the 0-2 or the 2-4 foot interval or from the interval with the highest PID reading, In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	If potential impacts extend to the water table, convert a maximum of four soil borings to temporary monitoring wells and sample groundwater, if encountered.	Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) DRO (Wisconsin Modified Method) RCRA Metals (Method 6010) PCBs (Method 8082) Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8270C) DRO (Wisconsin Modified Method) RCRA Metals (Method 6010),Dissolved PCBs (Method 8082)	The exact location of the test track is only visible in a few areas. The proposed test track boring locations will be surveyed at the site and the locations will be adjusted based on field conditions and utilities.

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Supplemental Phase II – Exterior Investigation
Twin Cities Assembly Plant, Saint Paul, Minnesota

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Former Location of Gasoline and Diesel Fuel Underground Piping Feature 5 Along northern portion of main assembly building beneath the current training center and employee parking lot Figure 6	Underground steel piping was formerly utilized in conjunction with former gasoline and diesel fuel USTs in the area, which were removed in 1993. The piping had been in place since approximately 1977. Some piping may still be in place below the ground surface. The piping is estimated to be present approximately 4 to 8 feet bgs. A release occurred from the piping which impacted subsurface soils. Remedial activities were completed in the area of the piping, which included soil removal. However, in 2004-2005 during a water main repair in the area of the piping, a subsequent release was reported. The releases have been closed per the MPCA; however, based on the recurrent releases identified, impacted soil may still be present in the area of the underground piping.	Field Measurements: Organic Vapor using a PID. The highest PID reading at ASB-029 was 2.2 ppm at 4-6 ft bgs. The highest PID reading at ASB-030 was 16 ppm at 4-6 ft bgs. The highest PID reading at ASB-045 was 2.6 ppm at 2-4 ft bgs. The highest PID reading at ASB-047 was 40.7 ppm at 10-12 ft bgs. The highest PID reading at ASB-048 was 5.4 ppm at 4-6 ft bgs. Borings and Wells: Five Hollow Stem Auger borings (ASB-029, ASB-030, ASB-045, ASB-047 and ASB-048). Sample depths were 0-2, 4-6, 2-4, 10-12 and 4-6, ft bgs, respectively. Temporary groundwater wells set and sampled from ASB-030 and ASB-047. Analytical Parameters: Soil: VOCs (Method 8260B) PAH (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) Lead (Pb) (Method 6010) ASB-045 Soil was sampled for VOCs, SVOCs, TAL metals, PCBs, GRO, and DRO. Groundwater: VOCs (Method 8260B) PAHs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) Lead (Pb) (Method 6010) Dissolved Results: Soil: No SRV exceedences at any location Groundwater: ASB-030 exceedance of HRL for Benzene and lead. ASB-047 exceedance of HRL for Benzene, benzo(a)pyrene and lead.	Two monitoring wells will be installed to further evaluate the groundwater exceedances identified at ASB-030 and ASB-047. Five soil borings will be completed to collect additional data along the areal extent of the feature for characterization purposes. Refer to Figure 6 for proposed soil boring and well locations.	**Two monitoring wells** will be installed to confirm the exceedances identified at boring locations ASB-030 and ASB-047. Proposed well locations are provided on the attached figure. Actual well locations will be based on field conditions and access restrictions. Complete **five soil borings** along the former underground piping route. Borings will be placed approximately every 150 feet along the former piping route. Each boring shall extend a minimum depth of 15 feet below ground level or to bedrock refusal, whichever is shallower.	Field Measurements: Organic Vapor using a PID. Base Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. At each of the borings soils samples will be collected at the highest PID reading interval and from the interval just above the perched groundwater table. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	Base Scope Install **two monitoring wells** and collect a groundwater sample from each well for analysis.	Analytical Parameters: Soil: VOCs (Method 8260B) PAHs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) Lead (Pb) (Method 6010) Groundwater: VOCs (Method 8260B) PAHs (Method 8270C) Lead (Method 6010), Dissolved GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method)	None.

Table 1. Supplemental Investigation Summary - Exterior Features
Supplemental Phase II – Exterior Investigation
Twin Cities Assembly Plant, Saint Paul, Minnesota

	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Railroad Spurs Feature 7 Central and southern portions of property Figure 7	Railroad spurs are utilized for the delivery and loading of parts and other items to and from the assembly plant via rail cars. In addition, railcars are used to transfer final products to their retail destinations. Some areas of staining were observed within the vicinity of the railroad spurs.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole. Borings and Wells: Five Hollow Stem Augers borings (ASB-017, ASB-021, ASB-022, ASB-031, ASB-043). Sample depths were 0-2, 4-6, 2-4, 2-4 and 0-2 ft bgs, respectively. Field Measurements: Organic Vapor using a PID. The highest PID reading at ASB-017 was 4.9 ppm at 0-2 ft bgs. The highest PID reading at ASB-021 was 12.9 ppm at 4-6 ft bgs. The highest PID reading at ASB-022 was 16.7 ppm at 2-4 ft bgs. The highest PID reading at ASB-031 was 6.3 ppm at 2-4 ft bgs. The highest PID reading at ASB-043 was 5.5 ppm at 2-4 ft bgs. Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) DRO (Wisconsin Modified Method) PCBs (Method 8082) RCRA Metals (Method 6010) ASB-043 samples for Herbicides & Pesticides via Method 8081A. Results: Soil: ASB-017 exceeded Tier 1 Residential SRV for benzo(a)pyrene 2.9J mg/kg. ASB-022 exceeded Tier 1 Residential SRV for arsenic 6.8 mg/kg (within background range). ASB-021, ASB-031 and ASB-043 no SRV exceedences.	Further investigation of the railroad spurs. Refer to Figure 7 for proposed soil boring and well locations.	Complete **eight soil borings** in the area of the railroad spurs to further investigate potential impacts. Four borings will be located in the rail yard at the center of the site not previously investigated. The other four borings will be completed near the three sets of railroad spurs at the south portion of the plant. Each boring shall extend until native materials are encountered and no visual, olfactory, or PID evidence of impacts is observed. Each boring shall extend a minimum depth of 12 feet below ground level or to bedrock refusal, whichever is shallower.	Field Measurements: Organic Vapor using a PID. Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. At each of the borings soils samples will be collected from the 0-2 foot interval and from the interval with the highest PID reading. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	If potential impacts extend to the water table, convert soil borings (a maximum of three) to temporary monitoring wells and sample groundwater, if encountered.	Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) DRO (Wisconsin Modified Method) PCBs (Method 8082) If staining is present from the 0-2 foot interval, a minimum of two samples will be analyzed for PCBs. RCRA Metals (Method 6010) Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8270C) DRO (Wisconsin Modified Method) PCBs (Method 8082) RCRA Metals (Method 6010), Dissolved	Soil boring may not be able to be completed within the feature area shown on Figure 7 due to railcars being present. Borings may need to be installed after plant closure.

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Supplemental Phase II – Exterior Investigation
Twin Cities Assembly Plant, Saint Paul, Minnesota

	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Former Hazardous Waste Storage Area Feature 8 Southwest of the paint building Figure 8	Based on historical documentation reviewed, a former hazardous waste storage area was identified. The documentation did not include any reported spills from this area; however, based on the general usage of the area to store hazardous waste materials this area was investigated.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole. Borings and Wells: Two Hollow Stem Auger borings (ASB-034, ASB-044). Sample depth was 0-2 ft bgs for both borings. Field Measurements: Organic Vapor using a PID. The highest PID reading at ASB-034 was 1.1 ppm at 0-2 ft bgs. The highest PID reading at ASB-044 was 1.3 ppm at 0-2 ft bgs. Analytical Parameters: Soil: VOCs (Method 8260) SVOCs (Method 8270) TAL Metals (Method 6010) PCBs (Method 8082) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) ASB-034 was not sampled for GRO or DRO. ASB-044 was sampled for RCRA metals. Results: Soil: ASB-034 exceeded Tier 1 Residential SRV for copper 15.7 mg/kg and iron 13,400 mg/kg (both are within typical background ranges). ASB-044 no SRV exceedences.	Further investigation of the former hazardous waste storage area. Refer to Figure 8 for proposed soil boring and well locations.	Complete **three soil borings** in the area of the former hazardous waste storage area to provide additional information. Three borings will be located approximately 130 feet apart. Each boring shall extend until native materials are encountered and no visual, olfactory, or PID evidence of impacts is observed. Each boring shall extend a minimum depth of 12 feet below ground level or to bedrock refusal, whichever is shallower.	Field Measurements: Organic Vapor using a PID. Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. At each of the borings soil samples will be collected from the 0-2 foot interval and from the interval with the highest PID reading. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	If potential impacts extend to the water table, convert soil borings to temporary monitoring wells and sample groundwater, if encountered.	Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) TAL Metals (Method 6010) PCBs (Method 8082) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8270C) TAL Metals (Method 6010), Dissolved PCBs (Method 8082) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method)	None.

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Supplemental Phase II – Exterior Investigation
Twin Cities Assembly Plant, Saint Paul, Minnesota

	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Former Hazardous Waste Storage Area Feature 10 Near Packer Building Figure 10	Based on historical documentation reviewed, a former hazardous waste storage area was identified in the area. The documentation did not include any reported spills from this area; however based on the general usage of the area to store hazardous waste materials this area was investigated.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole. Field Measurements: Organic Vapor using a PID. The highest PID reading at ASB-013 was 6.2 ppm at 4-6 ft bgs. The highest PID reading at ASB-014 was 5.4 ppm at 4-6 ft bgs. Other Testing: Completed Sheen tests in the 0-2 ft bgs interval in each boring. No visible sheen. Borings and Wells: Two Hollow Stem Auger borings (ASB-013, ASB-014). Sample depths were 4-6 at both borings. Temporary groundwater well set and sampled from ASB-013. Analytical Parameters: Soil: VOCs (Method 8260) SVOCs (Method 8270) TAL Metals (Method 6010) PCBs (Method 8082) If potential petroleum impacts were identified: GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) Groundwater: VOCs (Method 8260) SVOCs (Method 8270) PCBs (Method 8082) Results: Soil: ASB-013 exceeded Tier 1 Residential SRV for copper 13.7 mg/kg and iron 13,000 mg/kg. ASB-014 exceeded Tier 1 Residential SRV for copper 30.7 mg/kg and iron 12,300 mg/kg and exceeded Tier 2 Industrial SRV for Arsenic 156 mg/kg. Copper and iron levels within typical background ranges. Arsenic above typical background range Groundwater: No constituents above HRLs.	To further define the horizontal and vertical extents of arsenic impacts at ASB-014. Also, to further assess the former hazardous storage area. Refer to Figure 10 for proposed soil boring and well locations.	Complete **six soil borings** in the area of the former hazardous waste storage area. Three step-out borings will be located as as shown of Figure 10and positioned in a manner to delineate the exceedances from ASB-014. In addition, one boring will be positioned near the location of ASB-014 location to provide vertical delineation of the exceedance. Also, two borings will be installed in the area of the former hazardous waste storage area to provide additional information. Each boring shall extend up to a depth of 15 feet below ground level or to bedrock refusal, whichever is shallowest.	Field Measurements Organic Vapor using a PID. Base Scope Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. At each of the three step-out borings soil samples will be collected from the 0-2, 4-6, 6-8, and 8-10 foot intervals. At the co-located ASB-014 boring location soil samples will be collected from the 0-2 and 6-8, and 8-10 foot intervals. At the boring locations that are not part of the step-out borings, soil samples will be collected from the 0-2, 4-6 and 8-10 foot interval In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	Convert boring near ASB-014 to a temporary monitoring well and sample groundwater, if sufficient groundwater is present.	Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) TAL Metals (Method 6010) PCBs (Method 8082) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) Arsenic (Method 6010) TCLP – Arsenic See other considerations for individual boring analytical requirements. Groundwater (Provisional): Arsenic (Method 6010), Dissolved	Initially, the 0 - 2 and 6-8 foot interval samples collected from boring ASB-014 and the 0-2 and 4 - 6 ft intervals collected from the three step-out borings will be submitted to the laboratory for analysis. The –6-8 and 8 - 10 ft intervals collected from the three step-out borings will be submitted to the laboratory and placed on HOLD along with the 8-10 foot interval collected from the co-located boring ASB-014 pending the outcome of the initial analyses. Arsenic only will be analyzed for the step-out borings along with the 6-8 foot interval for boring ASB-014 (along with TCLP arsenic for ASB-014). The 0-2 foot interval for boring ASB-014 and for the two additional borings will be analyzed for the full suite of parameters to further assess the former hazardous waste storage area. The 4-6 and 8-10 foot interval samples will be placed on hold for the two additional borings. A seventh boring will be installed in the Packer building after plant shutdown.

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Twin Cities Assembly Plant, Saint Paul, Minnesota

	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Former Railroad Spurs Feature 12 Along eastern portion of main assembly building **Former Coal Operations** Feature 47 East of main assembly Figure 12	**Former Railroad Spurs** Feature 12 Railroad spurs were utilized for the delivery and loading of parts and other items to and from the assembly plant via rail cars. Based on their historic use the former railroad spurs were investigated. **Former Coal Operations** Feature 47 The coal hopper building was utilized to store coal for use at the Steam Plant. Coal was delivered via rail and was transferred into the coal hopper building for storage. A tunnel connecting the coal hopper building and the steam plant runs beneath the main assembly plant, which was utilized to transfer the coal from the hopper to the steam plant. The estimated depth to the base of the coal hopper building is approximately 10 to12 feet bgs.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole. Field Measurements: Organic Vapor using a PID. The highest PID reading at ASB-005 was 2.9 ppm at 8-10 ft bgs. The highest PID reading at ASB-036 was 4.1 ppm at 2-4 ft bgs. The highest PID reading at ASB-037 was 4.1 ppm at 6-8 ft bgs. The highest PID reading at ASB-040 was 17.3 ppm at 6-8 ft bgs. Other Testing: Completed Sheen tests in the 0-2 ft bgs interval in each boring. No visible sheen. Borings and Wells: Four Hollow Stem Auger borings (ASB-005, ASB-036, ASB-037, ASB-040) Sample depths were 6-8, 6-8 and 12-14, and 6-8, ft bgs, respectively. Temporary groundwater wells set and sampled from ASB-005, ASB-036 and ASB-037. Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) DRO (Wisconsin Modified Method) PCBs (Method 8082) RCRA Metals (Method 6010) Groundwater: VOCs (Method 8260B) SVOCs (Method 8270C) DRO (Wisconsin Modified Method) PCBs (Method 8082) RCRA Metals (Method 6010) Results: Soil: ASB-005 no SRV exceedences. ASB-036 exceeded Tier 1 Residential SRV for copper 14.1 mg/kg and iron 12,600 mg/kg (within typical background range). ASB-037 DRO detected at 1,100 mg/kg. ASB-040 no SRV exceedences. Groundwater: ASB-005 Arsenic, cadmium, chromium and lead detected above HRL's. ASB-036 Arsenic, beryllium, chromium, lead, manganese, nickel and vanadium detected above the HRL's. ASB-037 Arsenic, barium, cadmium, chromium, lead and mercury detected above HRL's.	To evaluate the exceedances identified at boring locations ASB-005, ASB-036, and ASB-037. Refer to Figure 12 for proposed soil boring and well locations.	Complete **one soil boring and install two monitoring wells** in the area to provide additional information. The boring shall extend until native materials are encountered and no visual, olfactory, or PID evidence of impacts is observed. Each boring shall extend a minimum depth of 12 feet below ground level or to bedrock refusal, whichever is shallower. **Two monitoring wells** will be installed to further evaluate the exceedances identified at boring locations ASB-005, ASB-036, and ASB-037. Proposed soil boring and well locations are provided on the attached figure. Actual well locations will be based on field conditions and access restrictions.	Field Measurements: Organic Vapor using a PID. Base Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. At each of the three borings (includes the borings converted to monitoring wells) soil samples will be collected from the 0-2 or 2-4 foot intervals. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	Install **two monitoring wells** to an anticipated total depth of 12 feet below land surface.	Analytical Parameters: Soil: VOCs (Method 8260B) PAHs (Method 8270C) DRO (Wisconsin Modified Method) PCBs (Method 8082) RCRA Metals (Method 6010) Groundwater: VOCs (Method 8260B) PAHs (Method 8270C) RCRA Metals (Method 6010), Dissolved DRO (Wisconsin Modified Method) GRO (Wisconsin Modified Method)	None.

Table 1. Supplemental Investigation Summary - Exterior Features
Supplemental Phase II – Exterior Investigation
Twin Cities Assembly Plant, Saint Paul, Minnesota

	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	**Additional Data Needs**	**Supplemental Scope**	**Soil Assessment**	**Groundwater Assessment**	**Analytical Requirements**	**Other Considerations**
Outfall 001 Feature 15 Southwest of TCAP property in Hidden Fall Regional Park Figure 14	Outfall 001 is regulated under the Site's NPDES permit and discharges into Hidden Falls Regional Park. According to documentation maintained at the MPCA, three separate spill events occurred at the Hidden Falls storm drain Outfall 001 in July, August and September of 1989. Samples were taken from the outfall area by MPCA representatives, which indicated the presence of MIBK and other solvents. During a meeting with MPCA representatives, Ford indicated that the suspected source of the spill was most likely a catch basin around four USTs containing solvents. Ford agreed to complete the requirements to define the extent of contamination surrounding the waste solvent tanks and proposed remediation addressed in the RFRA issued by the MPCA in June 1990. However, documentation pertaining to additional closure sampling at Outfall 001, following the identification of the presence of MIBK, was not found at files maintained at the TCAP or the MPCA.	A site reconnaissance was conducted of the area and no visual impacts were observed.	None.	None.	None.	None.	None.	Outfall 001 will be sampled as part of the Mississippi River Sampling activities and is described in the work plan titled *Groundwater Seep and Mississippi River Sampling Work Plan* dated April 11, 2008.

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	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	**Additional Data Needs**	**Supplemental Scope**	**Soil Assessment**	**Groundwater Assessment**	**Analytical Requirements**	**Other Considerations**
Former Gasoline, Sunoco Spirits, and Pryoxlin USTs Feature 16 East of Central Engineering Office Figure 15	Two former 20,000 gallon gasoline USTs were located east of the former oil house and eight 6,000 gallon gasoline, Sunoco spirits and pryoxlin thinner USTs were located north of the former oil house, which were utilized in conjunction with the former paint operations that occurred within the main assembly building. The estimated depth to the base of the former USTs is approximately 10 to12 feet bgs. Documentation pertaining to the removal and subsequent closure of the USTs was not found in files maintained at TCAP or the MPCA.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole. Borings and Wells: Two Hollow Stem Auger borings (ASB-001, and ASB-002). Sample depths were 6-8, & 8-10, and 8-10 ft bgs, respectively. Temporary groundwater well set and sampled from ASB-001. Field Measurements: Organic Vapor using a PID. The highest PID reading at ASB-001 was 3 ppm at 6-8 ft bgs. The highest PID reading at ASB-002 was 20.7 ppm at 8-10 ft bgs. Analytical Parameters: Soil: VOCs (Method 8260B) PAHs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) RCRA Metals (Method 6010) Groundwater: VOCs (Method 8260B) SVOCs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) RCRA Metals (Method 6010) Results: Soil: ASB-001 (6-8 ft bgs) DRO 250 mg/kg and GRO 740 mg/kg, exceeded Tier 1 Residential SRV for 1,2,4 TMB 12 mg/kg; 1,3,5 TMB 3.5 mg/kg; exceeded Tier 2 Industrial SRV total xylenes 178 mg/kg; DRO 250 mg/kg and GRO 740 mg/kg. (8-10 ft bgs) exceeded Tier 1 Residential SRV for arsenic 7.3 mg/kg. ASB-002 (8-10 ft bgs) DRO 200 mg/kg; GRO 1,400 mg/kg; naphthalene 24 mg/kg; and arsenic 6.1 mg/kg (within typical background range) exceeded Tier 1 Residential SRV; exceeded Tier 2 Industrial SRV for 1,2,4 TMB 57 mg/kg; 1,3,5 TMB 18 mg/kg; Groundwater: ASB-001 exceedance of HRL for ethylbenzene, isopropylbenzene, naphthalene, total xylenes, arsenic, barium, cadmium, chromium and lead. DRO 52 mg/kg and GRO 66 mg/kg	To confirm and delineate exceedances of criteria at ASB-001 and ASB-002. Refer to Figure 15 for proposed soil boring and well locations.	Complete **seven soil borings** in the area of the former gasoline, Sunoco spirits, and pryoxlin USTs to delineate exceedances of criteria at ASB-001 and ASB-002. Seven step-out borings will be located as shown on Figure 15 and positioned in a manner to delineate the exceedances. In addition, soil samples will be collected from soil borings converted to **two monitoring wells** co-located with the original ASB-001 and ASB-002 locations to provide vertical delineation of the exceedances. Each boring shall extend until native materials are encountered and no visual, olfactory, or PID evidence of impacts is observed. Borings shall extend approximately 12 feet below ground level or until bedrock, if encountered, whichever is shallowest.	Field Measurements: Organic Vapor using a PID. Base Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. At each of the three step-out borings completed to delineate ASB-001 soil samples will be collected from the 0-2, 6-8, and 10-12 foot intervals. At each of the four step-out borings completed to delineate ASB-002 soil samples will be collected from the 0-2, 8-10 and 10-12 foot intervals. At the co-located ASB-001 and ASB-002 boring locations soil samples will be collected from the 0-2 and 10-12 foot intervals. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	Install **two permanent monitoring wells** and collect a groundwater sample for analysis.	Analytical Parameters: Soil: VOCs (Method 8260B) PAHs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) Groundwater: VOCs (Method 8260B) PAHs (Method 8270C) RCRA Metals (Method 6010), Dissolved GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method)	**ASB-001** - Initially, both soil samples collected from ASB-001 and the 6-8 ft intervals collected from the three step-out borings will be submitted to the laboratory for analysis. The 0-2 and 10-12 ft intervals collected from the three step-out borings will be submitted to the laboratory and placed on HOLD pending the outcome of the initial analyses. **ASB-002** - Initially, both soil samples collected from ASB-002 and the 8-10 ft intervals collected from the four step-out borings will be submitted to the laboratory for analysis. The 0-2 and 10-12 ft intervals collected from the four step-out borings will be submitted to the laboratory and placed on HOLD pending the outcome of the initial analyses.

Table 1. Supplemental Investigation Summary - Exterior Features
Supplemental Phase II – Exterior Investigation
Twin Cities Assembly Plant, Saint Paul, Minnesota

	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Former Oil Fill Area Feature 20 Northeast of the Coal Hopper House Figure 16	A review of historical drawings indicated the presence of a former oil fill location. Based on the former use of the area the oil fill location was investigated.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole. Borings and Wells: Hollow Stem Auger borings (ASB-006, ASB-007) Sample depths were 8-10 and 10-12 ft bgs, respectively. Temporary groundwater well set and sampled from ASB-006. Field Measurements: Organic Vapor using a PID. No elevated PID readings were noted at ASB-006 and ASB-007. Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) PCBs (Method 8082) RCRA Metals (Method 6010) Groundwater: VOCs (Method 8260B) SVOCs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) RCRA Metals (Method 6010) Results: Soil: ASB-006 and ASB-007 no SRV exceedences Groundwater: ASB-006 exceeded HRLs for Arsenic, barium, cadmium, chromium, lead and mercury.	To evaluate the exceedances in groundwater identified at boring location ASB-006. Refer to Figure 16 for proposed soil boring and well locations.	**One monitoring well** will be installed to evaluate the exceedances identified at boring location ASB-006. The proposed well location is provided on the attached figure.	Field Measurements Organic Vapor using a PID. Base Scope Soils will be continuously logged from the surface to the bottom of each bore hole. Visually assess and log the soil type and lithology in each boring using the USCS.	Install **one monitoring well** and collect a groundwater sample for analysis.	Analytical Parameters: Groundwater: PAHs (Method 8270C) RCRA Metals (Method 6010), Dissolved DRO (Wisconsin Modified Method) GRO (Wisconsin Modified Method)	Original borings were not completed in the location identified on the map due to utility interference. Two soil borings will be installed during the interior investigation due to presence of utilities.

Table 1. Supplemental Investigation Summary - Exterior Features
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Feature(s)	**Background**	**Initial Scope**	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
1996 Glycol Release From Underground Piping Feature 21 Along eastern portion of main assembly building Figure 17	In 1996 a leak occurred from underground piping used to transfer glycol along the eastern portion of the main assembly building. The piping is estimated to be present approximately 4 to 8 feet bgs. Based on available documentation reviewed, remediation activities were completed in the area of the release; however there was no documentation indicating that the release had been adequately remediated per the MPCA. Therefore, the glycol release represents a Feature.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole. Borings and Wells: Two Hollow Stem Auger borings (ASB-008, ASB-009). Sample depths were 0-2 & 4-6 and 8-10 ft bgs, respectively. Field Measurements: Organic Vapor using a PID. No elevated PID readings were noted a t AsB-008 and ASB-009. Other Testing: Completed Sheen tests on ASB-008, ASB-009, ASB-011, and ASB-012. Visible sheen seen in ASB-008 from 0-2' and 4-6'. No sheen visible in other borings. Analytical Parameters: Soil: Ethylene glycol (Method 8015B) Results: Soil: ASB-008 and ASB-009 nothing detected.	To further evaluate the visible sheen at ASB-008. See also discussion for Feature 27 which is immediately adjacent to Feature 21.	Complete **one soil boring** near ASB-008 to provide additional information. The boring shall extend until native materials are encountered and no visual, olfactory, or PID evidence of impacts is observed. The boring shall extend a minimum depth of 12 feet below ground level or to bedrock refusal, whichever is shallower.	Field Measurements: Organic Vapor using a PID. Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. At the boring soil samples will be collected from the 0-2, 4-6 and 6-8 foot interval. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	None.	Analytical Parameters: Soil: VOCs (Method 8260B) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method)	None.

Table 1. Supplemental Investigation Summary - Exterior Features
Supplemental Phase II – Exterior Investigation
Twin Cities Assembly Plant, Saint Paul, Minnesota

	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	Background	Initial Scope	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Former Brake Fluid UST Feature 23 Near southwest corner of main assembly building Figure 18	A former 6,000-gallon brake fluid UST was used in fluid fill operations at TCAP. The UST was installed in 1968 and removed in 1990. The UST was of steel construction. The estimated depth to the base of the former UST is approximately 8 to 10 feet bgs. A review of available documentation indicated that there were no reported releases from this UST; however, no documentation pertaining to removal activities or closure sampling was found in files maintained at TCAP or the MPCA.	No borings installed due to utilities.	Investigate potential impacts associated with the former brake fluid UST. Refer to Figure 18 for proposed soil boring and well locations.	Investigation will be completed during the interior investigation. Complete **four soil borings** in the area of the former brake fluid UST area to investigate potential impacts. Each boring shall extend until native materials are encountered and no visual, olfactory, or PID evidence of impacts is observed. Each boring shall extend a minimum depth of 12 feet below ground level or to bedrock refusal, whichever is shallower.	Field Measurements Organic Vapor using a PID. Base Scope Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. At each of the borings soil samples will be collected from the 10-12 foot intervals and the interval with the highest PID reading. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	If potential impacts extend to the water table, convert soil borings (maximum of two) to temporary monitoring wells and sample groundwater, if encountered.	Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method)	The location will be investigated during the interior investigation due to presence of utilities.

Table 1. Supplemental Investigation Summary - Exterior Features
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	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	**Additional Data Needs**	**Supplemental Scope**	**Soil Assessment**	**Groundwater Assessment**	**Analytical Requirements**	**Other Considerations**
Unleaded Gasoline USTs Feature 24 West of the warehouse Figure 19	Two 20,000-gallon unleaded gasoline USTs (Figure 19) are currently utilized in conjunction with the fluid fill operations on the assembly line. The USTs are of STI-P3 construction with cathodic protection. The estimated depth to the base of the USTs is approximately 10 to12 feet bgs. A review of available documentation indicated that there were no reported releases from the USTs.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole. Borings and Wells: One Hollow Stem Auger boring (ASB-028). Sample depth was 2- ft bgs. Field Measurements: Organic Vapor using a PID. The highest PID reading at ASB-028 was 3.1 ppm at 2-4 ft bgs. Other Tests: Completed Sheen tests in the 0-2' interval in ASB-028. No visible sheen. Analytical Parameters: Soil: VOCs (Method 8260B) GRO (Wisconsin Modified Method) Results: Soil: ASB-028 nothing detected.	Once these USTs are no longer in use the area will be addressed in accordance with applicable regulations.	None.	None.	None.	None.	Intrusive investigation can not be completed at this time due to the USTs currently being in service. Investigation will be completed following the removal of the tanks.

Table 1. Supplemental Investigation Summary - Exterior Features
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	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	**Additional Data Needs**	**Supplemental Scope**	**Soil Assessment**	**Groundwater Assessment**	**Analytical Requirements**	**Other Considerations**
Oil/Water Separator and Trench Feature 27 North of packer building Figure 20	An approximate 3,000-gallon oil/water separator collects an oil/water mixture from a 100-foot long collection trench. Since this subsurface structure collects oil and water mixture and the integrity of the structure could not be inspected it is considered a Feature. Once the oil/water separator has been emptied and cleaned, the integrity of the structure will be evaluated. The depth of this Feature is still being researched.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole. Borings and Wells: Three Hollow Stem Auger borings (ASB-010, ASB-011, ASB-012) Sample depths were 10-12 & 0-2 and 0-2 ft bgs, respectively. Field Measurements: Organic Vapor using a PID. No elevated PID readings were noted at ASB-010. The highest PID reading at ASB-011 was 4.4 ppm at 0-2 ft bgs. The highest PID reading at ASB-012 was 5.3 ppm at 0-2 ft bgs. Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) PCBs (Method 8082) RCRA Metals (Method 6010) DRO (Wisconsin Modified Method) Results: Soil: ASB-010 Arsenic exceeded Tier 1 Residential SRV 5.9 mg/kg (within typical background range). ASB-011Benzo(a)pyrene exceeded Tier 1 Residential SRV 2.4 mg/kg. ASB-012 DRO detected at 640 mg/kg.	Further investigate potential impacts associated with the oil/water separator and trench. Refer to Figure 20 for proposed soil boring and well locations.	Complete **one soil boring** in the area of the oil/water separator and trench to further investigate potential impacts. Each boring shall extend until native materials are encountered and no visual, olfactory, or PID evidence of impacts is observed. Borings shall extend approximately 12 feet below ground level or until bedrock, if encountered, whichever is shallowest.	Field Measurements: Organic Vapor using a PID. Scope: Soils will be continuously logged from the surface to the bottom of bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in boring using the USCS. At the boring soil samples will be collected from the interval approximately 2 feet below the bottom of the oil/water separator trench or the interval with the highest PID reading. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	If potential impacts extend to the water table, convert soil borings to temporary monitoring wells and sample groundwater, if encountered.	Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010) DRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010), Dissolved DRO (Wisconsin Modified Method)	

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	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	Background	Initial Scope	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Waste Solvent USTs Feature 35 West of the Hazardous Waste Storage Building **Former Bulk Solvent and Waste Solvent USTs** Feature 36 West of the Hazardous Waste Storage Building **Solvent UST Underground Piping** Feature 37 South of Paint Building **Sump within Solvent UST Basin** Feature 46 Northwest Corner of the UST Basin Figure 21	Two 10,000 gallon USTs that store used purge solvent and cleaning solvent generated from the painting process at TCAP. The USTs are located in a basin/bunker which is raised approximately 3 to 4 feet above ground surface. During the fall of 1984 the UST area was constructed and four USTs were installed to store paints, resin and new solvents delivered to TCAP in tanker trucks. The estimated depth to the base of the former USTs is approximately 10 to12 feet bgs. A release was reported from the USTs in 1989 and remedial activities were completed in the area as part of the PRP investigation completed at TCAP. Three monitoring wells were installed in the area and were sampled annually until 2003, when the MPCA deemed the sampling not necessary. MIBK is still present in the area of the former USTs in the sump. Piping is utilized to collect solvent waste generated during the painting process that is then transferred to the used solvent USTs located south of the paint building. The piping is located in a concrete trench which is estimated to be approximately 1 to 2 feet bgs. Additional piping is utilized to transfer the used solvents from the USTs to unloading ports near the southwestern portion of the paint building for removal. Collection of groundwater from solvent UST basin which gets pumped to paint sludge pits. The sump is monitored annually due to a former release which occurred from the former solvent USTs that were removed from the area in 1992. Based on monitoring results MIBK is still detected above the applicable criteria in the sump and the next monitoring event is scheduled in fall of 2008. The base of the sump is estimated to be approximately 2 to 4 ft bgs.	Soil Logging: Soils were continuously logged from the surface to the bottom of the bore hole. Field Measurements: Organic Vapor using a PID. The highest PID reading at ASB-018 was 3.9 ppm at 2-4 ft bgs. The highest PID reading 2-4 ASB-019 was 40.6 ppm at 0-2 ft bgs. The highest PID reading at ASB-020 was 11.1 ppm at 0-2 ft bgs. Other Testing: Completed sheen tests on ASB-018, ASB-019, and ASB-020. No visible sheen. Borings and Wells: Three Hollow Stem Auger borings (ASB-018, ASB-019, and ASB-020). The sample depth at ASB-018 and ASB-019 was 2-4 ft bgs. The sample depth at ASB-020 was 0-2 ft bgs. No temporary monitoring wells were installed. Analytical Parameters SOIL: VOCs (Method 8260B) SVOCs (Method 8270C) PCBs (Method 8082) RCRA Metals (Method 6010) Results: The analytical results for soil samples collected from ASB-018, ASB-019, and ASB-020 no SRV exceedances.	To provide additional assessment of this Feature. Refer to Figure 21 for soil boring and well locations.	Complete **two soil borings** to provide additional assessment of this feature. Each boring shall extend until native materials are encountered and no visual, olfactory, or PID evidence of impacts is observed. Each boring shall extend up to a depth of 10 feet below ground level or to bedrock refusal, whichever is shallowest.	Field Measurements: Organic Vapor using a PID. Base Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. At each of the borings soil samples will be collected from the 4-6 foot interval and the interval with the highest PID reading. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	If potential impacts extend to the water table, convert one soil boring to a temporary monitoring well and a groundwater sample will be collected.	Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010) Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010), Dissolved	Monitoring wells MW-4, MW-5, and MW-6 were installed to monitor groundwater conditions in the vicinity of Features 35, 36, 37, and 46. These wells are currently being sampled per the Quarterly Groundwater and Annual Underground Storage Tank (UST) Discharge Monitoring Work Plan dated December 19, 2007 which is being implemented at the Site. The concrete containment includes the solvent UST piping and the piping for the sump to the Paint Building. The sump piping then runs above grade to the sludge pits.

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	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Former Fuel Oil ASTs Feature 42 South of Steam Plant Figure 23	Former fuel oil ASTs were located south of the Steam Plant. The ASTs were removed from service in 2000 and corrective actions were completed between August 1, 2000 and October 16, 2000. The corrective actions included removal of the remaining fuel oil from the in service AST, cleaning of the AST and associated piping and dismantling of the two ASTs for recycling.	Soil Logging: Soils were continuously logged from the surface to the bottom of the bore hole. Field Measurements: Organic Vapor using a PID. The highest PID reading at ASB-026 was 3.7 ppm at 4-6 ft bgs. Other Testing: Completed sheen tests on ASB-026. No visible sheen. Borings and Wells: One Hollow Stem Auger boring (ASB-026). Sample depth was 4-6 ft bgs. No temporary monitoring wells were installed. Analytical Parameters SOIL: VOCs (Method 8260B) SVOCs (Method 8270C) PCBs (Method 8082) TAL Metals (Method 6010) Results: ASB-026 exceeded Tier 1 Residential SRV for copper (21.7 mg/kg) and iron (17,700 mg/kg) (within typical background range).	To provide additional assessment of this Feature. Refer to Figure 23 for soil boring and well locations.	Complete **up to three soil borings** to the south east and west of the former fuel oil ASTs to provide additional assessment of this feature. Each boring shall extend until native materials are encountered and no visual, olfactory, or PID evidence of impacts is observed. Each boring shall extend a minimum depth of 15 feet below ground level or to bedrock refusal, whichever is shallowest.	Field Measurements: Organic Vapor using a PID. Base Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. At each of the borings soil samples will be collected from the 4-6 foot interval or the interval with the highest PID reading. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	Convert one boring to a temporary monitoring well and sample groundwater, if soil impacts extend to groundwater table.	Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) PCBs (Method 8082) TAL Metals (Method 6010) DRO (Wisconsin Modified Method) GRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8270C) PCBs (Method 8082) TAL Metals (Method 6010), Dissolved DRO (Wisconsin Modified Method) GRO (Wisconsin Modified Method)	The former fuel AST area has been converted to a storm water detention pond; therefore borings will be completed outside of the pond. As part of the Feature 153 investigation six soil borings will completed northeast of Feature 42. The analytical data collected from these borings will be used to assess subsurface conditions to the northeast.

Table 1. Supplemental Investigation Summary - Exterior Features
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	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	**Additional Data Needs**	**Supplemental Scope**	**Soil Assessment**	**Groundwater Assessment**	**Analytical Requirements**	**Other Considerations**
Wastewater Collection ASTs Feature 44 North of the wastewater treatment building **Wastewater Treatment Area** Feature 134 Wastewater treatment plant **Former Waste Disposal Area** Feature 140 North of Steam Plant Figure 24	Wastewater Collection ASTs - Feature 44 Three approximate 139,000-gallon wastewater treatment tanks are utilized to store and treat process wastewater generated by the assembly and painting processes at TCAP. The phosphate process generates the majority of the wastewater. Since the ASTs contain and hold process industrial wastewater prior to and during treatment, this area was investigated. Wastewater Treatment Area - Features 134 The wastewater treatment area houses operations including transferring, containing, storing, and treating process wastewater generated from the assembly process. Based on current and historic use this area was investigated. Former Waste Disposal Area – Feature 140 In what appears to be an isolated disposal incident in 1966, paint waste solvent and sludge was disposed of north of the Steam Plant. Visibly contaminated soils in the area were excavated and sent to a permitted landfill. The reviewed documentation had no analytical data of the material disposed of or description of materials excavated and disposed.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole. Field Measurements: Organic Vapor using a PID. The highest PID reading at ASB-023 was2.8 ppm at 6-8 ft bgs. The highest PID reading at ASB-024 was 2.3 ppm at 4-6 ft bgs. The highest PID reading at ASB-025 was 1.6 ppm at 12-14 ft bgs. The highest PID reading at ASB-027 was 3.3 ppm at 2-6 ft bgs. Other Testing: Completed Sheen tests on each boring. No visible sheen. Borings and Wells: Four Hollow Stem Auger borings (ASB-023, ASB-024, ASB-025, ASB-027). Sample depths were 6-8, 4-6, 12-14, and 4-6, ft bgs, respectively. No temporary monitoring wells were installed. Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) PCBs (Method 8082) TAL Metals (Method 6010) Results: Soil: Lead was the only constituent detected in ASB-027 at 1070 mg/kg at the interval 4-6 ft bgs which exceeded the SRV.	To further define the horizontal and vertical extents of lead impacts at ASB-027. Refer to Figure 24 for proposed soil boring and well locations.	Complete **five additional soil borings** in the area of the wastewater treatment area to delineate the exceedance of criteria at ASB-027. Four step-out borings will be located approximately 25 feet from ASB-027 and positioned in a manner to delineate the exceedance. In addition, one boring will be co-located with the original ASB-027 location to provide vertical delineation of the exceedance. Each boring shall extend until native materials are encountered and no visual, olfactory, or PID evidence of impacts is observed. Borings shall extend approximately 15 ft bgs or until bedrock, if encountered, whichever is shallowest.	Field Measurements: Organic Vapor using a PID Base Scope: At each of the four step-out borings soil samples will be collected from the 0-2, 4-6, and 8-10 ft intervals. At the co-located ASB-027 boring location soil samples will be collected from the 0-2, 8-10, and 10-12 ft intervals. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	Convert ASB-027 to a temporary monitoring well and sample groundwater, if sufficient groundwater is present.	Analytical Parameters: Soil: Lead (Method 6010) TCLP Lead Groundwater (Provisional): Lead (Method 6010), Dissolved	Initially, the 0-2 and 8-10 ft bgs samples collected from boring ASB-027 and the 0-2 and 4-6 ft bgs intervals collected from the four step-out borings will be submitted to the laboratory for analysis. The 8-10 ft bgs interval collected from the four step-out borings and the 10-12 ft bgs interval collected from ASB-027 will be submitted to the laboratory and placed on HOLD pending the outcome of the initial analyses.

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Feature(s)	**Background**	**Initial Scope**	**Additional Data Needs**	**Supplemental Scope**	**Soil Assessment**	**Groundwater Assessment**	**Analytical Requirements**	**Other Considerations**
Former Hazardous Waste Storage Area Feature 49 Along Eastern Portion of Main Assembly Building Figure 25	Based on historical documentation reviewed, a former hazardous waste storage area was identified to have been located east of the main assembly building. Based on the general usage of the area to store hazardous waste materials, the former hazardous storage area was investigated.	Soil Logging: Soils were continuously logged from the surface to the bottom of the bore hole. Field Measurements: Organic Vapor using a PID. The highest PID reading at ASB-038 was 3.8 ppm at0-2 and 8-10 ft bgs. The highest PID reading at ASB-029 was 0.6 ppm at 0-2 ft bgs. Other Testing: Completed Sheen tests on ASB-038. No visible sheen. Borings and Wells: Two Hollow Stem Auger borings (ASB-038 and ASB-039). Sample depth at ASB-038 was 8-10 ft bgs Sample depth at ASB-039 was 0-2 ft bgs. No temporary monitoring wells were installed. Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) PCBs (Method 8082) TAL Metals (Method 6010) GRO & DRO (Wisconsin Modified Method) were sampled for in ASB-038. Results: ASB-038 exceeded Tier 1 Residential SRV for arsenic (8.9 mg/kg), copper (12.1 mg/kg), and iron (9,630 mg/kg) (within typical background range).	To provide additional assessment of this Feature. Refer to Figure 25 for soil boring locations.	Complete **one soil boring** to provide additional assessment of this feature. The boring shall extend until native materials are encountered and no visual, olfactory, or PID evidence of impacts is observed. The boring shall extend up to a depth of 15 feet below ground level or to bedrock refusal, whichever is shallowest.	Field Measurements: Organic Vapor using a PID. Base Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. The boring soil sample will be collected from the 0-2 or 2-4 foot interval. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	None.	Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) PCBs (Method 8082) TAL Metals (Method 6010) DRO (Wisconsin Modified Method) GRO (Wisconsin Modified Method)	Six borings completed to investigate Features 12, 47, and 138 are located within or adjacent to Feature 49. Two of the soil borings completed at Feature 12 (ASB-037 and ASB-040) were analyzed for VOCs, SVOCs, PCBs, TAL metals and DRO. Soil samples were collected from 6-8 ft bgs and 12-14 ft bgs at ASB-037 and 6-8 ft bgs at ASB-040. The analytical results for soil samples collected from these borings did not exceed criteria. The two soil borings completed at Feature 47 (ASB-035 and ASB-036) were analyzed for VOCs, SVOCs, TAL metals and DRO. Soil samples were collected from 8-10 ft bgs at ASB-035 and 6-8 ft bgs at ASB-036. The analytical results for soil samples collected from these borings did not exceed criteria. The two soil borings completed at Feature 138 (ASB-041 and ASB-042) were analyzed for VOCs, lead, and GRO. Soil samples were collected from 6-8 ft bgs at ASB-041 and 8-10 ft bgs at ASB-042. The analytical results for soil samples collected from these borings did not exceed criteria. Groundwater samples collected from ASB-036 and ASB-037 exceeded criteria for select analytes; additional delineation of these exceedances are addressed in the SOW for the respective Features.

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	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	**Additional Data Needs**	**Supplemental Scope**	**Soil Assessment**	**Groundwater Assessment**	**Analytical Requirements**	**Other Considerations**
Exterior locations adjacent to Sludge Pits Feature 121 Western Portion of Paint Building Figure 26	The paint sludge pits separate overspray from the painting process that is captured by sheeting action of water in trenches underneath the paint booths. The northern paint sludge pit was observed to be in good condition; however, the southern paint sludge pit was currently full of water and could not be inspected. Since the southern pit could not be inspected, the Feature was investigated. The base of the sludge pits is an approximate elevation of 822 feet mean sea level.	Soil Logging: Soils were continuously logged from the surface to the bottom of the bore hole. Field Measurements: Organic Vapor using a PID. The highest PID reading at ASB-015 was 7.9 ppm at 0-2 ft bgs. The highest PID reading at ASB-016 was 3.4 ppm at 0-2 ft bgs. The highest PID reading at ASB-032 was 3.9 ppm at 0-2 ft bgs. Borings and Wells: Three Hollow Stem Auger borings (ASB-015, ASB-016, and ASB-032). The sample depth at ASB-015 and ASB-016 was 0-2 ft bgs. The sample depth at ASB-032 was 2-4 ft bgs. No temporary monitoring wells were installed. Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) PCBs (Method 8082) TAL Metals (Method 6010) Results: ASB-032 exceeded Tier 1 Residential SRV for iron (10,800 mg/kg) (within typical background range).	To provide additional assessment of this Feature. Refer to Figure 26 for soil boring and well locations.	Complete **two soil borings** in the area of the sludge pits to provide additional assessment of this feature. Each boring shall extend until native materials are encountered and no visual, olfactory, or PID evidence of impacts is observed. The borings shall extend an approximate depth of 6 feet below ground level. Ground surface elevation at the proposed boring location to the north of the sludge pits is approximately 826 feet mean sea level and the ground surface elevation of the proposed boring to the west is approximately 811 feet mean sea level.	Field Measurements: Organic Vapor using a PID. Base Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. At the boring location to the north of the sludge pits a soil sample will be collected from the 4-6 foot interval and at the boring location to the west of the sludge pits a soil sample will be collected from the 0-2 foot interval. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	Convert one boring to a temporary monitoring well and sample groundwater, if soil impacts extend to groundwater table.	Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) TAL Metals (Method 6010) Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8270C) TAL Metals (Method 6010), Dissolved	None.

Table 1. Supplemental Investigation Summary - Exterior Features
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	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Former 20,000 Gallon Gasoline AST Feature 138 South of Former Oil House Figure 27	A former 20,000-gallon gasoline AST was removed from south of the former oil house as identified during interviews with TCAP personnel. Based on the interviewee, when the AST was removed stained soil and odors were identified. However, actions for remediation of the soil were apparently not completed in the area. It is unknown if the AST stored leaded or unleaded gasoline.	Soil Logging: Soils were continuously logged from the surface to the bottom of the bore hole. Field Measurements: Organic Vapor using a PID. The highest PID reading at ASB-041 was 22.7 ppm at 6-8 ft bgs. No elevated PID readings were noted at ASB-042. Borings and Wells: Two Hollow Stem Auger borings (ASB-041 and ASB-042). Sample depth at ASB-041 was 6-8 ft bgs. Sample depth at ASB-042 was 8-10 ft bgs. No temporary monitoring wells were installed. Analytical Parameters: Soil: VOCs (Method 8260B) Lead (Method 6010) GRO (Wisconsin Modified Method) Results: The analytical results for soil samples collected from ASB-041 and ASB-042 no SRV exceedances.	To provide additional assessment of this Feature. Refer to Figure 27 for soil boring and well locations.	Complete **two soil borings** in the area of the former 20,000 gallon gasoline AST to provide additional assessment of this feature. Each boring shall extend until native materials are encountered and no visual, olfactory, or PID evidence of impacts is observed. The borings shall extend a minimum depth of 15 feet below ground level or to bedrock refusal, whichever is shallowest.	Field Measurements: Organic Vapor using a PID. Base Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. A soil sample will be collected from the 0-2 foot interval and/or the interval with the highest PID reading. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	Convert one boring to a temporary monitoring well and sample groundwater, if soil impacts extend to groundwater table.	Analytical Parameters: Soil: VOCs (Method 8260B) Lead (Method 6010) GRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) Lead (Method 6010), Dissolved GRO (Wisconsin Modified Method)	Soil boring may not be able to be completed within the feature area shown on Figure 26 due to utilities and Site infrastructure. Borings may need to be installed after plant closure.

Table 1. Supplemental Investigation Summary - Exterior Features
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	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	**Additional Data Needs**	**Supplemental Scope**	**Soil Assessment**	**Groundwater Assessment**	**Analytical Requirements**	**Other Considerations**
Potential Battery Waste Disposal Area – Baseball Fields Feature 139 Baseball Diamonds Figure 28	Based on documentation reviewed the area was potentially used for disposal of battery waste. The MPCA requested a geophysical study in the area; however, no documentation pertaining to additional investigations into Feature 139 was found.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole Field Measurements: Organic Vapor using a PID. Other Testing: Completed Sheen tests on each boring. No visible sheen. Boring and Wells: 30 Geoprobe borings (ASB-049 to ASB-054 and ASB-071 to ASB-094 39 surface soil samples (AGM-SS-001, to AGM-SS039) collected from 0 to 6 inches below ground surface. Temporary groundwater well set and sampled from ASB-076 and ASB-087. Analytical Parameters: Soil: VOCs (Method 8260) SVOCs (Method 8270) TAL Metals (Method 6010) pH (Method 150.1) RCRA Metals (Method 6010) Surface Soil Samples: TAL Metals (Method 6010) Groundwater: VOC (Method 8260B) SVOC (Method 8270C) DRO (Wisconsin Modified Method) PCBs (Method 8082) RCRA Metals (Method 6010) Results: Soil: Refer to the "Additional Soil Investigation and Surface Risk Assessment Report Baseball Fields - Feature 139" and "RAIR" for a summary of results and remediation completed. Groundwater: ASB-076 arsenic, copper and lead was exceeded the HRL. ASB-087 arsenic and lead exceeded the HRL.	None.	None.	None.	None.	None.	

Table 1. Supplemental Investigation Summary - Exterior Features
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	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	Background	Initial Scope	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Drums Feature 143 Underground Sand Tunnel 1A South and Sand Tunnel 4A Figure 29	A total of three drums were observed in the sand tunnels. The floor and walls of the sand tunnels consist of sandstone. Two of three drums were empty all drums were rusted and in poor condition with no lids. Staining was not observed in or near the drums observed in these areas. It appeared that the drums may have been historically utilized to mix concrete or mortar. However, due to the presence of the corroded drums of which the former contents is unknown, the area was investigated.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole. Borings and Wells: Two Hand Augers (HA-055, HA-056). Samples depths were 0-1 and 0-0.5 ft bgs. Field Measurements: Organic Vapor using a PID. No elevated PID readings were noted at HA-055. The highest PID reading at HA-056 was 0.4 ppm at 0-5 ft bgs. Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010) PCBs (Method 8082) Results: Soil: HA-055 no SRV exceedances. HA-056 no SRV exceedances.	None. Refer to Figure 29 for a map of the feature area.	None.	None.	None.	None.	None.

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	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	**Additional Data Needs**	**Supplemental Scope**	**Soil Assessment**	**Groundwater Assessment**	**Analytical Requirements**	**Other Considerations**
Utility Tunnel Staining Feature 144 Underground Utility Tunnel Figure 29	Staining was identified on the concrete floor surface within the utility tunnel. The utility tunnel may have been associated with historical Fluid Fill AST tank farm (UST/AST Feature 52) located in or near the former fuel house which contains product piping.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole. Borings and Wells: Two Hand Augers (HA-069, HA-070). Samples depths were 0-1 and 0-1 ft bgs. Field Measurements: Organic Vapor using a PID. The highest PID reading at HA-069 was1.2 ppm at 0-1 ft bgs. The highest PID reading at HA-070 was 5.7 ppm at 0-1 ft bgs. Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) RCRA Metals (Method 6010) PCBs (Method 8082) Ethylene Glycol (Method 8015) Results: Soil: HA-069 and HA-070 no SRV exceedances.	None. Refer to Figure 29 for a map of the feature area.	None.	None.	None.	None.	None.

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	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Flow Stone Feature 149 Underground Easternmost Portion of Gas Tunnel Figure 29	At the east end of the gas tunnel, water was observed to be leaking in from the main assembly building above. The floor and walls of the gas tunnel consist of sandstone. Flow stone was observed on the walls within the gas tunnel.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole. Borings and Wells: One Hand Auger (HA-068). Sample depth was 0-1 ft bgs. Field Measurements: Organic Vapor using a PID. The highest PID reading at HA-068 was 065 ppm at 0-1 ft bgs. Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010) PCBs (Method 8082) Results: Soil: HA-068 no SRV exceedances.	None. Refer to Figure 29 for a map of the feature area.	None.	None.	None.	None.	None.

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	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	**Additional Data Needs**	**Supplemental Scope**	**Soil Assessment**	**Groundwater Assessment**	**Analytical Requirements**	**Other Considerations**
Collapsed Area with Buried Drums Feature 150 Underground Westernmost Portion of Sand Tunnel 1A South Figure 29	Sand tunnel 1A south was an exit at one point in time, with concrete and rebar-formed walls and ceiling. Currently, there is no exit point, and a collapse is apparent at the end of the tunnel. Buried drums were observed to be present among the collapse debris and black, rust and turquoise staining was observed on the floor and ceiling. The stained area had a paint odor. The black, rust, and turquoise staining was also present in open 55-gallon drums partially filled with solids with a paint odor. The extent of the drum deposits could not be determined due to a collapse at the assumed exit point of the tunnel.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole Field Measurements: Organic Vapor using a PID. The highest PID reading at HA-064 was 101 ppm at 0-1 ft bgs. The highest PID reading at HA-065 was 90.4 ppm at 0-1 ft bgs. The highest PID reading at HA-066 was 85.2 ppm at 0-1 ft bgs. The highest PID reading at HA-067 was 80.1 ppm at 0-1 ft bgs. Borings: Four Hand Auger borings HA-064, HA-065, HA-066 and HA-067 Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010) PCBs (Method 8082) Results: HA-064 exceeded Tier 1 Residential SRV for 1,3,5 TMB 7 mg/kg, barium 8,630 mg/kg and chromium 263 mg/kg; exceeded Tier 2 Industrial SRV for 1,2,4 TMB 87 mg/kg, naphthalene 150 mg/kg, 2-methylnaphthalene 370J, naphthalene 1,400 mg/kg, arsenic 36.7 mg/kg, cadmium 307 mg/kg and lead 6,650 mg/kg. HA-065 exceeded Tier 1 Residential SRV for benzene 6.9J mg/kg, n-propylbenzene 41 mg/kg, toluene 210 mg/kg, barium 6710 mg/kg, chromium 210 mg/kg, selenium 253 mg/kg and mercury 0.56 mg/kg; exceeded Tier 2 Industrial SRV for 1,2,4 TMB 1,100 mg/kg, 1,3,5 TMB 350 mg/kg, butylbenzene 130 mg/kg, naphthalene 370 mg/kg, total xylenes 1,030 mg/kg, 2-methylnaphthalene 460J mg/kg, naphthalene 2,100 mg/kg, arsenic 42.6 mg/kg, cadmium 832 mg/kg and lead 8,410 mg/kg. HA-066 exceeded Tier 1 Residential SRV for benzene 6.3J mg/kg, n-propylbenzene 73 mg/kg, toluene 290 mg/kg, 2-methylnaphthalene 250 mg/kg, barium 8710 mg/kg, chromium 306 mg/kg, selenium 390 mg/kg: exceeded Tier 2 Industrial SRV for 1,2,4 TMB 1,500 mg/kg, 1,3,5 TMB 480 mg/kg, butylbenzene 160 mg/kg, naphthalene 300 mg/kg, total xylenes 1,810 mg/kg, 2-methylnaphthalene 250 mg/kg, naphthalene 1,300 mg/kg, arsenic 87.5 mg/kg, cadmium 1,420 mg/kg, lead 17,900 mg/kg. HA-067 exceeded Tier 1 Residential SRV for 1,3,5 TMB 4.6 mg/kg.	To further evaluate the exceedances identified at hand auger boring locations HA-064, HA-065, HA-066 and HA-067 and to estimate the volume of residual waste materials within the tunnel. Refer to Figure 29 for proposed soil boring and well locations.	The location of the collapsed portion of the tunnel will be surveyed (X,Y,Z). In addition, the extent of the visible sludge will also be surveyed. The surveyors will then proceed outside the tunnels and use the X and Y coordinates to identify the location of the collapse from the exterior. Field personnel will work with the surveyors using Site drawings and maps to identify and survey the former exit of the tunnel. This activity will be completed in accordance with confined space entry protocols outlined in the HASP.	None.	None.	None.	Options for further investigation will be developed following the determination of the location of the former tunnel exit and the estimated volume of waste materials.

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	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Potential Film/Staining Feature 151 Underground Sand Tunnels Figure 29	Several of the mined sand tunnels contain railroad ties (with a limited number having rails still attached) which were used to transport the mined sand from the tunnels for use in the glass manufacturing operations in the main assembly building. A number of these tunnels have had or currently had standing water in them, and a film/staining on the standing water was observed in these areas. The staining may have been related to wood preservation residuals. The film/staining was observed to be dark brown to black in color.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole. Borings and Wells: Seven Hand Augers (HA-057, HA-058, HA-059, HA-060, HA-061, HA-062, HA-063). Sample depths were 0-0.5, 0-1, 0-0.5, 0-0.5, 0-0.5, 0-0.5 and 0-0.5 Field Measurements: Organic Vapor using a PID. The highest PID reading at HA-057 was 15.2 ppm at 0-0.5 ft bgs. The highest PID reading at HA-058 was 0.9 ppm at 0-1 ft bgs. The highest PID reading at HA-059 was 1.2 ppm at 0-0.5 ft bgs. The highest PID reading at HA-060 was 19.1 ppm at 0-0.5 ft bgs. The highest PID reading at HA-061 was 10.4 ppm at 0-0.5 ft bgs. The highest PID reading at HA-062 was 30.7 ppm at 0-0.5 ft bgs. The highest PID reading at HA-063 was 40.1 ppm at 0-0.5 ft bgs. Analytical Parameters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010) PCBs (Method 8082) Results: Soil: No SRV exceedences at any of the locations.	None. Refer to Figure 29 for a map of the feature area.	None.	None.	None.	None.	None.

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	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	**Additional Data Needs**	**Supplemental Scope**	**Soil Assessment**	**Groundwater Assessment**	**Analytical Requirements**	**Other Considerations**
Former Fuel Oil UST Feature 152 East of Central Engineering Office Figure 30	The 27,000-gallon UST may have been utilized to provide fuel as a heating source in the main assembly building. The UST was installed at an unknown date and no documentation pertaining to its removal was found through research activities; therefore, the UST may still be in place at TCAP. The estimated depth to the base of the former UST is approximately 10 to12 feet bgs.	Soil Logging: Soils were continuously logged from the surface to the bottom of each bore hole. Borings and Wells: Two Hollow Stem Auger borings (ASB-003, ASB-004) Sample depths were 6-8 & 10-12 and 4-6 ft bgs, respectively. Temporary groundwater well set and sampled from ASB-003. Field Measurements: Organic Vapor using a PID. The highest PID reading at ASB-003 was 0.9 ppm at 6-8 ft bgs. There was no PID data available for ASB-004. Analytical Parameters: Soil: VOCs (Method 8260B) PAHs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) RCRA Metals (Method 6010) Groundwater: VOCs (Method 8260B) SVOCs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) RCRA Metals (Method 6010) Results: Soil: ASB-003 (6-8 feet bgs) DRO detected at 290 mg/kg, GRO at 1,000 mg/kg; exceeded Tier 1 Residential SRV for 1,3,5 TMB 7.2 mg/kg, naphthalene 12 mg/kg, total xylenes 88 mg/kg exceeded Tier 2 Industrial SRV for 1,2,4 TMB 31 mg/kg. (10-12) GRO detected at 1,800 mg/kg; exceeded Tier 1 SRV for 1,2,4 TMB 20 mg/kg, 1,3,5 TMB 4.9 mg/kg, total xylenes 56 mg/kg ASB-004 no SRV exceedences. Groundwater: ASB-003 detected above HRLs for benzene, ethylbenzene, isopropylbenzene, naphthalene, total xylenes, benzo(a)pyrene, arsenic, barium, cadmium, chromium, and lead.	To evaluate the exceedances identified at boring location ASB-003. Refer to Figure 30 for proposed soil boring and well locations.	Complete **four soil borings and install one monitoring wells** in the area of the former fuel oil UST to delineate the exceedances of criteria at ASB-003. Four step-out borings will be located as shown on Figure 30 and positioned in a manner to delineate the exceedance. In addition, one boring will be co-located with the original ASB-003 (and converted to **one monitoring well**) location to provide vertical delineation of the exceedance. Each boring shall extend until native materials are encountered and no visual, olfactory, or PID evidence of impacts is observed. Borings shall extend approximately 12 feet below ground level or until bedrock, if encountered.	Field Measurements: Organic Vapor using a PID. Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. At each of the four step-out borings soil samples will be collected from the 0-2, 6-8, and 10-12 foot intervals. At the co-located ASB-003 boring location soil samples will be collected from the 0-2 and 10-12 foot intervals. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	Install **one monitoring well** and collect a groundwater sample for analysis.	Analytical Parameters: Soil: VOCs (Method 8260B) PAHs (Method 8270C) GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method) Groundwater: VOCs (Method 8260B) PAHs (Method 8270C) RCRA Metals (Method 6010), Dissolved GRO (Wisconsin Modified Method) DRO (Wisconsin Modified Method)	Initially, both soil samples collected from ASB-003 and the 6-8 ft intervals collected from the four step-out borings will be submitted to the laboratory for analysis. The 0-2 and 10-12 ft intervals collected from the four step-out borings will be submitted to the laboratory and placed on HOLD pending the outcome of the initial analyses.

Table 1. Supplemental Investigation Summary - Exterior Features
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	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Former Coal Gasification Plant Feature 153 Near Steam Plant Figure 31	Historically, a coal gasification plant was located near the steam plant where coal was used to generate gas. The gas was then pumped to the main assembly plant through the gas tunnel. Based on aerial photographs the plant was constructed prior to 1937 and was demolished between 1957 and 1974.	None.	Investigate the former Coal Gasification Plant. Refer to Figure 31 for proposed soil boring and well locations.	Complete **four soil borings** to assess subsurface conditions. Each boring shall extend until no visual, olfactory, or PID evidence of impacts is observed. Borings shall extend until competent bedrock is encountered.	Field Measurements: Organic Vapor using a PID. Base Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Visually assess and log the soil type and lithology in each boring using the USCS. At each of the borings soil samples will be collected from the interval with the highest PID reading and from the lower most interval bgs or the interval just above the groundwater table, if present. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	One soil boring will be completed and converted to a temporary monitoring well adjacent to the river down gradient from the Former Coal Gasification Plant if groundwater is present.	Analytical Paramters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010) Free Cyanide Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010), Dissolved Free Cyanide	This Feature was added after completion of the Initial Phase II – Exterior Investigation.

Table 1. Supplemental Investigation Summary - Exterior Features
Supplemental Phase II – Exterior Investigation
Twin Cities Assembly Plant, Saint Paul, Minnesota

	Background/Initial Phase – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Initial Scope**	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Former Tar Decanter House **Feature 154** **Near Steam Plant** **Figure 32**	Historically, a coal gasification plant was located near the steam plant where coal was used to generate gas. The gas was then pumped to the main assembly plant through the gas tunnel. Based on aerial photographs the plant was constructed prior to 1937 and was demolished between 1957 and 1974.	None.	Investigate the former Tar Decanter House. Refer to Figure 32 for proposed soil boring and well locations.	Complete **four soil borings** to assess subsurface conditions. Each boring shall extend until no visual, olfactory, or PID evidence of impacts is observed. Borings shall extend until competent bedrock is encountered.	Field Measurements: Organic Vapor using a PID. Base Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Visually assess and log the soil type and lithology in each boring using the USCS. At each of the borings soil samples will be collected from the interval with the highest PID reading and from the lower most interval bgs or the interval just above the groundwater table, if present. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	One soil boring will be completed and converted to a temporary monitoring well adjacent to the river down gradient from the Former Coal Gasification Plant if groundwater is present.	Analytical Paramters: Soil: VOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010) Free Cyanide Groundwater (Provisional): VOCs (Method 8260B) SVOCs (Method 8270C) RCRA Metals (Method 6010), Dissolved Free Cyanide	This Feature was added after completion of the Initial Phase II – Exterior Investigation.

Notes:
MONITORING WELL INSTALLATION AND DEVELOPMENT:
Monitoring wells and piezometers shall be installed according to MDH well codes.
All wells completed 5 feet or more in limestone or dolomite will be completed as single cased wells with open bore hole or as double cased wells with stainless steel screens.
All wells materials used for well construction will meet the MDH well codes.
The wells shall be secured with a locking expandable cap.
All wells completed in roadway, sidewalk, driveway, or a parking area will be completed at grade with a flush-mount protective cover set inside a 48-inch square 4-inch thick concrete pad. The concrete pad shall be sloped to facilitate runoff drainage away from the well.
All wells completed in areas other than those listed above will be completed as above grade monitoring wells with a steel protective casing and protective posts as required by MDH wells code.
The wells shall be pad-tagged or otherwise permanently labeled to indicate the well identification.
Each monitoring well shall be developed using typical and appropriate methods. Development water shall be considered an IDW and managed appropriately.
Monitoring wells may be sampled only a minimum of 48 hours after development.

ACRONYMS:

ASB	ARCADIS Soil Boring
AST	Above Ground Storage Tank
CRA	Conestoga Rovers & Associates
ft bgs	Feet Below Ground Surface
DRAP	Development Response Action Plan
DRO	Diesel Range Organics
GRO	Gasoline Range Organics
HA	Hand Auger
HASP	Health and Safety Plan
HSA	Hollow-Stem Auger
HRL	Health Risk Limit
IDW	Investigative Derived Waste
MDH	Minnesota Department of Health
MIBK	Methyl Isobutyl Ketone
MTBE	Methyl Tert-Butyl Ethet
mg/kg	Milligram per Kilogram
MPCA	Minnesota Pollution Control Agency
MS/MSD	Matrix Spike/Matrix Spike Duplicate
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PID	Photo-Ionization Detector
PLP	Permanent List of Priorities
ppm	Parts per million
PRP	Potentially Responsible Parties
RCRA	Resource Conservation and Recovery Act
SRV	Soil Reference Value
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCAP	Twin Cities Assembly Plant
TMB	Trimethylbenzenes
USCS	United Soil Classification System
VIC	Voluntary Investigation and Cleanup Program
VOC	Volatile Organic Compound

Table 2. Supplemental Investigation Summary - Historical Features
Supplemental Phase II – Exterior Investigation
Twin Cities Assembly Plant, Saint Paul, Minnesota

	Background/Historical Scope – Exterior		Supplemental Phase - Exterior					
Historical Feature	**Background**	**Historical Scope**	**Additional Data Needs**	**Supplemental Scope**	**Soil Assessment**	**Groundwater Assessment**	**Analytical Requirements**	**Other Considerations**
Former Gasoline and Diesel USTs Feature 2 Southeast of Training Facility Figure 3	Two 20,000 gallon gasoline USTs and two 10,000 gallon diesel fuel USTs were utilized in fuel fill operations at TCAP. The estimated depth to the base of the former USTs is approximately 10 to13 feet bgs. In 1993 a confirmed release (Leak #6373) from the USTs was reported during UST removal activities in June 1993. Approximately 210 cubic yards of impacted soil was removed during remedial actions. The results of verification soil sampling indicated that following excavation, impacted soils were not present within the underlying and sidewall bedrock deposits above MPCA Guidance Action Levels. The soils that remained had DRO concentrations between 16 and 74 ppm, however they had no visual or olfactory evidence of petroleum impact based on field observations. The tank piping was also removed. No releases were detected in the length of the piping to the building. The release received a closure letter from on April 21, 1994 stating that the MPCA agreed that the excavation and sampling activities had adequately addressed the petroleum tank release.	Soil Samples: Twenty-one soil samples were collected from the excavation sidewalls and bottom. Analytical Parameters Soil: GRO/DRO Lead MTBE Benzene Toluene Ethylbenzene Xylene Results: Historic analytical results were compared to current Tier 1 Residential SRV or Tier 2 Industrial SRV Criteria. The analytical results do not exceed criteria.	None. No further assessment for this Feature is necessary.	None.	None.	None.	None.	This area has received closure from the MPCA. Historical analytical data from excavation verification samples collected from the sidewalls and bottom do not exceed current criteria Historical cleanup appears to meet applicable standards.

Table 2. Supplemental Investigation Summary - Historical Features
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	Background/Historical Scope – Exterior		Supplemental Phase - Exterior					
Historical Feature	**Background**	**Historical Scope**	**Additional Data Needs**	**Supplemental Scope**	**Soil Assessment**	**Groundwater Assessment**	**Analytical Requirements**	**Other Considerations**
Former Convoy UST Feature 3 Located Approximately 200 feet East of the Training Facility Figure 4	A confirmed release (Leak #5343) from the former Convoy 2,000 gallon diesel UST was reported during UST removal activities on June 22, 1992. . The estimated depth to the base of the former UST is approximately 6 to 8 feet bgs. Approximately 150 cubic yards of impacted soil was removed during remedial actions. As directed by the MPCA, a soil boring program was implemented to delineate the extent of contamination. Impacted soils were identified at a depth of 7-10 ft bgs (beneath 7 feet of clean overburden). It was determined that the vertical extent of impact extended to the shale at approximately 10 ft bgs and the horizontal extent was limited to the excavation area. Results of the additional soil borings indicated that THC as fuel oil was not above 2.5 ppm at the soil bedrock interface. Approximately 125 cubic yards of impacted soil remained in the excavation area beneath approximately 300 cubic yards of clean fill overlain by an asphalt cap (parking lot). It was proposed to the MPCA that the remaining impacted soil (approximately 125 cubic yards) should remain in place (although it was in contact with perched groundwater). The release received a closure letter on September 9, 1992 stating that it is the understanding of the MPCA that the remaining contamination is limited in extent and is impaired from vertical migration by the presence of bedrock at 10 feet below grade and by an asphalt cap over the impacted area. For this reason the MPCA does not consider the remaining contamination to be a threat to public health or the environment. This is a historical REC since the release pertaining to the UST, which was removed, was issued a closure by the MPCA, stating that adequate clean up and control measures have been implemented.	Soil Samples: 12 soil samples were collected to delineate the extent of impacted soils. Analytical Parameters Soil: THC – as fuel oil THC – as gas Lead MTBE Benzene Toluene Ethylbenzene Xylene Results: Seven samples were collected from the sidewalls and bottom of excavation. THC as fuel oil highest at 4,300 ppm and THC as gas highest at 200 ppm in sample SS #5 at 8 ft bgs. Lead (8 ppm) and ethylbenzene (1.8 ppm) detected during initial excavation activities do not exceed current Tier 1 Residential SRVs; however, no criteria are available from the MPCA for THC concentrations. In addition 5 soil borings were completed to delineate the extent of impacted soils. Analytical results indicated that THC- as fuel oil was not present at the soil bedrock interface above 2.5 ppm in any of the soil borings.	To provide additional assessment of this Feature and to validate historic results that showed residual petroleum impacts are limited and delineated. Refer to Figure 4 for soil boring and well locations.	Complete **three soil borings** in the area of the former Convoy UST to provide additional assessment of this feature. The borings shall extend a minimum depth of 15 feet below ground level or to bedrock refusal, whichever is shallowest.	Field Measurements: Organic Vapor using a PID. Base Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. A soil sample will be collected from the 8 - 10 foot interval, or if shale is present deeper, from the interval just above the shale or from the highest PID reading interval. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	Convert one boring to a temporary monitoring well and sample groundwater, if soil impacts extend to groundwater table.	Analytical Parameters: Soil: VOCs (Method 8260B) Lead (Method 6010) GRO and DRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) Lead (Method 6010), Dissolved GRO and DRO (Wisconsin Modified Method)	The closure letter states that it is the understanding of the MPCA that the remaining contamination is limited in extent and is impaired from vertical migration by the presence of bedrock at 10 feet below grade and by an asphalt cap over the impacted area.

Table 2. Supplemental Investigation Summary - Historical Features
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	Background/Historical Scope – Exterior		Supplemental Phase - Exterior					
Historical Feature	**Background**	**Historical Scope**	**Additional Data Needs**	**Supplemental Scope**	**Soil Assessment**	**Groundwater Assessment**	**Analytical Requirements**	**Other Considerations**
Former Area of Impacted Soil - Leak #10700 Feature 4 Located in the Area Beneath the Westernmost Portion of the Current Training Center Figure 5	An area of impacted soil located beneath the proposed training center was reported on June 30, 1997. The soil was impacted as a result of gasoline and diesel fuel leakage from product lines. The product lines were associated with gasoline and diesel USTs (Feature 2) that were removed in 1993. The initial subsurface investigation began in October 1997. Ford entered VPIC on December 16, 1997 for the identified impacted soils. The impacted soils were removed and the release received closure on February 27, 1998. The MPCA approved CRA's Development Response Action Plan (DRAP) for the site, which outlined how impacted soil and groundwater was to be managed during construction activities, in a letter dated February 27, 1998. The DRAP was implemented during excavation activities for the proposed training center and 3,078 cubic yards of impacted soil was sent off-site for disposal and 50,693 gallons of groundwater was dewatered from the excavation and discharged into the sanitary sewer system via a permitted discharge by the City of St. Paul. The release was reopened in 2005 when a release was identified during excavation activities for a water main. The MPCA issued a re-closure letter on September 22, 2005.	Soil and Groundwater Samples: Thirty-one soil borings were completed in 1997 and 1998 to investigate leak #10700. Twenty soil samples and 11 groundwater samples were submitted for laboratory analysis. Analytical Parameters: Soil: Benzene Toluene Ethylbenzene Xylene MTBE Lead GRO and DRO Groundwater: VOCs - MDH 4653 List MTBE Lead GRO and DRO Results: A comparison of the historical analytical data to current criteria indicate the following exceedances of criteria: The S-21 soil sample collected from 4-6 ft bgs exceeded Tier 2 Industrial criteria for benzene and xylene. The S-21 groundwater sample exceeded MDH HRLs/EPA MCLs for acetone, benzene, ethylbenzene, naphthalene, toluene, xylene. The S-30 soil sample exceeded Tier I Residential SRV criteria for xylene. In addition, a small amount (0.01 ft) of free product was measured in Monitoring Well W-1. Note that S-21 was located approximately 250 feet west of the training center, beyond the excavation area.	To provide additional assessment of this Feature. Refer to Figure 5 for soil boring and well locations.	Complete **two soil borings** north and west of the former leak to provide additional assessment of this feature. The borings shall extend a minimum depth of 10 feet below ground level or to bedrock refusal, whichever is shallowest.	Field Measurements: Organic Vapor using a PID. Base Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. A soil sample will be collected from the 4 - 6 foot interval or from the highest PID reading interval and the 2 foot interval above the water table or if the water table is not encountered the bottom 2 feet of the boring. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	Convert one boring to a temporary monitoring well and sample groundwater, if soil impacts extend to groundwater table.	Analytical Parameters: Soil: VOCs (Method 8260B) Lead (Method 6010) GRO and DRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) Lead (Method 6010), Dissolved GRO and DRO (Wisconsin Modified Method)	The impacted soils associated with leak #10700 were addressed in 1997-98 and 2005. The abandoned piping identified as the source of this leak is being investigated as Former Location of Gasoline and Diesel Fuel Underground Piping – Feature 5. The exceedances at historic location S-21 will be addressed as part of the Feature 5 investigation

Table 2. Supplemental Investigation Summary - Historical Features
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	Background/Historical Scope – Exterior		Supplemental Phase - Exterior					
Historical Feature	**Background**	**Historical Scope**	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Former Disposal Area A Feature 9 Southwest of the Paint Building Figure 9	This area was utilized as a historical disposal site for waste materials generated from the assembly and painting operations. Waste materials, including waste solvents, were disposed of and buried in this area from approximately 1946 through 1960. In 1992 as part of RI/AA activities several soil borings were installed to delineate the extent of impacted soil. Based on historic boring logs the depth of fill materials extends approximately 3 ft bgs. A 1993 Interim Response Action Field Report indicated that the MPCA advised on soil clean up goals for six parameters including arsenic, lead, ethylbenzene, methyl chloride, toluene, and total xylenes. The analytical results indicated that xylene concentrations at location A5 exceeded criteria; therefore remediation activities were implemented. Approximately 29 cubic yards of soil were removed at location A5 in November – December 1992. March 23, 1993 MPCA ROD document indicated that approximately 270 cubic yards of impacted soil was removed from six excavation areas at Areas A and B from November 1992 through January 1993 and samples obtained from the excavations indicated that clean up levels had been attained. The Response Action Final Completion Report completed for Areas A and B was accepted by the MPCA on April 20, 1993. On July 8, 1993, TCAP was de-listed from the Permanent List of Priorities (PLP) for Areas A and B. In 1985 the VOC incinerator for the site was installed. As part of the construction an unknown quantity of soil was removed from the site.	Soil Samples: Soil samples were collected from six soil borings at Former Disposal Area A. Verification samples were collected from the sidewalls and bottom of A5 excavation. Analytical Parameters: Soil Borings: VOCs Metals Verification Samples: Toluene Ethylbenzene Xylene Methylene Chloride Lead Results: The historical soil boring and verification sample analytical data were compared to current Tier 1 Residential SRV or Tier 2 Industrial SRV Criteria. The analytical results do not exceed criteria	To provide additional assessment of this Feature. Refer to Figure 9 for soil boring and well locations.	Complete **four soil borings** at Former Disposal Area A to provide additional assessment of this feature. The borings shall extend a minimum depth of 15 feet below ground level or to bedrock refusal, whichever is shallowest.	Field Measurements: Organic Vapor using a PID. Base Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. A soil sample will be collected from the 2 foot interval above the groundwater table or the interval with the highest PID reading. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	Convert one boring to a temporary monitoring well and sample groundwater, if soil impacts extend to groundwater table.	Analytical Parameters: Soil: VOCs (Method 8260B) TAL Metals (Method 6010) GRO and DRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) TAL Metals (Method 6010), Dissolved GRO and DRO (Wisconsin Modified Method)	Analytical data collected to characterize Feature 8 from soil boring ASB-034 will be used to assess subsurface conditions at the Former Disposal Area

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	Background/Historical Scope – Exterior		Supplemental Phase - Exterior					
Historical Feature	**Background**	**Historical Scope**	**Additional Data Needs**	**Supplemental Scope**	**Soil Assessment**	**Groundwater Assessment**	**Analytical Requirements**	**Other Considerations**
Former Disposal Area B Feature 11 Southeast of Main Assembly Building Figure 11	This area was utilized as a historical disposal site for waste materials generated from the assembly and painting operations. Waste materials, including waste solvents, were disposed of, buried and burned in this area from early plant operations until approximately 1945. In 1992 as part of RI/AA activities 17 soil borings were installed to delineate the extent of impacted soil at Former Disposal Area B. The analytical results identified several analytes which exceeded criteria at several locations. Based on historic boring logs the depth of fill materials extends approximately 12 ft bgs. A 1993 Interim Response Action Field Report indicated that the MPCA advised on soil clean up goals for six parameters including arsenic, lead, ethylbenzene, methyl chloride, toluene, and total xylenes. Five areas at Former Disposal Area B including BH-A, BH-B, B6, SL4 and MW-10 were identified to contain one or more contaminants of concern above MPCA response action goals. Excavation activities were initiated in the five areas until verification samples confirmed that cleanup goals were achieved. It was determined that based on confirmatory sampling all excavations had achieved cleanup goals as approved by the MPCA. March 23, 1993 MPCA ROD document indicated that approximately 270 cubic yards of impacted soil was removed from six excavation areas at Areas A and B from November 1992 through January 1993 and samples obtained from the excavations indicated that clean up levels had been attained. The Response Action Final Completion Report completed for Areas A and B was accepted by the MPCA on April 20, 1993. On July 8, 1993, TCAP was de-listed from the PLP for Areas A and B.	Soil and Groundwater Samples: Twenty-six soil samples were collected from 17 soil borings and four monitoring well locations. Groundwater samples were collected from 10 monitoring wells at Former Disposal Area B. Verification samples were collected from the sidewalls and bottom of excavations. Analytical Parameters: Soil and Groundwater: VOCs Metals Verification Samples: Toluene Ethylbenzene Xylene Methylene Chloride Lead Results: Historic analytical data were compared to current Tier 1 Residential SRVs, Tier 2 Industrial SRVs, and MDH HRLs/EPA MCLs. The following groundwater exceedances were noted: MW-2 exceeds criteria for 1,1-dichloroethylene, benzene, and ethylbenzene. MW-9 exceeds criteria for benzene, ethyl benzene, and methylene chloride. MW-10L exceeds criteria for chloroform. The following soil exceedances were noted: MW-1 (4-6) exceeded Tier I SRV for arsenic, copper and lead and Tier II SRV for xylenes. MW-2 (2-4) exceeded criteria Tier I SRVs for arsenic and copper. MW-3 (4-6) exceeded Tier I SRV for copper. Additional soil exceedances were noted at location BH-A and BH-B; however, these locations were subsequently excavated. Some areas within the excavations may still contain residual contamination; however, the areas were excavated to achieve MPCA response action goals.	To provide additional assessment of this Feature. Refer to Figure 11 for soil boring and well locations.	Complete **five soil borings** at Former Disposal Area B to provide additional assessment of this feature. The borings shall extend a minimum depth of 15 feet below ground level or to bedrock refusal, whichever is shallowest.	Field Measurements Organic Vapor using a PID. Base Scope Soils will be continuously logged from the surface to the bottom of each bore hole. Under no circumstances shall borings extend beyond the base of a natural water bearing zone, if encountered. Soil samples will not be collected from bedrock. Visually assess and log the soil type and lithology in each boring using the USCS. A soil sample will be collected from the 2 foot interval above the groundwater table or from the interval with the highest PID reading. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	Convert up to three borings to temporary monitoring wells and sample groundwater, if soil impacts extend to groundwater table.	Analytical Parameters: Soil: VOCs (Method 8260B) TAL Metals (Method 6010) GRO and DRO (Wisconsin Modified Method) Groundwater (Provisional): VOCs (Method 8260B) TAL Metals (Method 6010), Dissolved GRO and DRO (Wisconsin Modified Method)	None.

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	Background/Historical Scope – Exterior		Supplemental Phase - Exterior					
Historical Feature	**Background**	**Historical Scope**	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Former Disposal Area C Feature 13 South of the Steam Plant Figure 13	This area was utilized as a historical disposal site for waste materials generated from the assembly and painting operations from early plant operations until approximately 1965. Impacted soils from Areas A and B were also deposited here along with paint sludge and wastes. Fill materials and concrete blocks were also deposited and buried in this area by others. An existing 8-inch concrete pavement covers most of the fill area. Based on historic boring logs the depth of fill materials extends approximately 70 ft bgs. Ford Motor Company proposed no further action for Area C in the February 15, 1991 "RI/FS Work Plan." The MPCA approved the Work Plan in a letter dated January 16, 1991 and Area C was delisted from the Minnesota PLP along with Areas A and B on July 8, 1993. Based on the presence of buried drums beneath several feet of construction debris and other fill materials, contaminants may still be present below the ground surface; however, based on 1990 groundwater monitoring results it appeared that VOC release to the surrounding areas around the fill area is minimal and the concentration of analytes were below method detection limits and therefore no further action was warranted.	Soil Borings, Groundwater Samples and Test Pits: Six soil borings, five monitoring wells and 10 test pits were completed. Analytical Parameters Groundwater: VOCs Metals Results: Historic analytical data were compared to current Tier 1 Residential SRVs, Tier 2 Industrial SRVs, and MDH HRLs/EPA MCLs. Six soil borings were completed at former disposal area C. A strong solvent odor was detected at B-5 at 12-14 feet bgs. Glass, fire brick and slag were encountered in B-1, B-2, B-4, and B-6. Historical groundwater analytical data exceed current criteria at B-1 for vinyl chloride, at B-2 for 1,2-dichloroethylene and B-4 for cadmium and 1,2-dichloroethylene. However the last round of groundwater data collected were below current criteria. Ten test pits were completed at historical disposal area C. Test pit TP3 exhibited soil with gray black color and a strong paint odor and TP8 also exhibited the same coloring but did not have an odor. VOCs were detected below method detection limits in samples from TP8, no other samples were collected due to no evidence of waste present.	To provide additional assessment of this Feature. Refer to Figure 13 for soil boring and well locations.	Complete **two monitoring wells** at Former Disposal Area C to provide additional assessment of this feature. The depth of the wells will be approximately 15 to 20 feet below ground level. Also conduct a visual inspection of the existing surface cover to determine if there are any signs that the cover integrity has been compromised.	Field Measurements: Organic Vapor using a PID. Base Scope: Soils will be continuously logged from the surface to the bottom of each bore hole. Visually assess and log the soil type and lithology in each boring using the USCS. In addition, if organic vapors, odors, or visual indications of impacts are observed at depth intervals that could provide useful assessment or delineation data those interval samples will be containerized for possible laboratory analysis.	Install **two monitoring wells** and collect a groundwater sample from each well for analysis.	Analytical Parameters: Groundwater: VOCs (Method 8260B) PAHs (Method 8270C) TAL Metals (Method 6010), Dissolved DRO (Wisconsin Modified Method) GRO (Wisconsin Modified Method)	None.

Table 2. Supplemental Investigation Summary - Historical Features
Supplemental Phase II – Exterior Investigation
Twin Cities Assembly Plant, Saint Paul, Minnesota

	Background/Historical Scope – Exterior		Supplemental Phase - Exterior					
Feature(s)	**Background**	**Historical Scope**	Additional Data Needs	Supplemental Scope	Soil Assessment	Groundwater Assessment	Analytical Requirements	Other Considerations
Former Fuel Oil UST Feature 41 South of Steam Plant Figure 22	The former 26,500 gallon fuel oil UST was installed south of the steam plant in approximately 1950. The estimated depth to the base of the former UST is approximately 10 to12 feet bgs. Based on the location of the UST it could not be removed without possibly compromising the structural integrity of the steam plant; therefore, it was closed in place in 1990. A release was reported from the UST in 1990 during its in place closure (Leak 3262). In November 1991, two soil borings and three monitoring wells were advanced and installed in the vicinity of the UST. Impacted soils were identified at depths of 27 to 38 feet below ground surface. Soil and groundwater samples were collected and submitted for laboratory analysis. Based on analytical results it was recommended that additional water level measurements and groundwater samples be collected in March 1992. Some minimal groundwater impact was still present in the vicinity of the UST. An August 24, 1994, letter stated that the results of analytical testing of groundwater samples collected from the three monitoring wells installed in the vicinity of the UST revealed non-detectable amounts of contaminants. The MPCA issued a closure for the release on December 16, 1994.	Soil Samples: Four soil borings were completed and three monitoring wells were installed to investigate Leak 3262. Analytical Parameters: Soil: THC – as fuel oil #6 Benzene Toluene Ethylbenzene Xylene Groundwater: THC – as fuel oil #6 VOCs Results: Soil and groundwater samples collected and analyzed in 1991 are below the current Tier 1 Residential SRV for soil and below the MDH HRLs/EPA MCLs for groundwater.	None. Refer to Figure 22 for the feature map.	None.	None.	None.	None.	Soil and groundwater samples collected to investigate Features 13, 42, and 153 will be used to assess this feature.

Notes:

MONITORING WELL INSTALLATION AND DEVELOPMENT:

- Monitoring wells and piezometers shall be installed according to MDH well codes.
- All wells completed 5 feet or more in limestone or dolomite will be completed as single cased wells with open bore hole or as double cased wells with stainless steel screens.
- All wells materials used for well construction will meet the MDH well codes.
- The wells shall be secured with a locking expandable cap.
- All wells completed in roadway, sidewalk, driveway, or a parking area will be completed at grade with a flush-mount protective cover set inside a 48-inch square 4-inch thick concrete pad. The concrete pad shall be sloped to facilitate runoff drainage away from the well.
- All wells completed in areas other than those listed above will be completed as above grade monitoring wells with a steel protective casing and protective posts as required by MDH wells code.
- The wells shall be pad-tagged or otherwise permanently labeled to indicate the well identification.
- Each monitoring well shall be developed using typical and appropriate methods. Development water shall be considered an IDW and managed appropriately.
- Monitoring wells may be sampled only a minimum of 48 hours after development.

ACRONYMS:

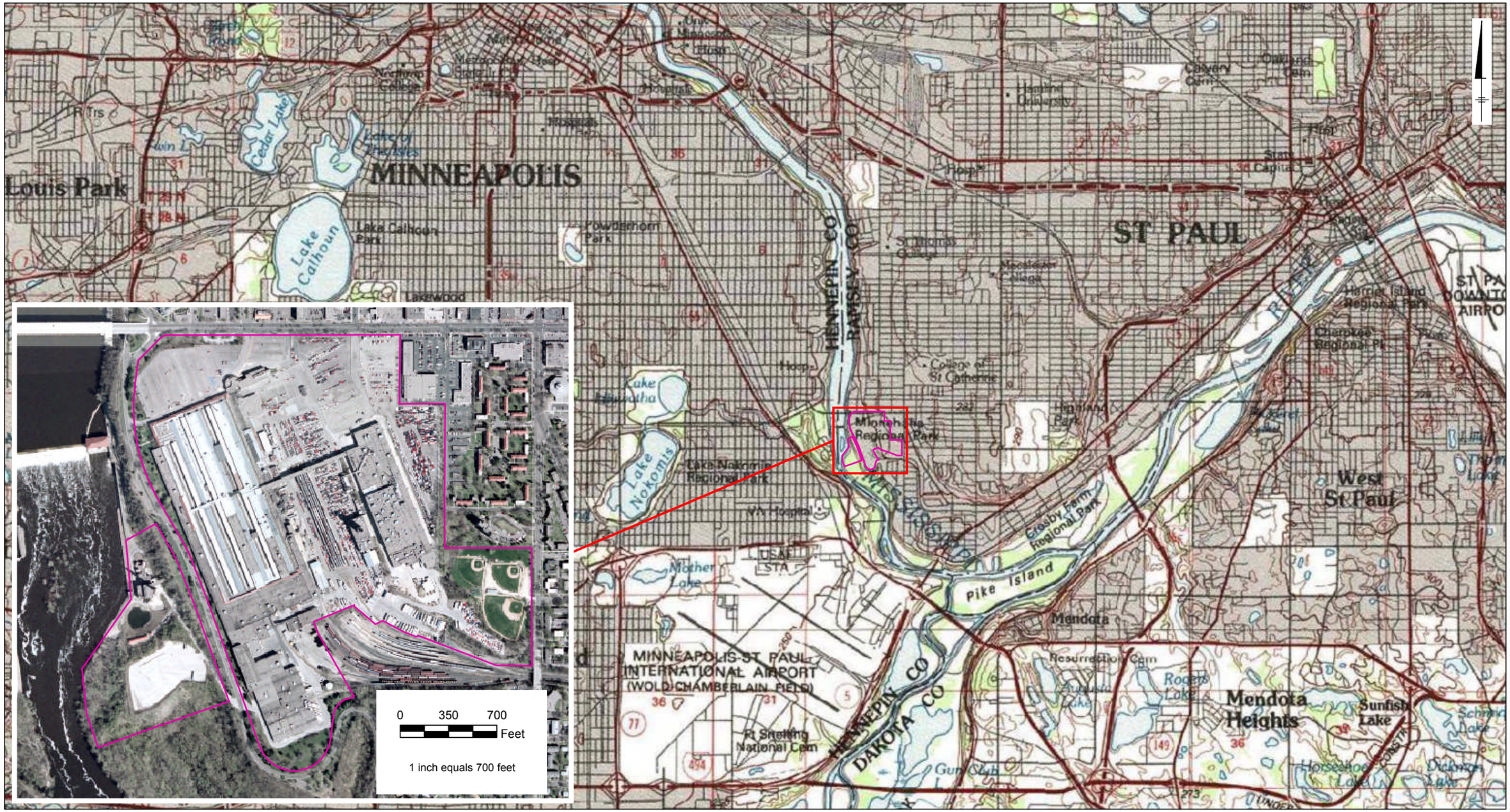
- ASB — ARCADIS Soil Boring
- AST — Above Ground Storage Tank
- CRA — Conestoga Rovers & Associates
- DRO — Diesel Range Organics
- EPA — Environmental Protection Agency
- ft bgs — Feet Below Ground Surface
- DRAP — Development Response Action Plan
- GRO — Gasoline Range Organics
- HRL — Health Risk Limit
- IDW — Investigative Derived Waste
- MCL — Maximum Contaminant Level
- MDH — Minnesota Department of Health
- MTBE — Methyl Tert-Butyl Ethet
- mg/kg — Milligram per Kilogram
- PAH — Polycyclic Aromatic Hydrocarbons
- PCB — Polychlorinated Biphenyls
- PID — Photo-Ionization Detector
- PLP — Permanent List of Priorities
- REC — Recognized Environmental Condition
- RI/AA — Remedial Investigation/Alternatives Analysis
- SRV — Soil Reference Value
- SVOC — Semi-Volatile Organic Compound
- TAL — Target Analyte List
- TCAP — Twin Cities Assembly Plant
- THC — Total Hydrocarbons
- USCS — Unified Soil Classification System
- UST — Underground Storage Tank
- VOC — Volatile Organic Compound

Table 3. Scope of Work Overview
Supplemental Phase II - Exterior Investigation
Twin Cities Assembly Plant, Saint Paul, Minnesota

			Drilling/Inspection						Soil Analytical													Groundwater Analytical												
Feature Name	Feature Number	Figure Number	Number of Borings	Number of Temporary Wells	Number of Permanent Wells	Depth of each (bgs) or to Competent Bedrock	Drilling Total Depth (bgs)	Visual Inspection of Ground Cover	VOCs (8260)	SVOCs (8270)	GRO (Wi)	DRO (Wi)	RCRA Metals (6010)	TAL Metals (6010)	Lead (6010)	Arsenic (6010)	TCLP Lead (6010)	TCLP Arsenic (6010)	PAHs (8270)	PCBs (8082)	Free Cyanide	VOCs (8260)	SVOCs (8270)	GRO (Wi)	DRO (Wi)	Dissolved RCRA Metals (6010)	Dissolved TAL Metals (6010)	Dissolved Lead (6010)	Dissolved Arsenic (6010)	PAHs (8270)	PCBs (8082)	Free Cyanide	Hold Samples	Submit Samples
WORK ELEMENT 1 - Historical Features																																			
1. Former Gasoline and Diesel USTs	2	3	N/A																																
2. Former Convoy UST	3	4	3	1		15	45		3		3	3			3							1		1	1			1							
3. Former Area of Impacted Soil-Leak# 10700	4	5	2	1		10	20		4		4	4			4							1		1	1			1							
4. Former Disposal Area A	9	9	4	1		15	60		4		4	4		4								1		1	1		1								
5. Former Disposal Area B	11	11	5	3		15	75		5		5	5		5								3		3	3		3								
6. Former Disposal Area C	13	13	N/A		2	20	40	yes														2		2	2		2			2					
7. Former Fuel Oil UST	41	22	N/A																																
WORK ELEMENT 2- Features																																			
8. Former Test Track	1	2	7	4		12	84		7	7		7	7							7		4	4		4	4					4				
9. Former Location of Gasoline and Diesel Fuel Underground Piping	5	6	5		2	15	105		10		10	10			10				10			2		2	2			2		2					
10. Railroad Spurs	7	7	8	3		12	96		16	16		16	16							8		3	3		3	3					3				
11. Former Hazardous Waste Storage Area	8	8	3	3		12	36		6	6	6	6		6						6		3	3	3	3		3				3				
12. Former Hazardous Waste Storage Area	10	10	6	1		15	90		18	18	18	18		18		4		1		18									1					7	11
13. Former Railroad Spur & Former Coal Operations	12 & 47	12	1		2	12	36		3			3	3						3	3		2		2	2	2				2					
14. Outfall 001	15	14	N/A																																
15. Former Gasoline, Sunoco Spirits, and Pryoxlin USTs	16	15	7		2	12	108		25		25	25							25			2		2	2	2				2			14	11
16. Former Oil Fill Area	20	16	N/A		1	12	12																	1	1	1				1					
17. 1996 Glycol Release from Underground Piping	21	17	1			12	12		3		3	3																							
18. Oil/Water Separator and Trench	27	20	1	1		12	12		1	1		1	1									1	1		1	1									
19. Waste Solvent USTs	35, 36, 37, 46	21	2	1		10	20		4	4			4									1	1			1									
20. Former Fuel Oil ASTs	42	23	3	1		15	45		3	3	3	3		3						3		1	1	1	1		1				1				
21. Wastewater Collection ASTs, Wastewater Treatment Area, Former Waste Diposal Area	44, 134, 140	24	5	1		15	75								11		1											1						5	6
22. Former Hazardous Waste Storage Area	49	25	1			15	15		1	1	1	1		1						1															
23. Exterior Locations Adjacent to Sludge Pits	121	26	2	1		6	12		2	2				2								1	1				1								
24. Potential Battery Waste Disposal Area-Baseball Fields	139	28	N/A																																
25. Drums	143	29	N/A																																
26. Utility Tunnel Staining	144	29	N/A																																
27. Flow Stone	149	29	N/A																																
28. Collapsed Area with Buried Drums	150	29	N/A																																
29. Potential Film/Staining	151	29	N/A																																
30. Former Fuel Oil AST	152	30	4		1	12	60		14		14	14							14			1		1	1	1				1				8	6
31. Former Coal Gasification Plant	153	31	4	1		15	60		8	8			8								8	1	1			1						1			
32. Former Tar Decantor Building	154	32	4	1		15	60		8	8			8								8	1	1			1						1			
WORK ELEMENT 3-Installed After Plant Closure																																			
33. Former Oil Fill Area	20	16	2			12	24																												
34. Former Brake Fluid UST	23	18	4	2		12	48		2	2	2	2										2	2	2	2										
35. Unleaded Gasoline USTs	24	19	N/A																																
36. Former 20,000 Gallon Gasoline AST	138	27	2	1		15	30		4		4				4							1		1				1							
Totals			85	27	10	343	1,280		151	76	102	125	47	39	32	4	1	1	52	46	16	34	18	23	30	17	11	6	1	10	11	2		

Note: Features with no proposed soil borings in Tables 1 or 2 have an N/A inserted under the Number of Borings column above.

AST Above ground storage tank
bgs Below ground surface
DRO Diesel range organics
GRO Gasoline range organics
MW Monitoring well
N/A Not Applicable
PAH Polycyclic aromatic hydrocarbons
PCB Polychlorinated bi-phenols
RCRA Resource conservation and recovery act
SB Soil boring
SVOC Semi-volatile organic compounds
TAL Target analyte list
UST Under ground storage tank
VOC Volatile organic compounds



LEGEND:

Ford Property Boundary

NOTES:

1. Imagery Source: United States Geological Survey High Resolution Orthoimagery for the Minneapolis-St. Paul, Minnesota Urban Area

2. Topographic Map Source: http://services.arcgisonline.com/v92, © 2007 National Geographic Society

0 1 2 Miles

1 inch equals 1 miles

Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Site Location / Property Layout

ARCADIS

FIGURE 1

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Project MN000593
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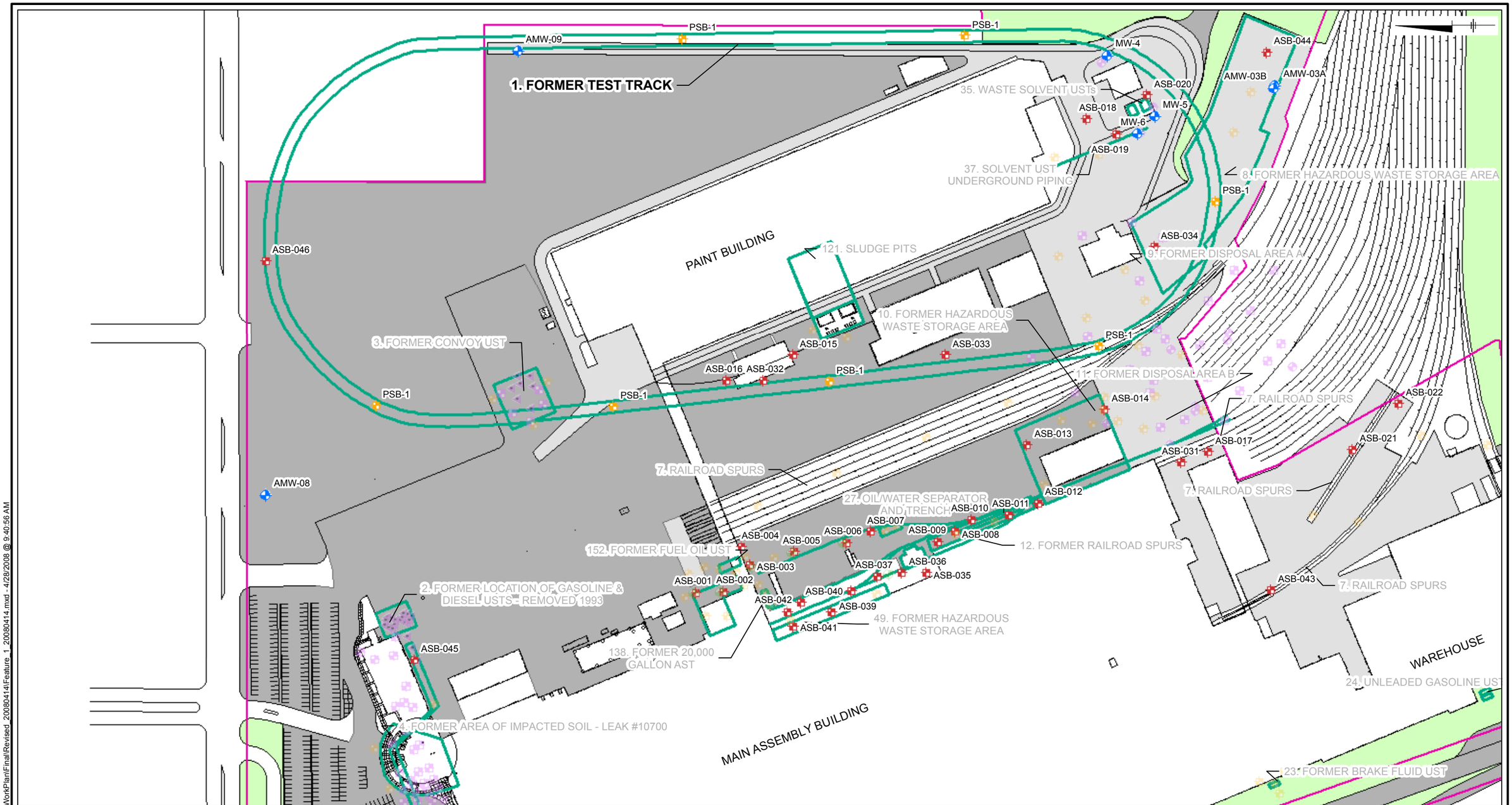

LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River

0 200 400 Feet

1 inch equals 200 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring

Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 1 - Former Test Track
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
2

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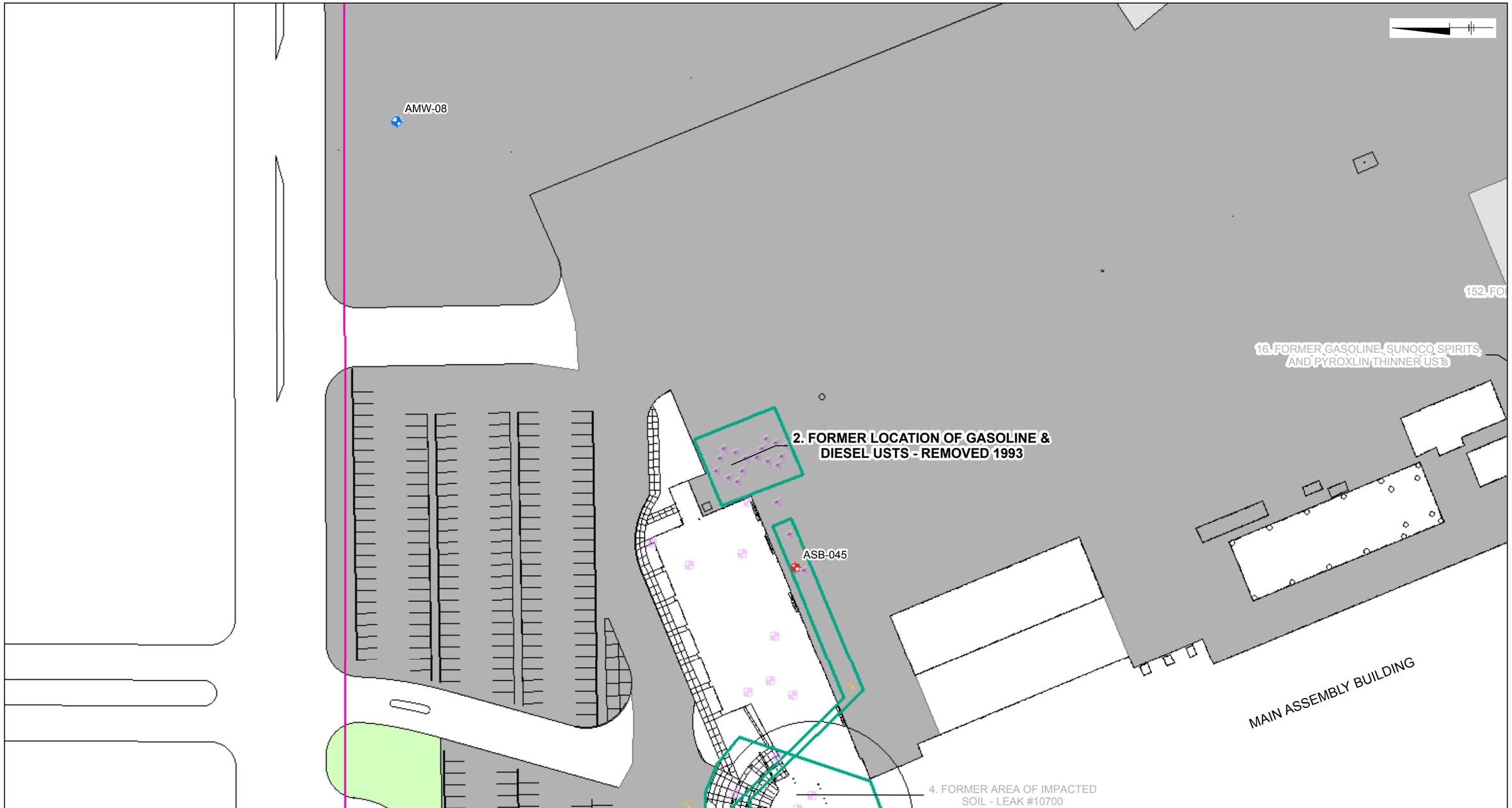


LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

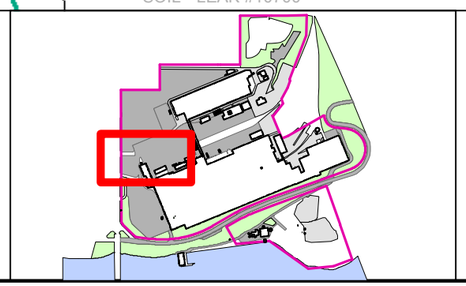
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 2 - Former Location of Gasoline & Diesel USTs Removed 1993
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
3

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Project: MN000593
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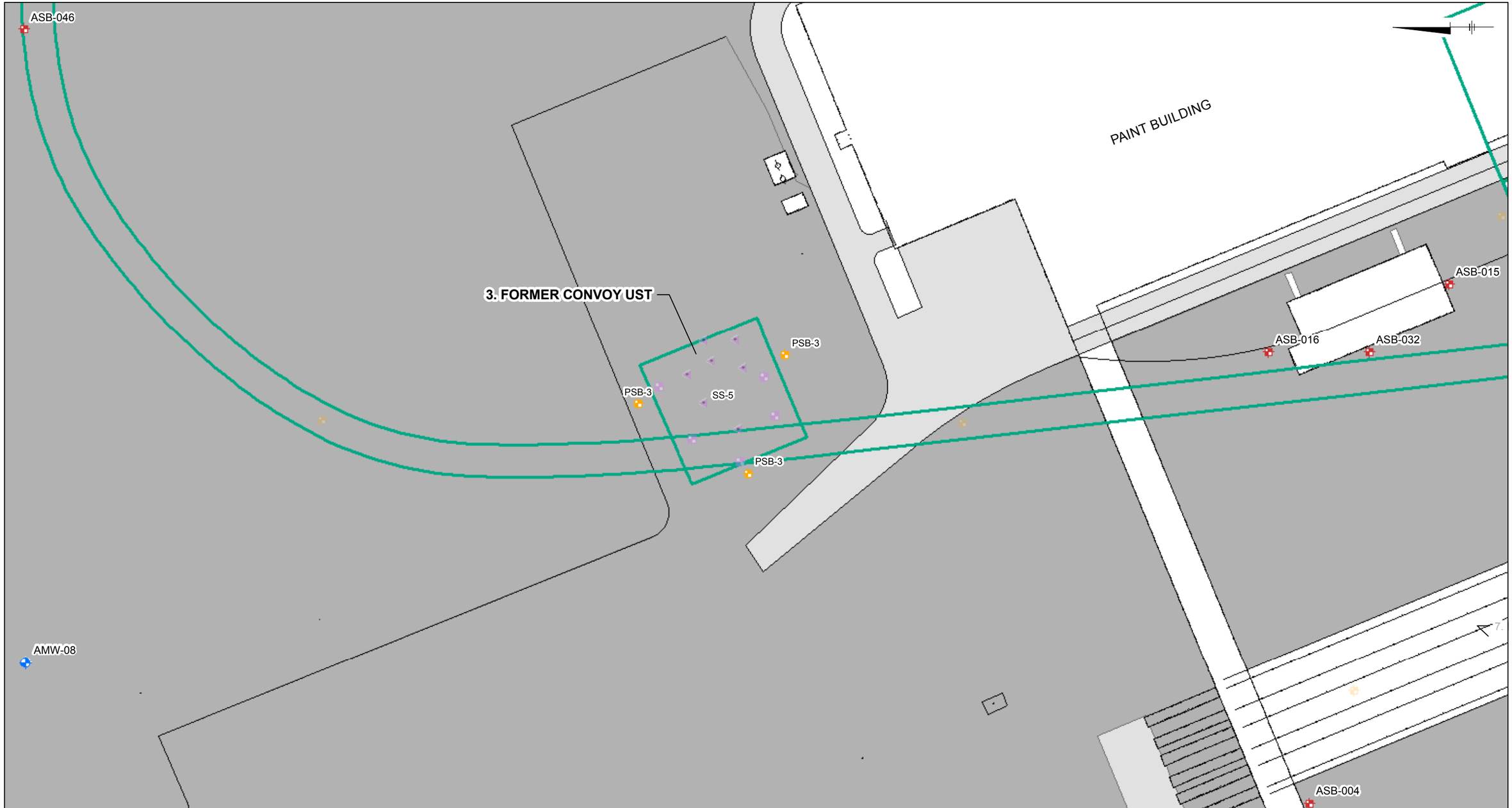


LEGEND:

Proposed Locations

- Monitoring Well
- Soil Boring

Completed Locations

- Monitoring Well
- Soil Boring

Historic Locations

- Monitoring Well
- Soil Boring
- Surface Soil Sample

- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings

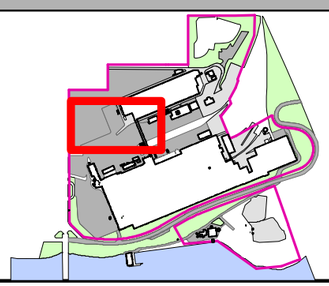
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 3 - Former Convoy UST
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
4

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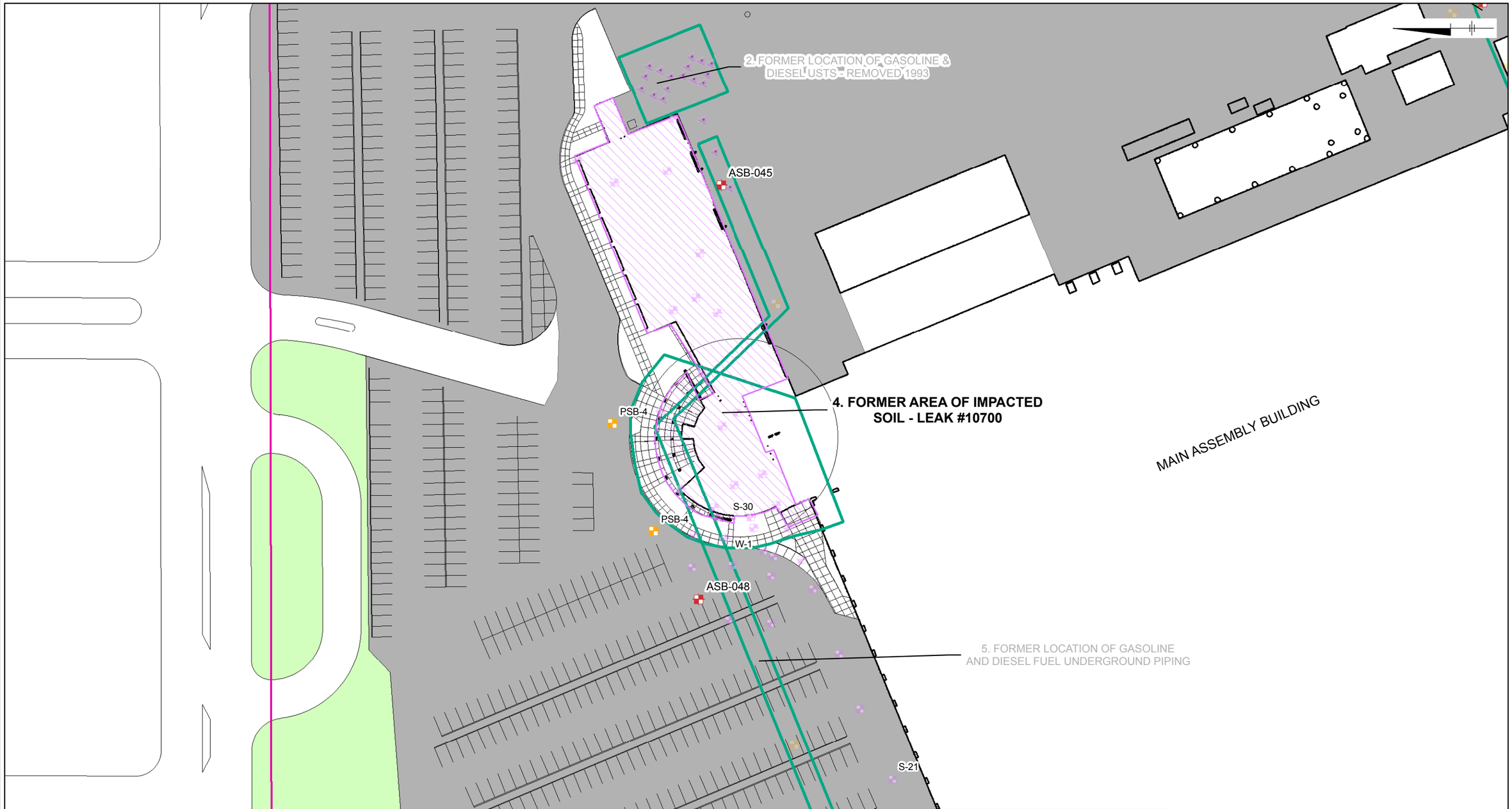


LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample
- Historic Excavation

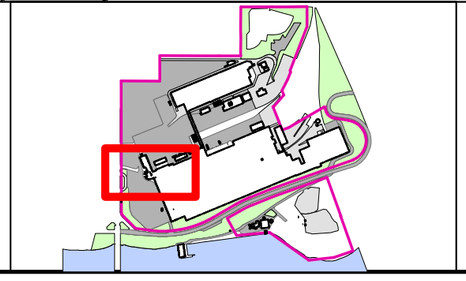
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 4 - Former Area of Impacted Soil - Leak #10700
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
5

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
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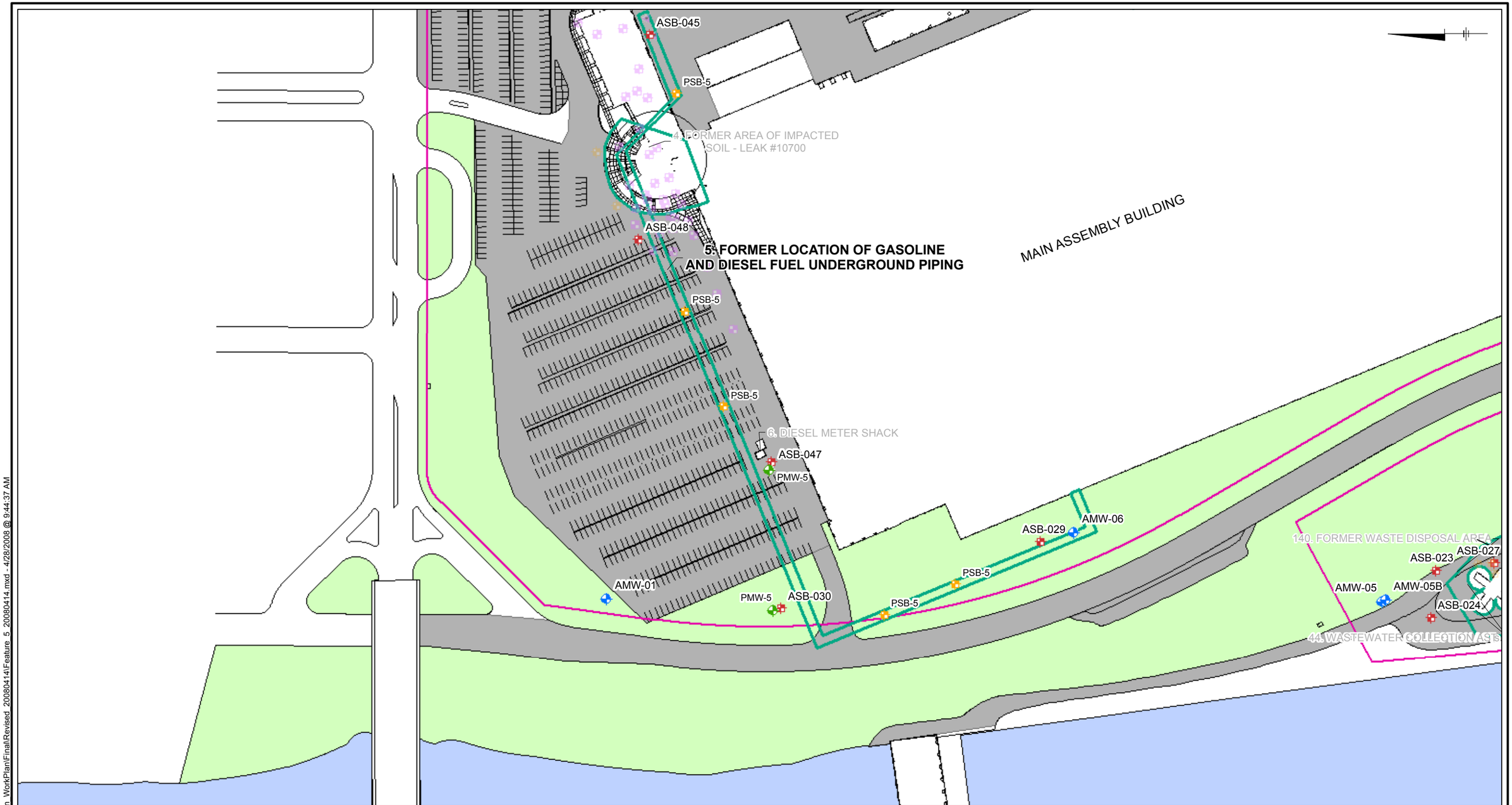


LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

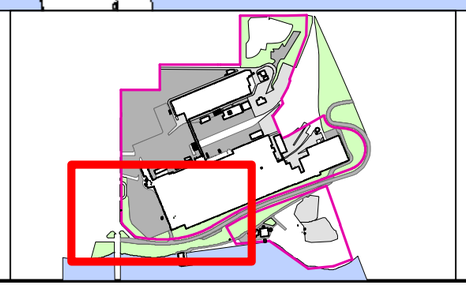
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 225 300 Feet

1 inch equals 150 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PMW Proposed Monitoring Well
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 5 - Former Location of Gasoline and Diesel Fuel Underground Piping
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
6

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
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PAINT BUILDING
121. SLUDGE PITS
10. FORMER HAZARDOUS WASTE STORAGE AREA
9. FORMER DISPOSAL AREA A
11. FORMER DISPOSAL AREA B
15. OUTFALL 001
7. RAILROAD SPURS
27. OIL/WATER SEPARATOR AND TRENCH
12. FORMER RAILROAD SPURS
152. FORMER FUEL OIL UST
49. FORMER HAZARDOUS WASTE STORAGE AREA
138. FORMER 20,000 GALLON AST
WAREHOUSE
MAIN ASSEMBLY BUILDING
24. UNLEADED GASOLINE USTS
23. FORMER BRAKE FLUID UST
K #1070C

ASB-034
ASB-015
ASB-016
ASB-032
ASB-033
ASB-014
ASB-013
ASB-012
ASB-011
ASB-010
ASB-009
ASB-008
ASB-007
ASB-006
ASB-005
ASB-004
ASB-003
ASB-002
ASB-001
ASB-037
ASB-036
ASB-035
ASB-040
ASB-038
ASB-042
ASB-039
ASB-041
ASB-017
ASB-031
ASB-022
ASB-021
ASB-043
ASB-028
AMW-02
AMW-10
PSB-7

LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

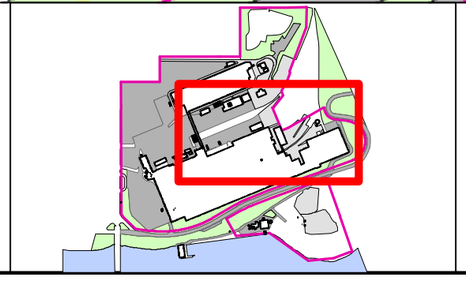
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 225 300 Feet

1 inch equals 150 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 7 - Railroad Spurs
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
7

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Project: MN000593
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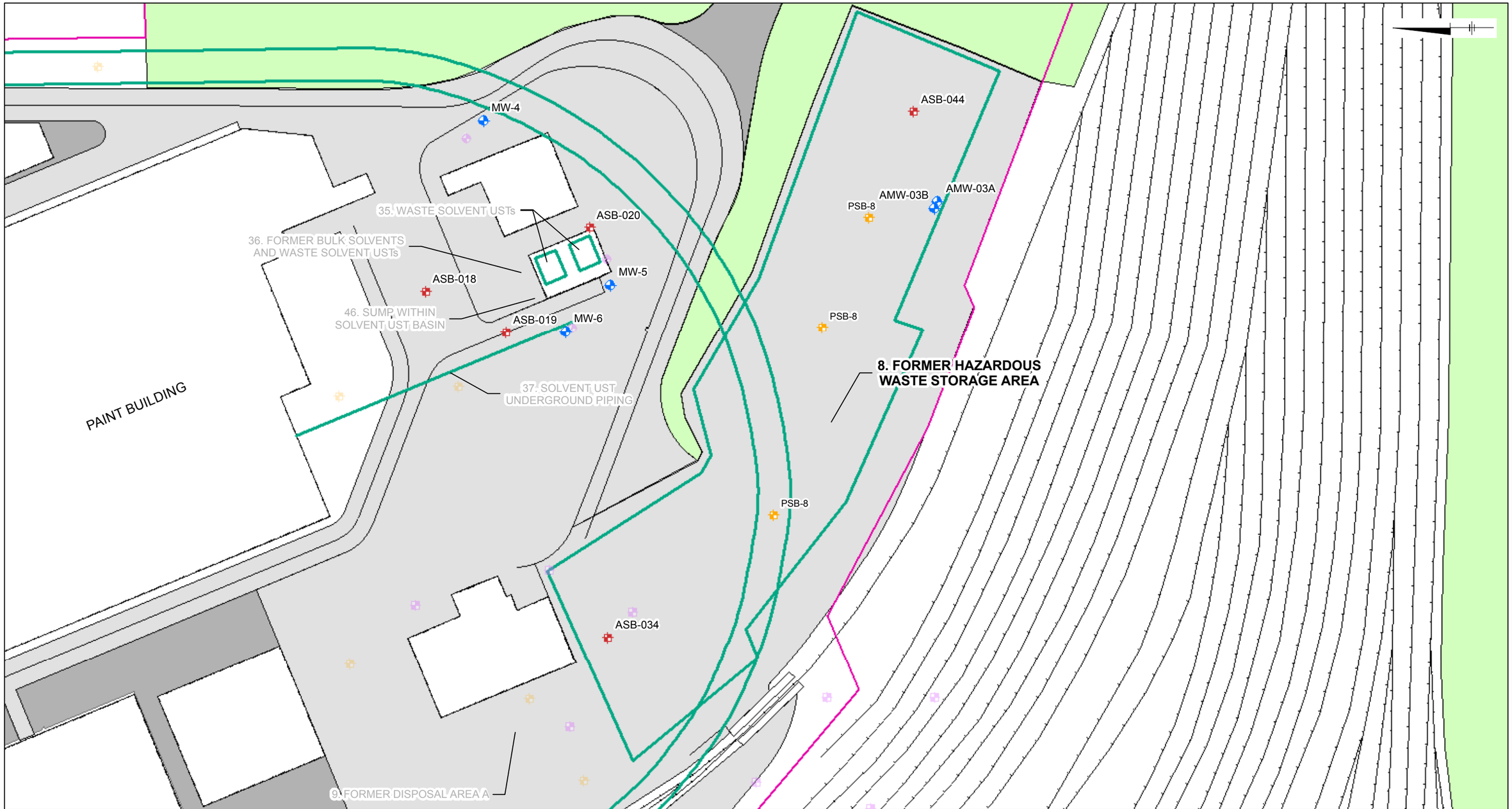


LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

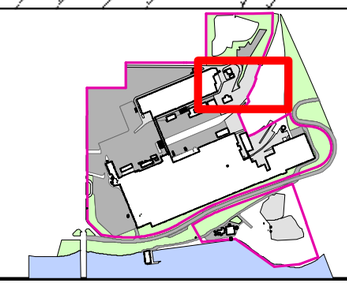
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 8 - Former Hazardous Waste Storage Area Proposed Soil and Groundwater Sampling Locations Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
8

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
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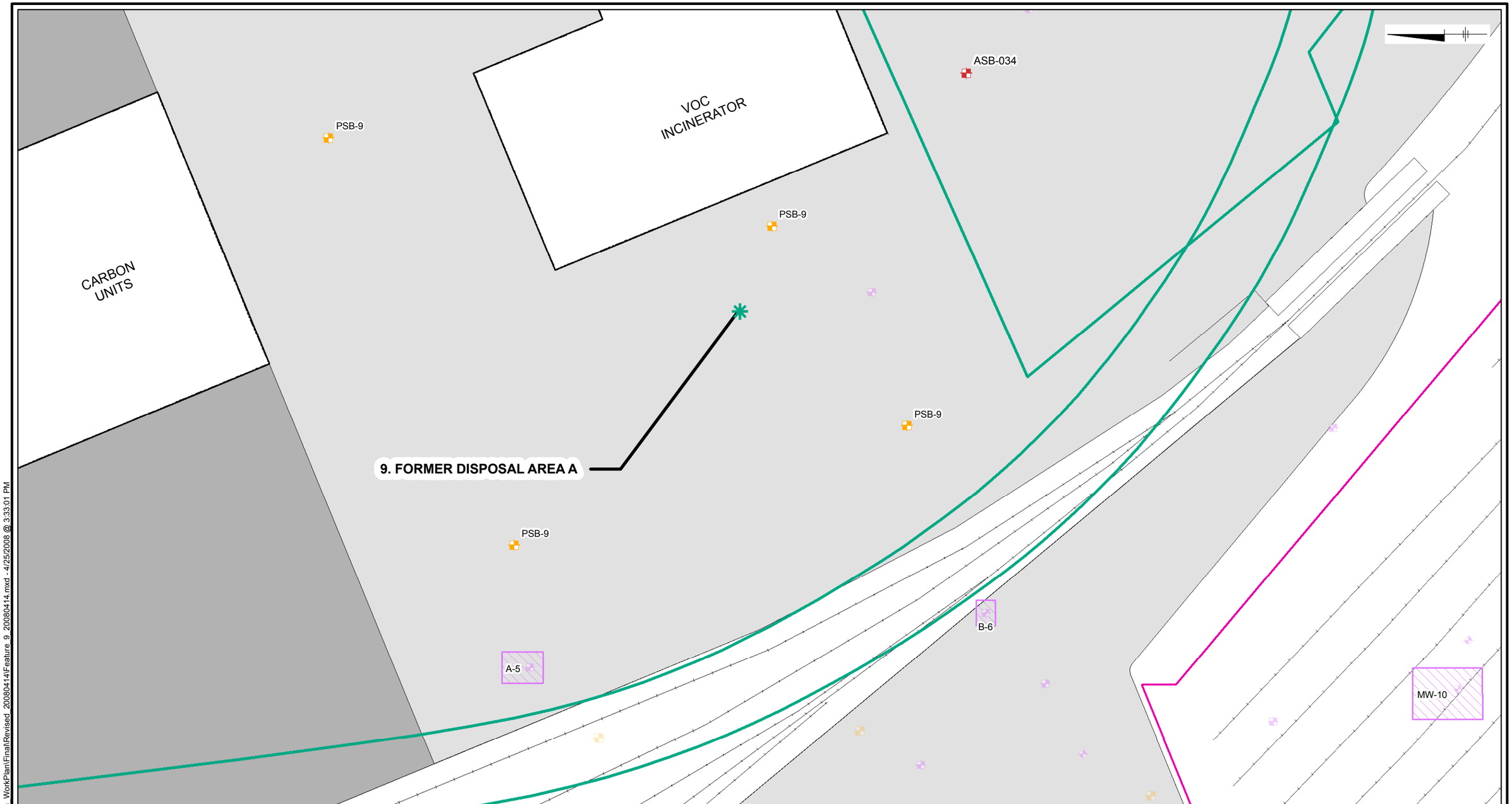


LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample
- Historic Excavation

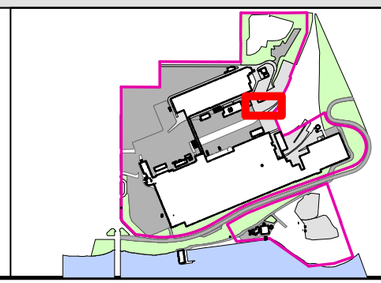
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River

0 30 60 Feet

1 inch equals 30 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 9 - Former Disposal Area A
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
9

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
G:\GIS\Projects\Ford Ranger\ArcMap\Delineation_WorkPlan\Final\Revised_20080414\Feature_9_20080414.mxd - 4/25/2008 @ 3:33:01 PM

ASB-015
ASB-033
10. FORMER HAZARDOUS WASTE STORAGE AREA
PSB-10
ASB-014
11. FORMER DISPOSALAREA B
7. RAILROAD SPURS
ASB-013
PACKER BUILDING
ASB-017
ASB-031
7. RAILROAD SPURS
21. 1996 GLYCOL RELEASE FROM UNDERGROUND PIPING
27. OIL/WATER SEPARATOR AND TRENCH
ASB-012
20. FORMER OIL FILL AREA
ASB-010
ASB-011
ASB-007
ASB-008
ASB-006
ASB-009
ASB-005
47. FORMER COAL OPERATIONS
12. FORMER RAILROAD SPURS
ASB-037
ASB-036
ASB-035
38. FORMER 20,000 GALLON AST
ASB-038
ASB-040
ASB-039
MAIN ASSEMBLY BUILDING
FRAME BUILDING
7. RAILROAD SPURS
ASB-043

LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring

Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 10 - Former Hazardous Waste Storage Area Proposed Soil and Groundwater Sampling Locations Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE 10

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
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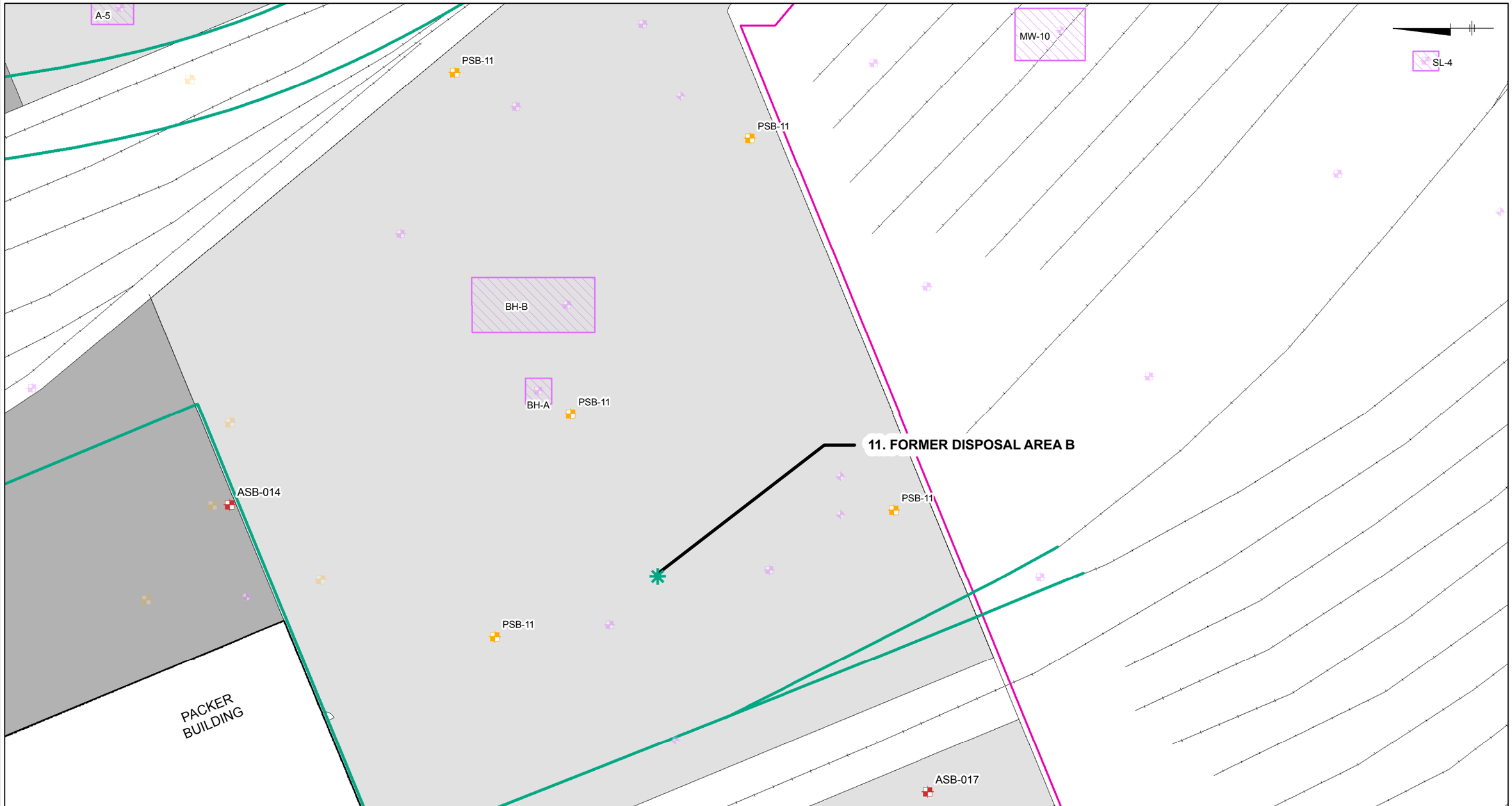


LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample
- Historic Excavation

- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings

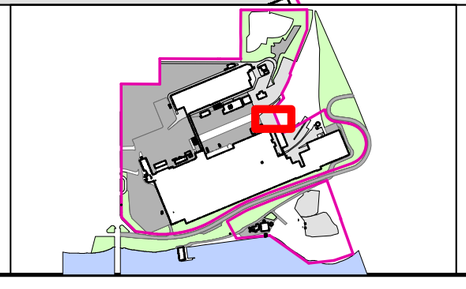
- Asphalt
- Concrete
- Grass
- Mississippi River

0 30 60 Feet

1 inch equals 30 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 11 - Former Disposal Area B
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
11

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
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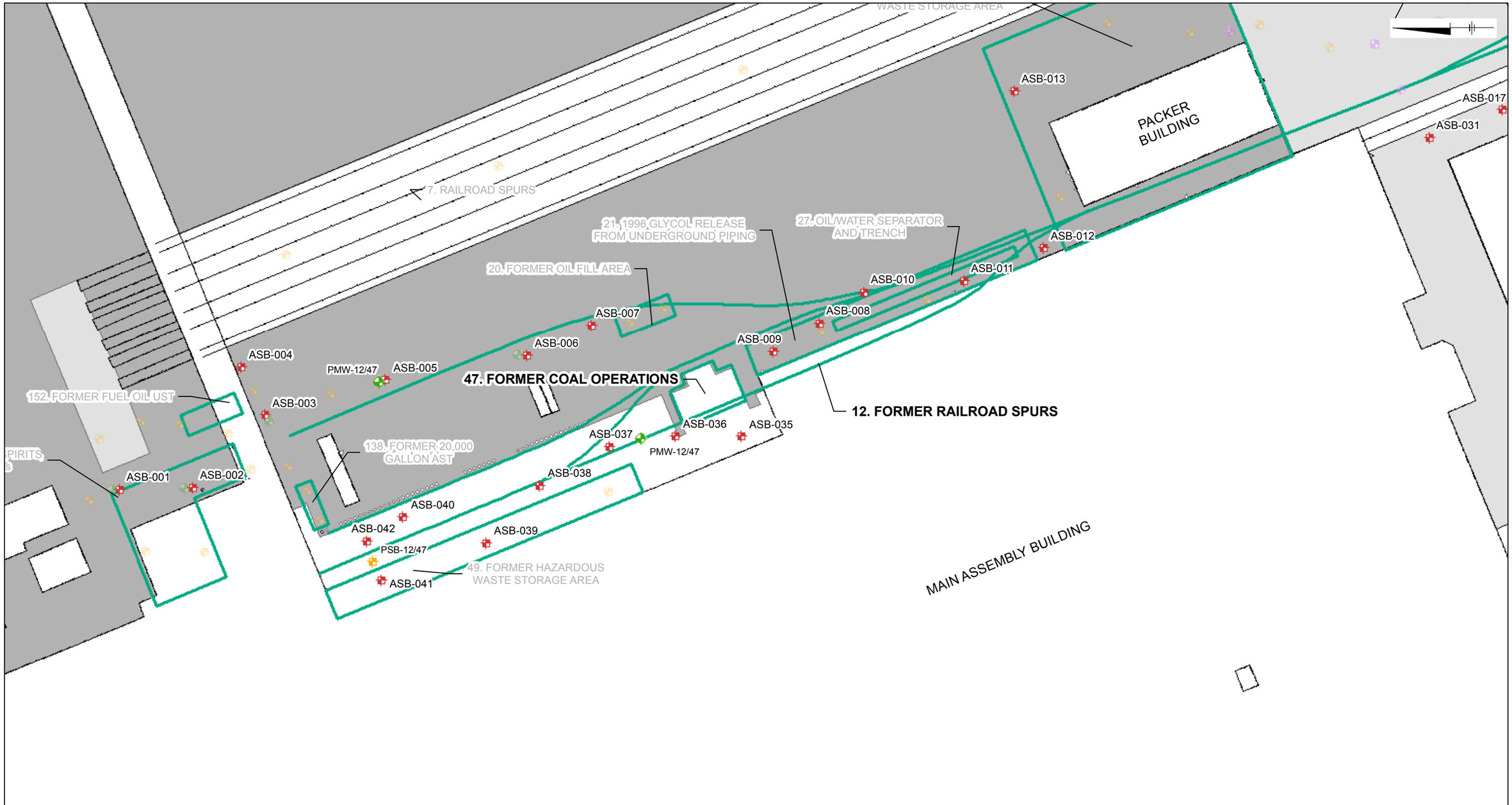


LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings

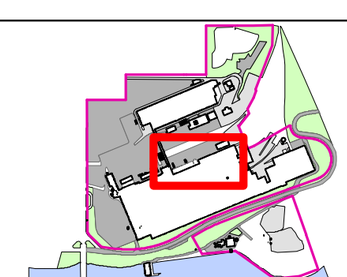
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PMW Proposed Monitoring Well
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Features 12 - Former Railroad Spurs & 47 - Former Coal Operations
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE **12**

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
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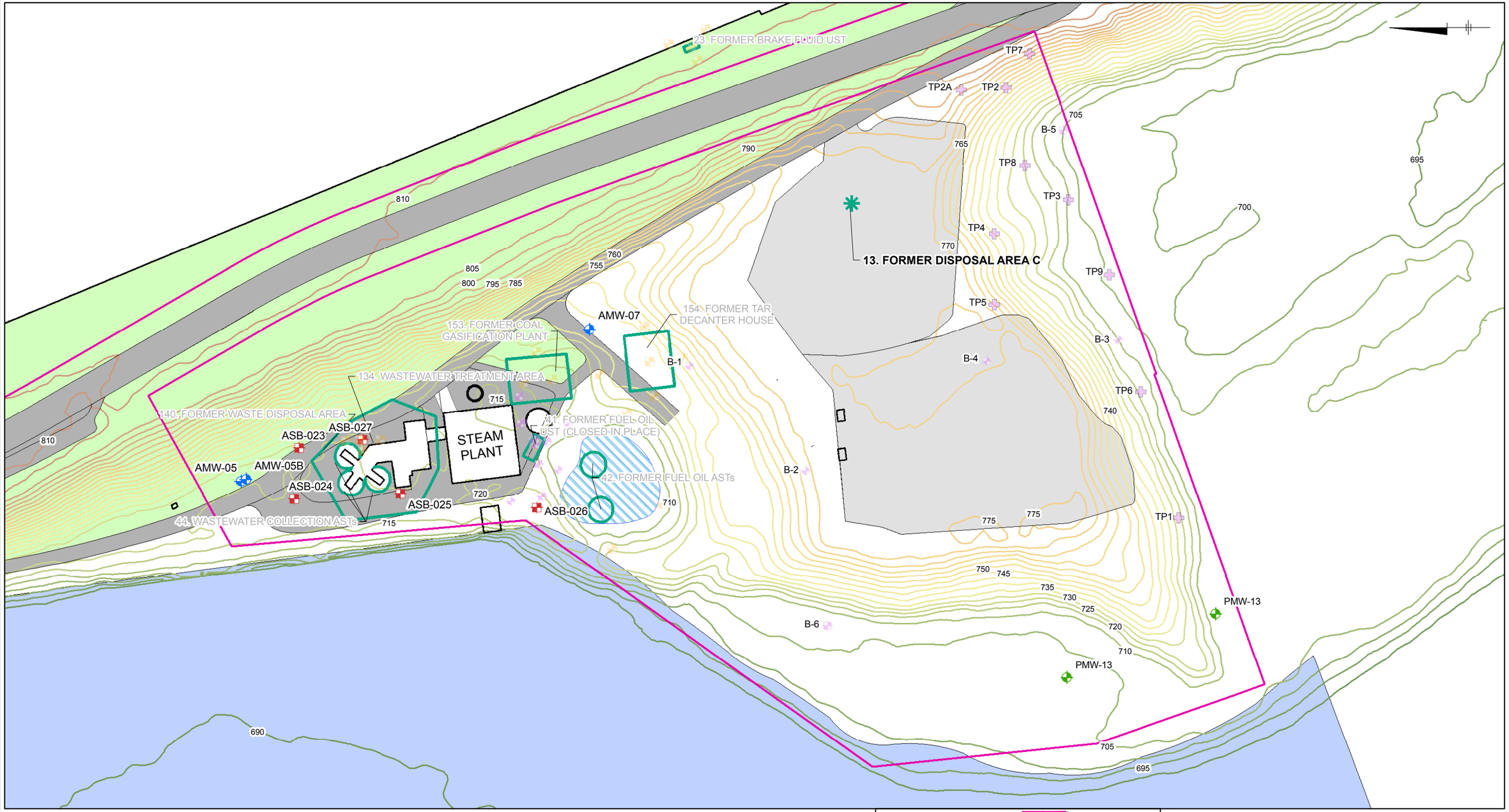


LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample
- Test Pit

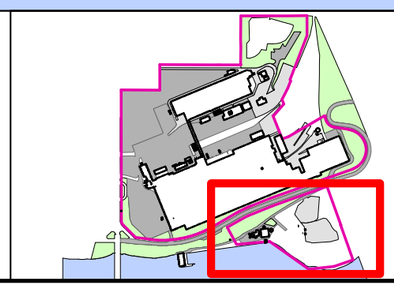
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Elevation Contours (Feet)
- Asphalt
- Concrete
- Grass
- Mississippi River
- Detention Basin

0 140 280 Feet

1 inch equals 140 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PMW Proposed Monitoring Well



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 13 - Former Disposal Area C
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
13

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
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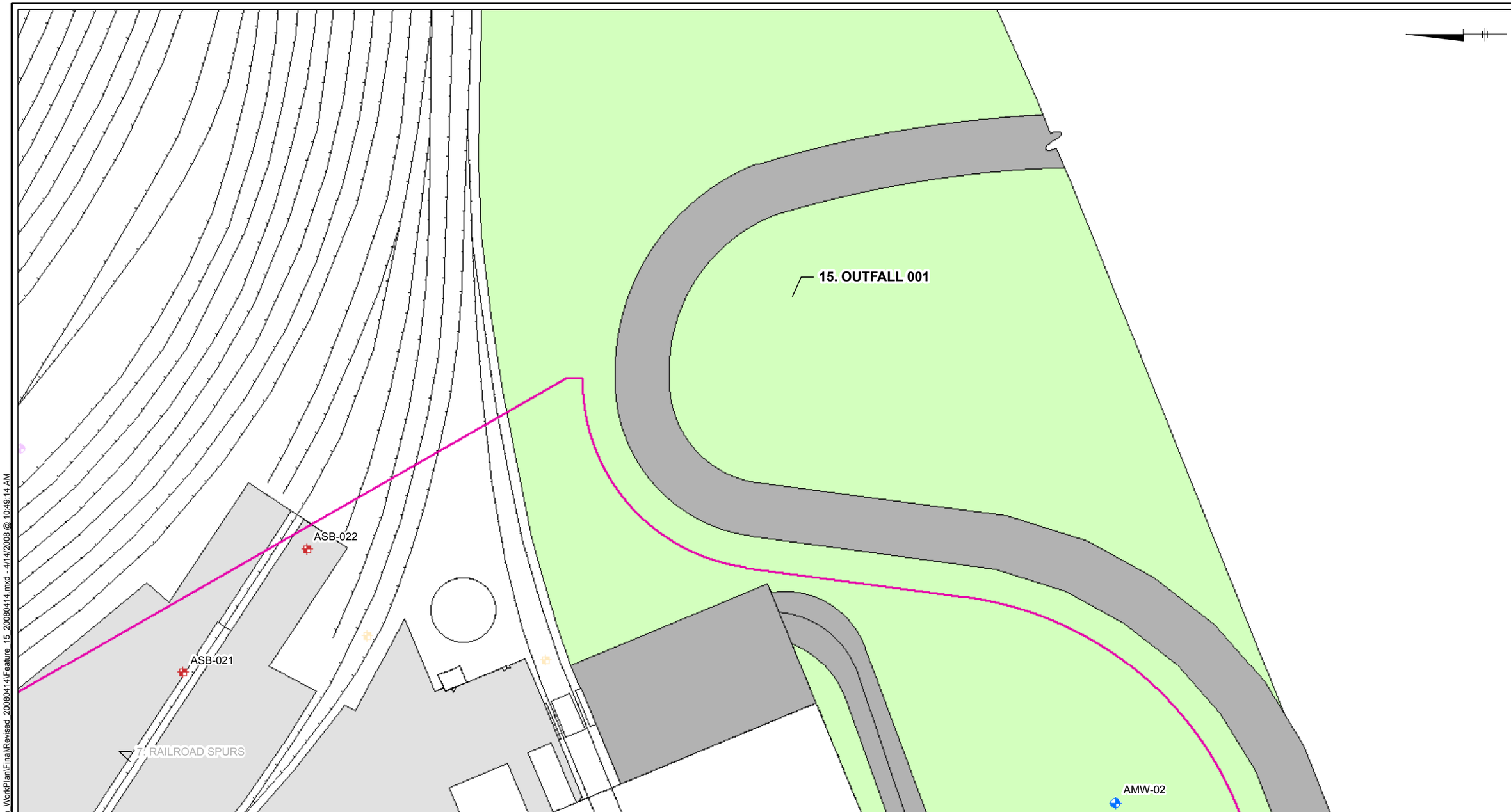


LEGEND:

Proposed Locations

- Monitoring Well
- Soil Boring

Completed Locations

- Monitoring Well
- Soil Boring

Historic Locations

- Monitoring Well
- Soil Boring
- Surface Soil Sample

- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings

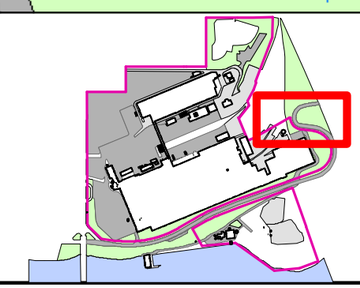
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 15 - Outfall 001
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
14

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
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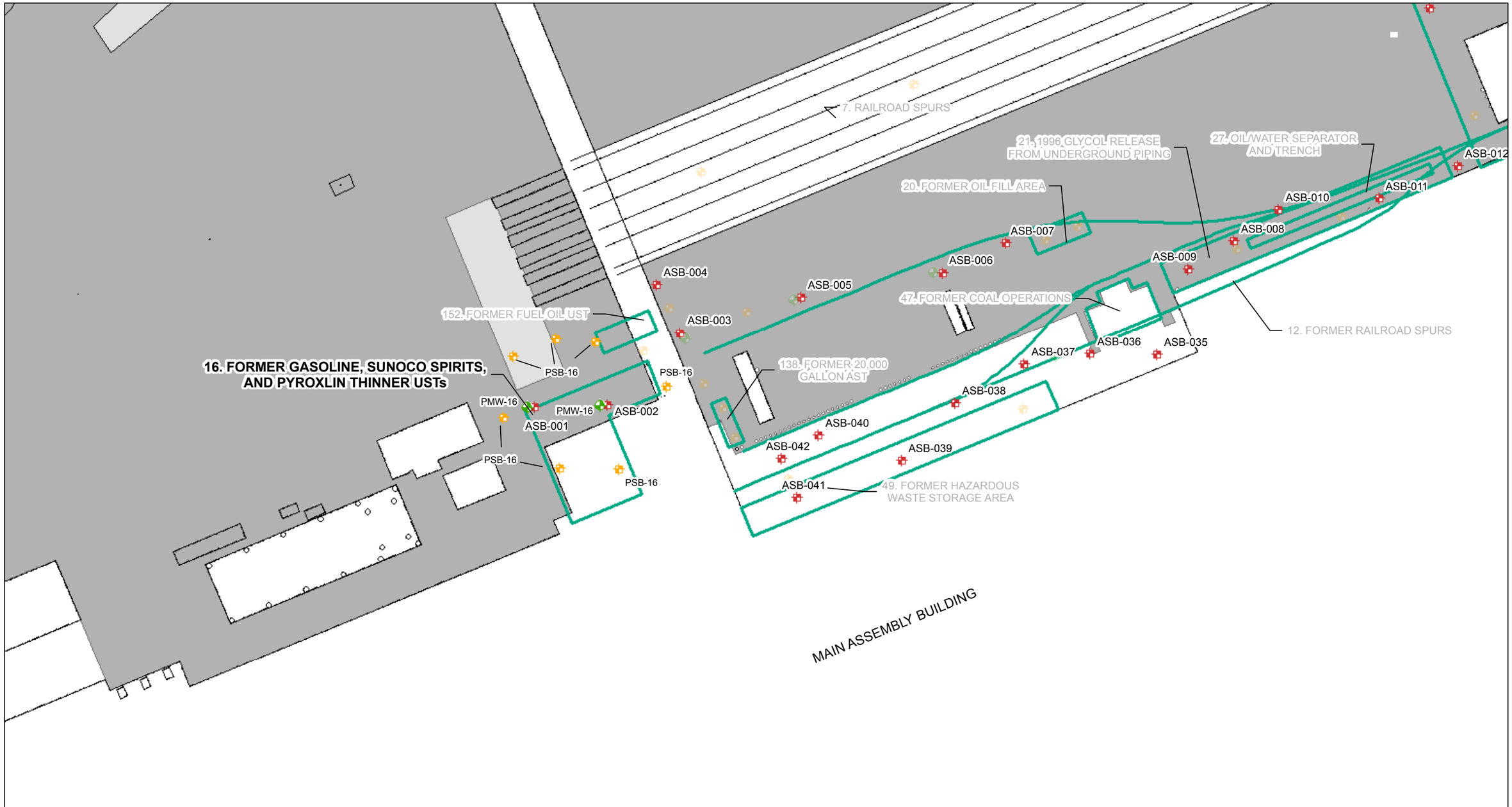


LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings

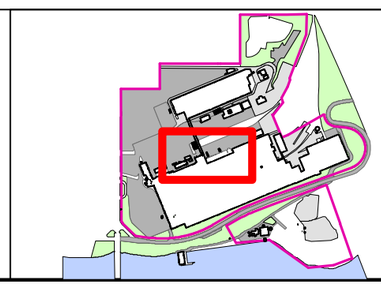
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PMW Proposed Monitoring Well
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 16 - Former Gasoline, Sunoco Spirits, and Pyroxlin Thinner USTs
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
15

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
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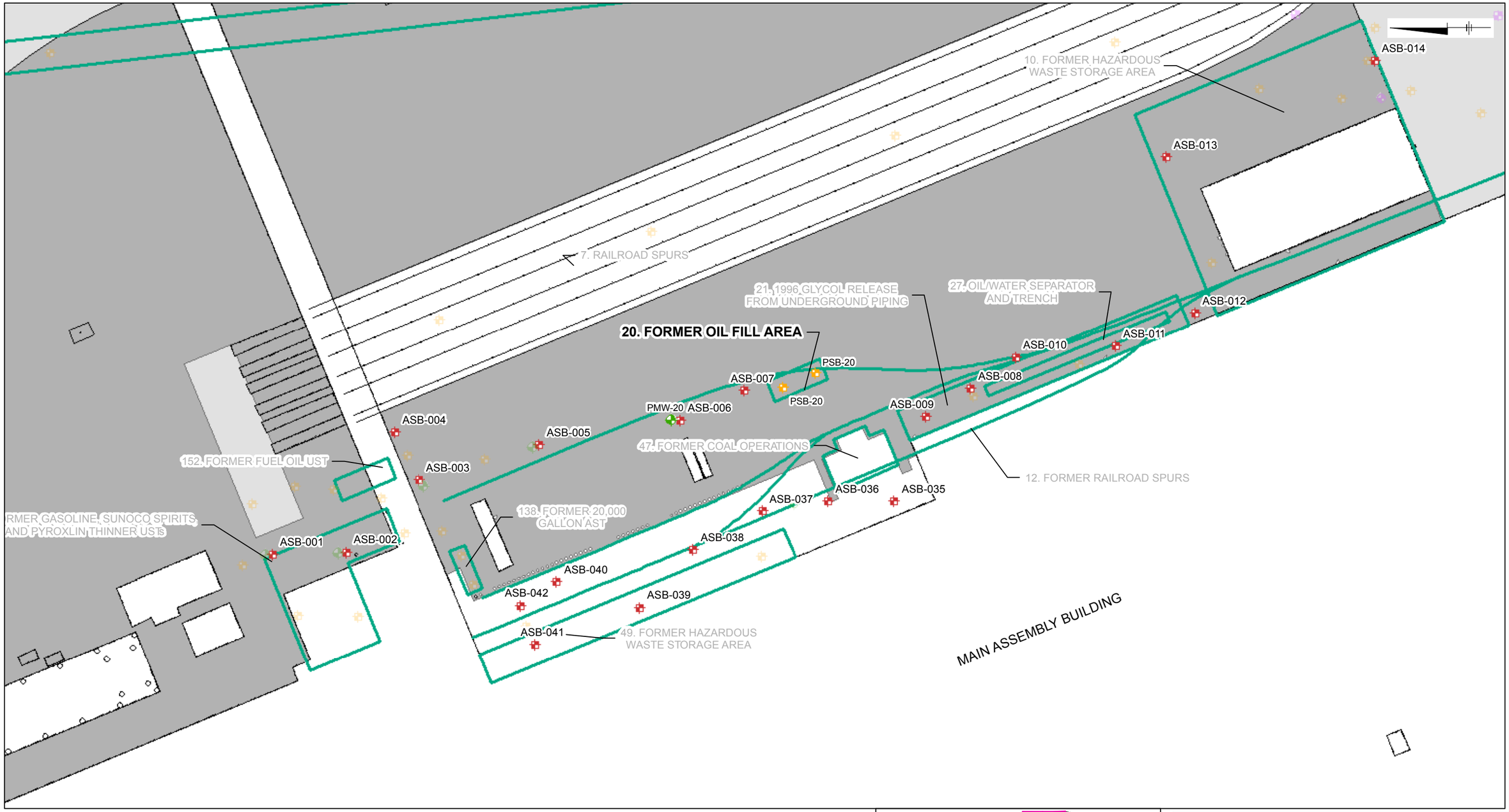


LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

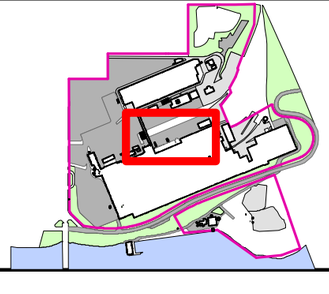
Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:
AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PMW Proposed Monitoring Well
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 20 - Former Oil Fill Area
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
16

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
G:\GIS\Projects\Ford Ranger\ArcMap\Delineation_WorkPlan\Final\Revised_20080414\Feature_20_20080414.mxd - 4/25/2008 @ 11:04:04 AM

ASB-016
ASB-032
ASB-014
11. FORMER DISPOSAL
10. FORMER HAZARDOUS WASTE STORAGE AREA
ASB-013
PACKER BUILDING
ASB-017
ASB-031
7. RAILROAD SPURS
21. 1996 GLYCOL RELEASE FROM UNDERGROUND PIPING
27. OIL/WATER SEPARATOR AND TRENCH
ASB-012
ASB-011
ASB-010
20. FORMER OIL FILL AREA
ASB-007
ASB-008
PSB-21
ASB-006
ASB-009
ASB-004
ASB-005
47. FORMER COAL OPERATIONS
FORMER FUEL OIL UST
ASB-003
12. FORMER RAILROAD SPURS
ASB-036
ASB-035
ASB-037
138. FORMER 20,000 GALLON AST
ASB-001
ASB-002
ASB-038
ASB-040
ASB-042
ASB-039
ASB-041
49. FORMER HAZARDOUS WASTE STORAGE AREA
MAIN ASSEMBLY BUILDING

LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

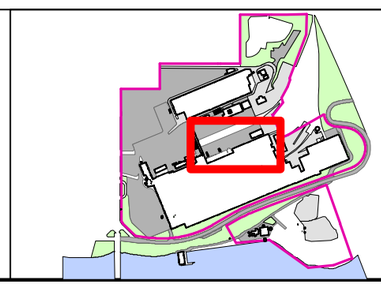
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 21 - 1996 Glycol Release From Underground Piping Proposed Soil and Groundwater Sampling Locations Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE 17

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
G:\GIS\Projects\Ford Ranger\ArcMap\Delineation_WorkPlan\Final\Revised_20080414\Feature_21_20080414.mxd - 4/28/2008 @ 9:56:05 AM

WAREHOUSE

ASB-028

24. UNLEADED GASOLINE USTs

MAIN ASSEMBLY BUILDING

PSB-23

PSB-23

PSB-23

23. FORMER BRAKE FLUID UST

PSB-23

MISSISSIPPI RIVER BLVD.

LEGEND:

Proposed Locations

- Monitoring Well
- Soil Boring

Completed Locations

- Monitoring Well
- Soil Boring

Historic Locations

- Monitoring Well
- Soil Boring
- Surface Soil Sample

- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings

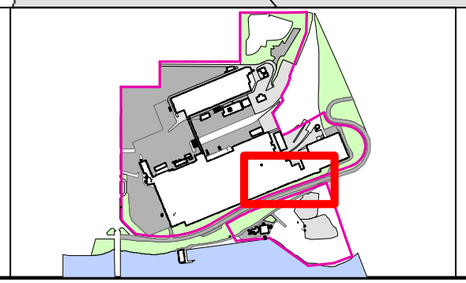
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 23 - Former Brake Fluid UST
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
18

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
G:\GIS\Projects\Ford Ranger\ArcMap\Delineation_WorkPlan\Final\Revised_20080414\Feature_23_20080414.mxd - 4/14/2008 @ 11:14:23 AM

LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

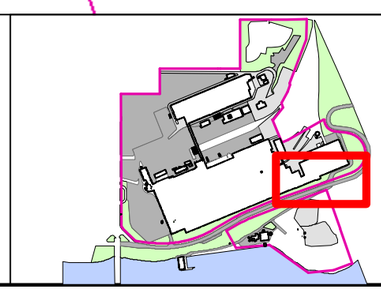
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 24 - Unleaded Gasoline USTs
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
19

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
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ASB-015
ASB-033
ASB-016
ASB-032
ASB-014
11. FORMER DISPOSAL AREA B
10. FORMER HAZARDOUS WASTE STORAGE AREA
7. RAILROAD S
ASB-013
PACKER BUILDING
ASB-017
ASB-031
7. RAILROAD SPURS
21. 1996 GLYCOL RELEASE FROM UNDERGROUND PIPING
27. OIL/WATER SEPARATOR AND TRENCH
ASB-012
20. FORMER OIL FILL AREA
ASB-010
ASB-011
PSB-27
FRAME BUILDING
ASB-007
ASB-008
ASB-006
ASB-009
ASB-004
ASB-005
47. FORMER COAL OPERATIONS
7. RAILROAD
ASB-003
12. FORMER RAILROAD SPURS
ASB-037
ASB-036
ASB-035
138. FORMER 20,000 GALLON AST
ASB-002
ASB-038
MAIN ASSEMBLY BUILDING
ASB-043
ASB-040
ASB-042
ASB-039
ASB-041
49. FORMER HAZARDOUS WASTE STORAGE AREA

LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

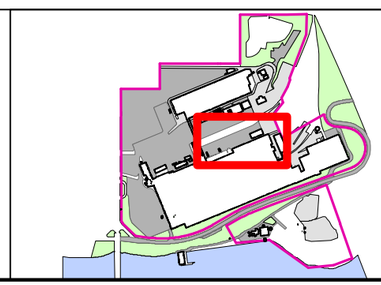
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 27 - Oil/Water Separator and Trench
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
20

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
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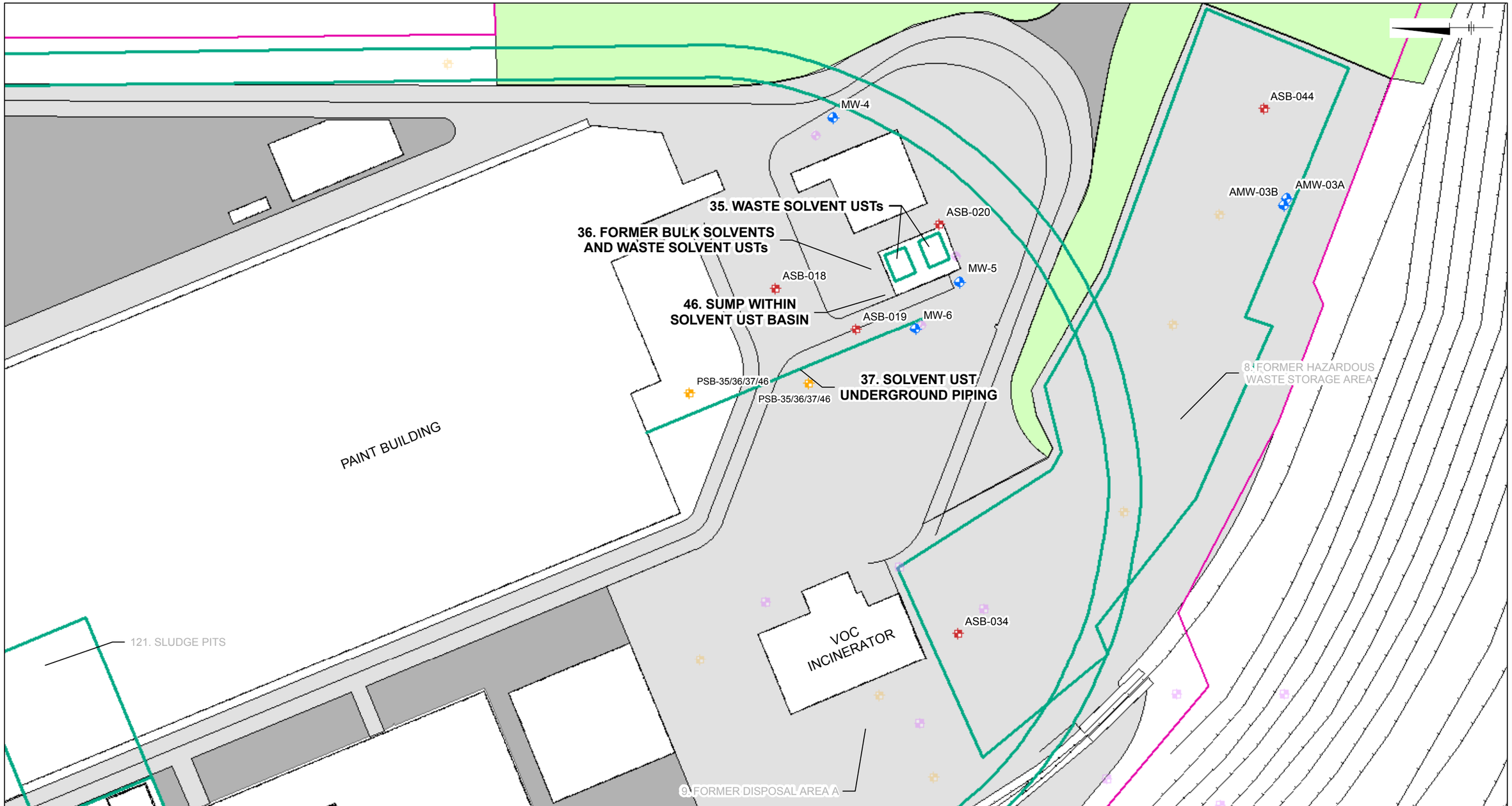


LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

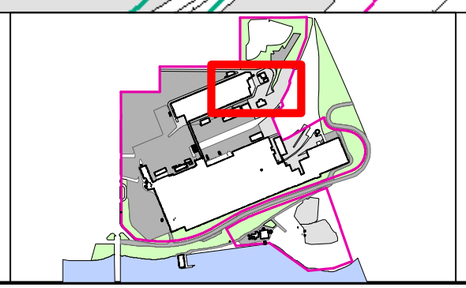
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Features 35, 36, 37, 46
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
21

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
G:\GIS\Projects\Ford Ranger\ArcMap\Delineation_WorkPlan\Final\Revised_20080414\Feature_35_36_37_46_20080414.mxd - 4/16/2008 @ 1:49:12 PM

LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings

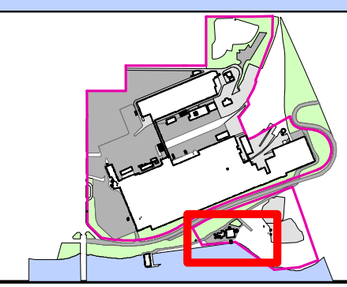
- Asphalt
- Concrete
- Grass
- Mississippi River
- Detention Basin

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 41 - Former Fuel Oil UST (Closed in Place)
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
22

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
G:\GIS\Projects\Ford Ranger\ArcMap\Delineation_WorkPlan\Final\Revised_20080414\Feature_41_20080414.mxd - 4/14/2008 @ 1:51:32 PM

LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

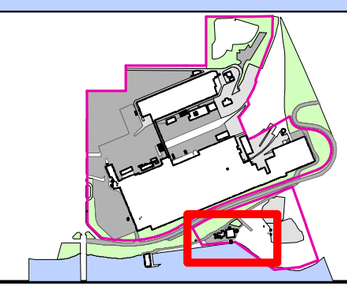
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River
- Detention Basin

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



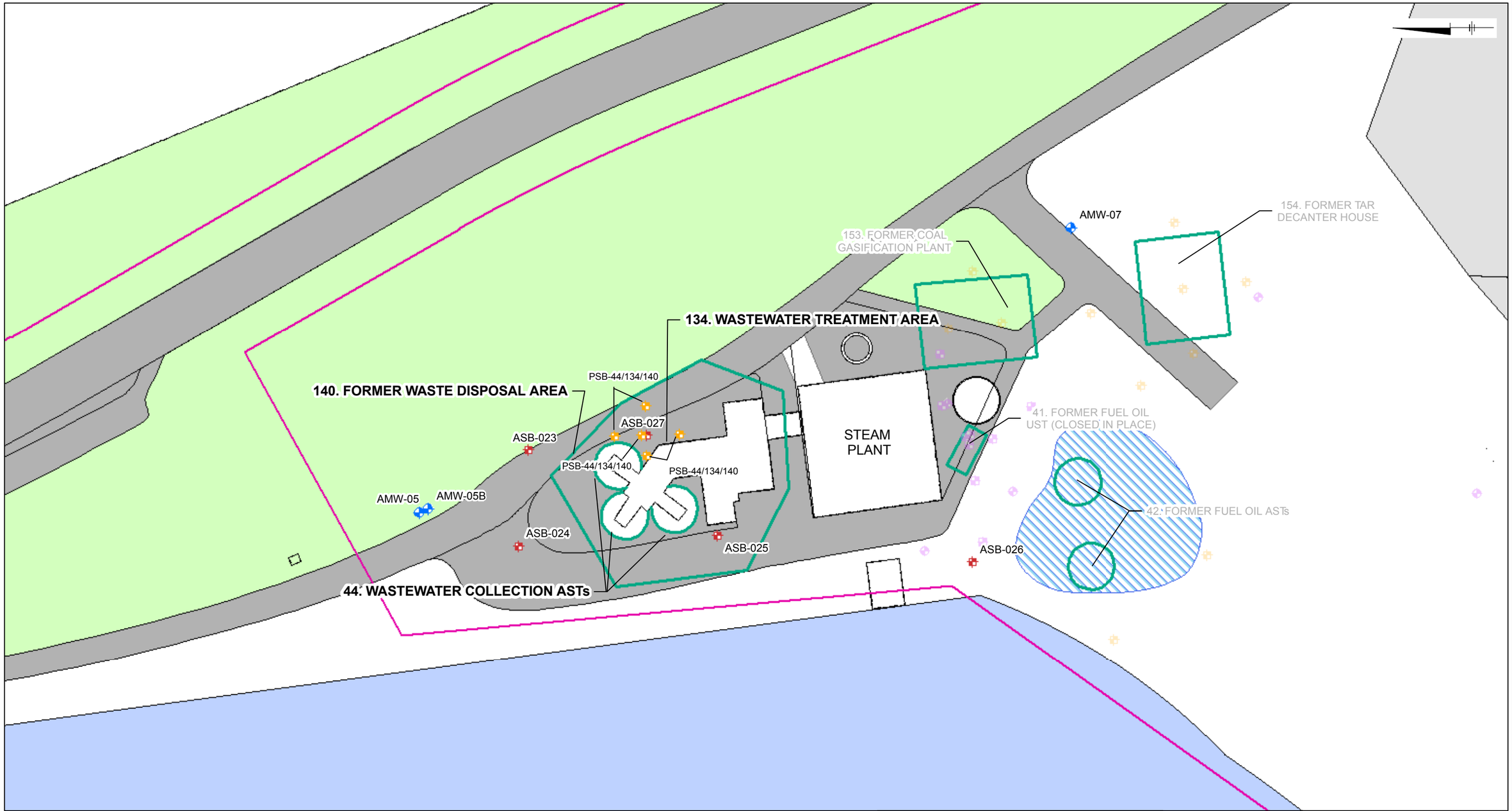
Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 42 - Former Fuel Oil ASTs
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
23

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
G:\GIS\Projects\Ford Ranger\ArcMap\Delineation_WorkPlan\Final\Revised_20080414\Feature_42_20080414.mxd - 4/25/2008 @ 11:20:34 AM



LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

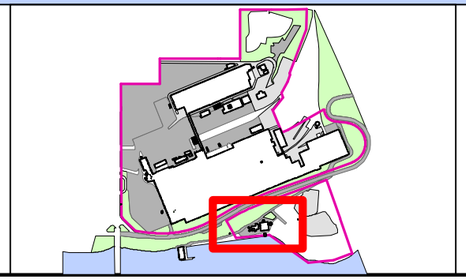
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River
- Detention Basin

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



Ford

Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Features 44, 134, 140
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
24

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
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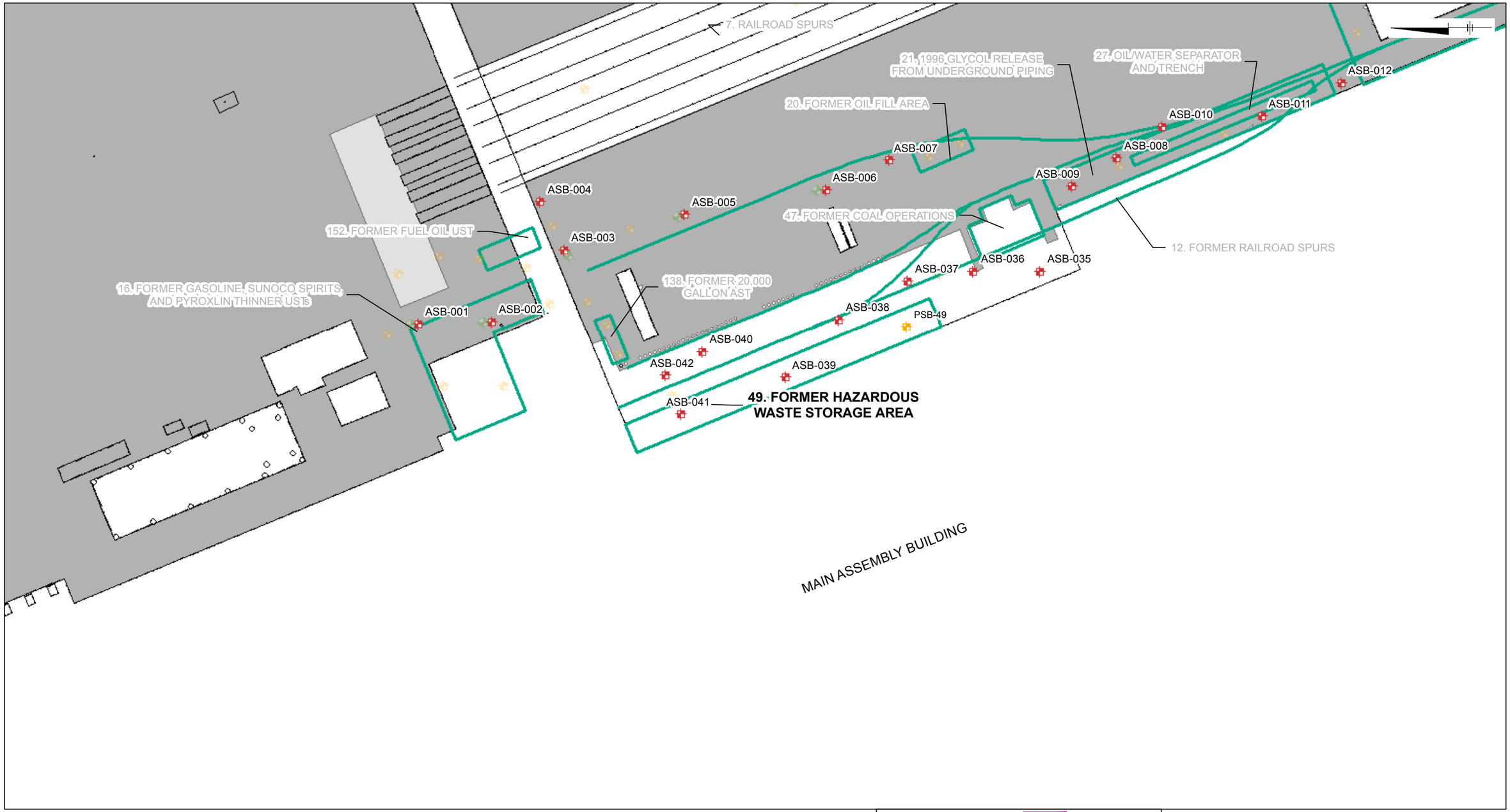


LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

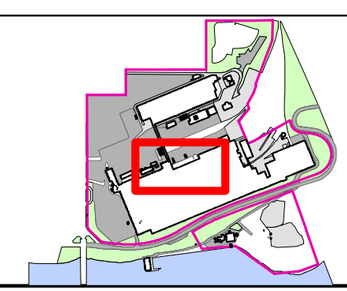
Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:
AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PMW Proposed Monitoring Well
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 49 - Former Hazardous Waste Storage Area
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
25

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
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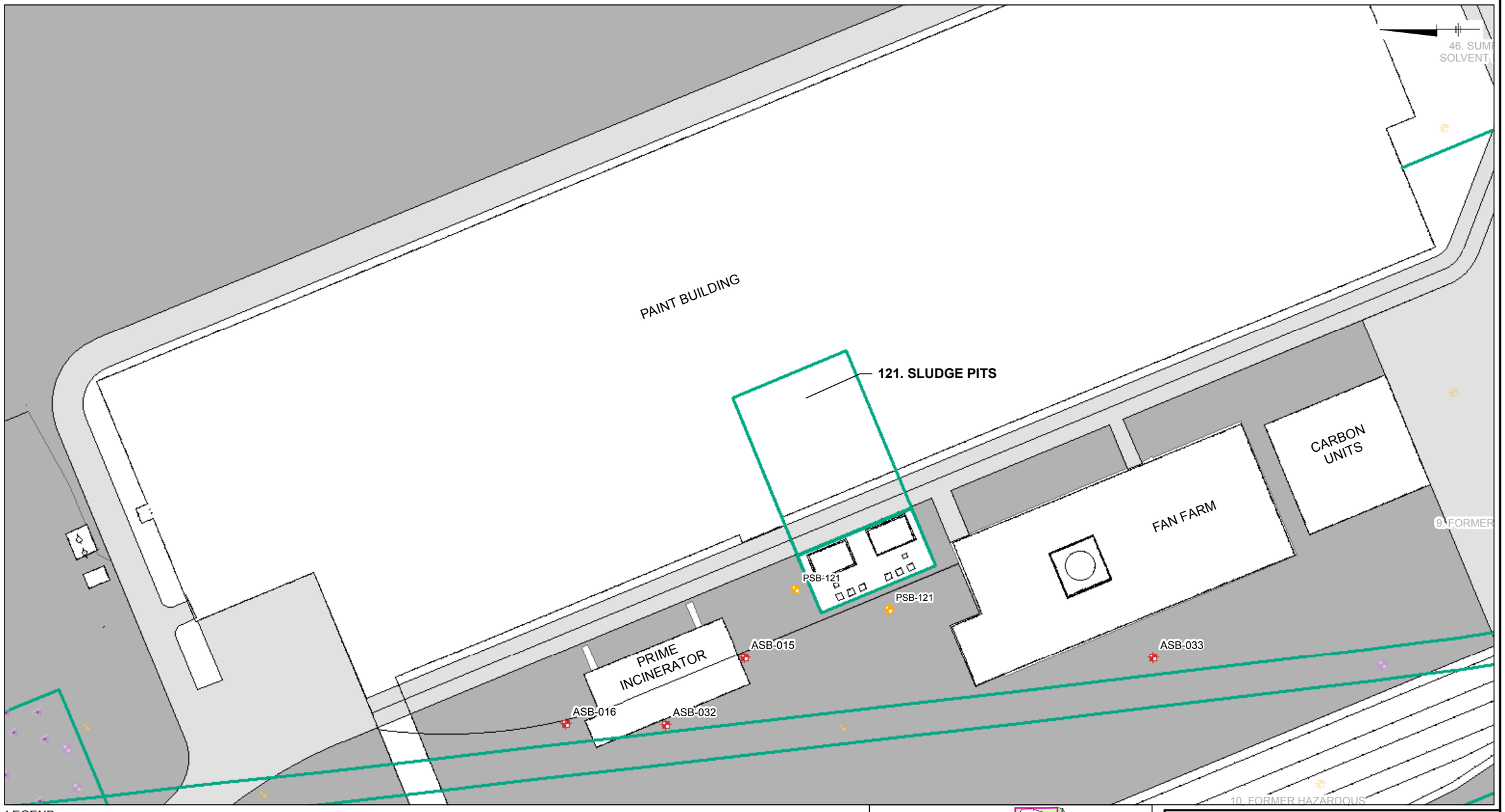


LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

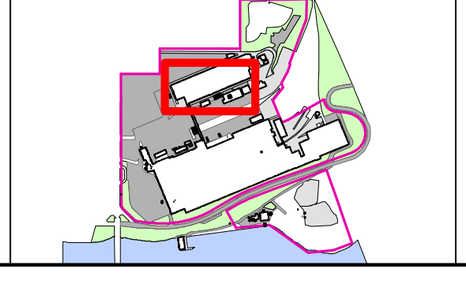
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 121 - Sludge Pits
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
26

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
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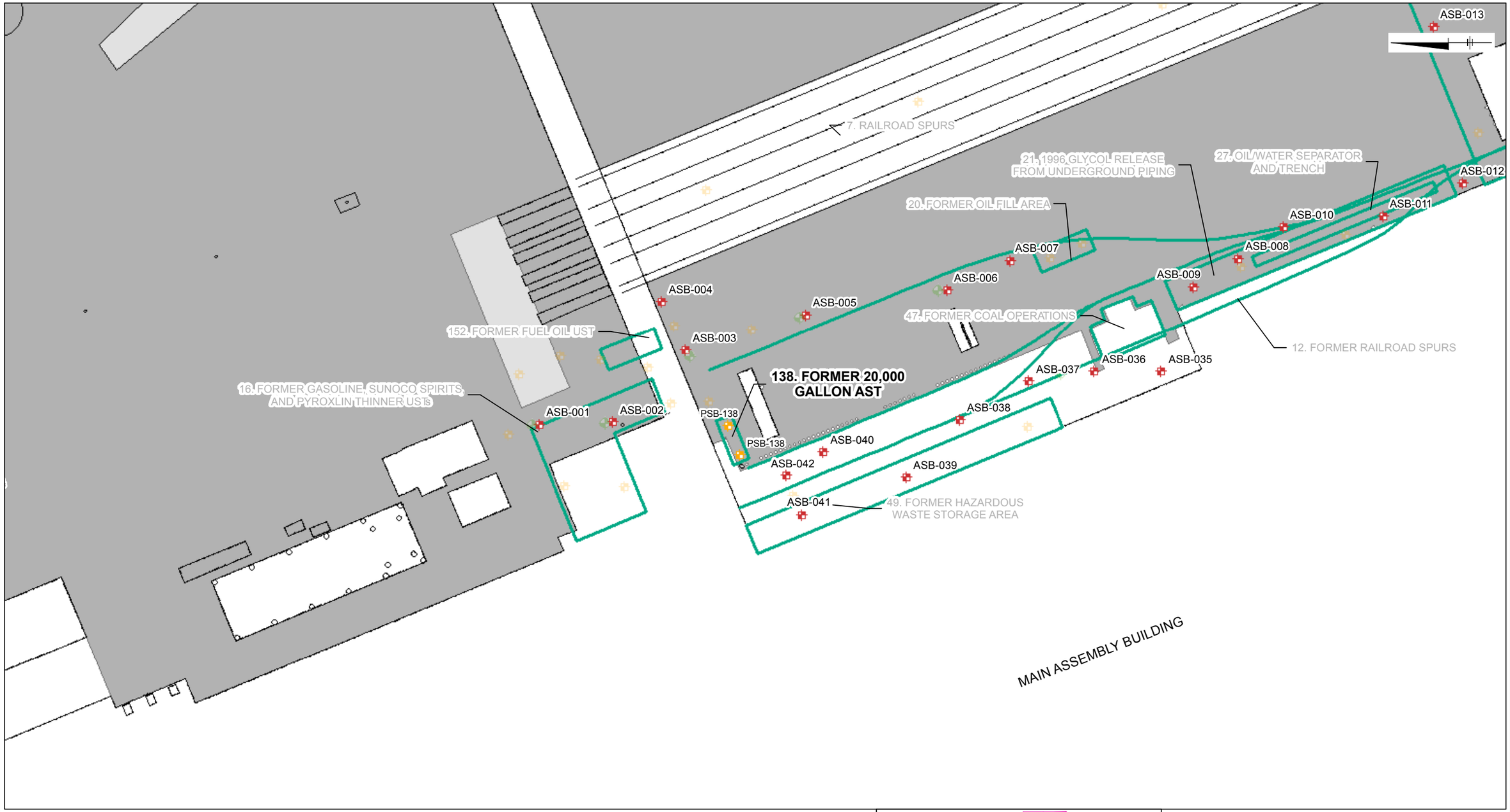


LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

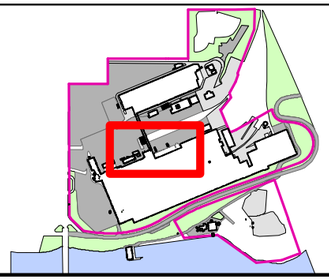
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



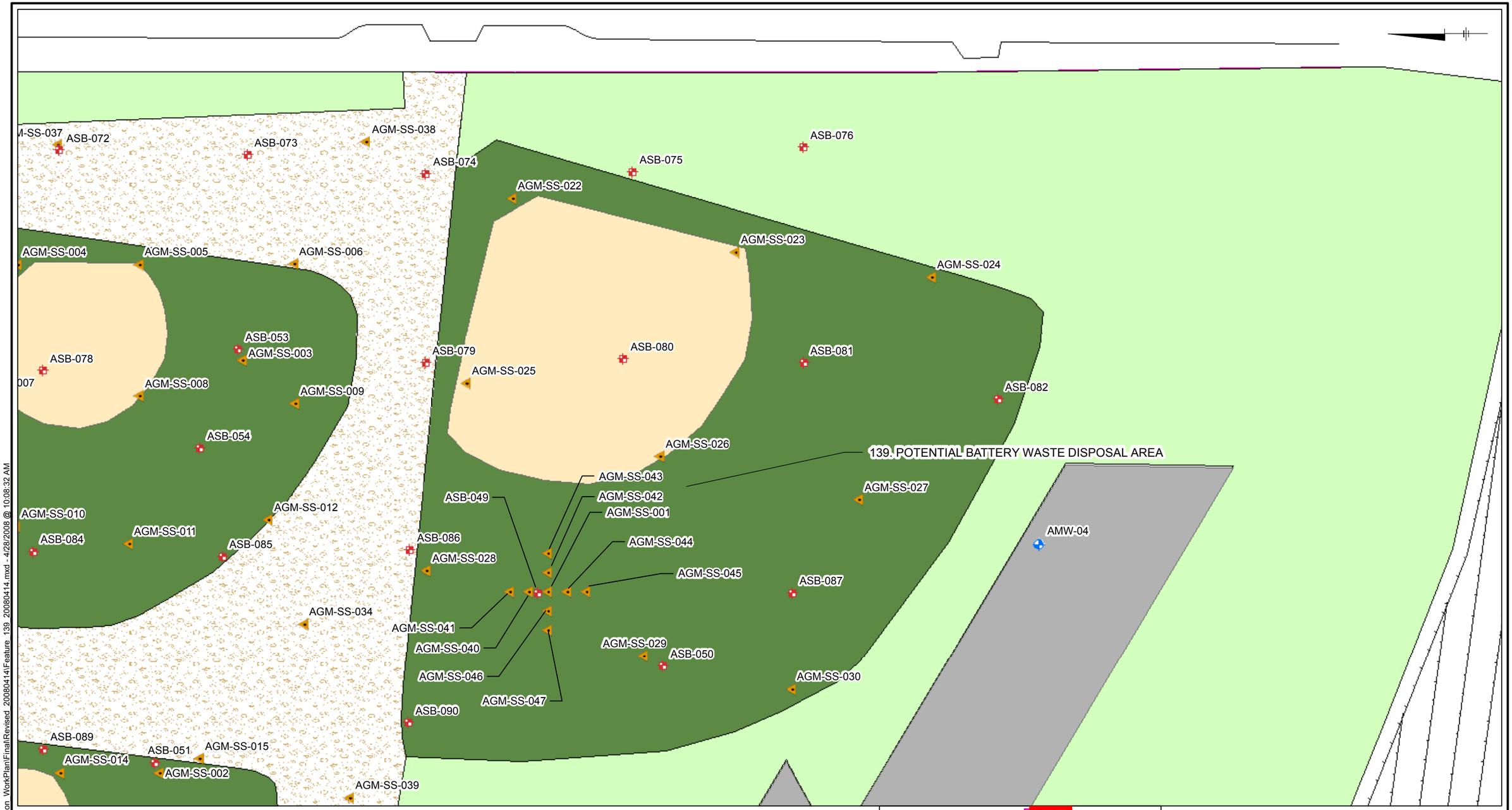
Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 138 - Former 20,000 Gallon AST
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
27

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
G:\GIS\Projects\Ford Ranger\ArcMap\Delineation_WorkPlan\Final\Revised_20080414\Feature_138_20080414.mxd - 4/25/2008 @ 11:32:04 AM



LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

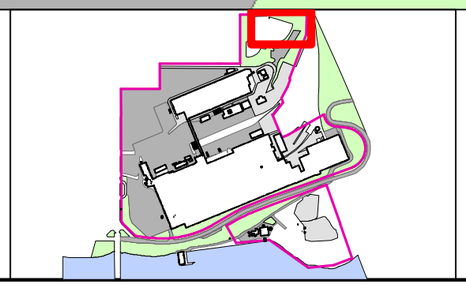
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Baseball Infield
- Baseball Outfield
- Parking Area
- Mississippi River

0 50 100 Feet

1 inch equals 50 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
AGM-SS ARCADIS Surface Soil Sample



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 139 - Potential Battery Waste Disposal Area
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
28

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
G:\GIS\Projects\Ford Ranger\ArcMap\Delineation_WorkPlan\Final\Revised_20080414\Feature_139_20080414.mxd - 4/28/2008 @ 10:08:32 AM

LEGEND:

- Hand Auger
- **Historic Locations**
- Monitoring Well
- Soil Boring
- Surface Soil Sample

Tunnels

- Cable Tunnels
- Utility Tunnel
- Mined Sand Tunnels
- Gas Tunnel
- Steam Tunnel
- Traffic Tunnels

- Ford Property Boundary
- Roads
- Rail
- Buildings

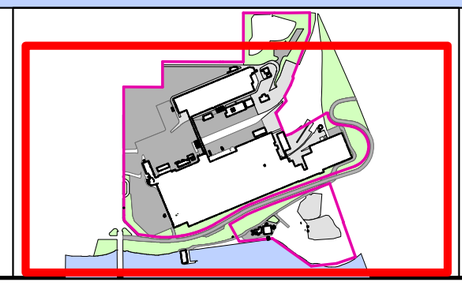
- Asphalt
- Concrete
- Grass
- Baseball Infield
- Baseball Outfield
- Detention Basin
- Mississippi River

0 350 700 Feet

1 inch equals 350 feet

NOTES:

HA ARCADIS Hand Auger



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Features 143, 144, 149, 150, 151
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
29

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
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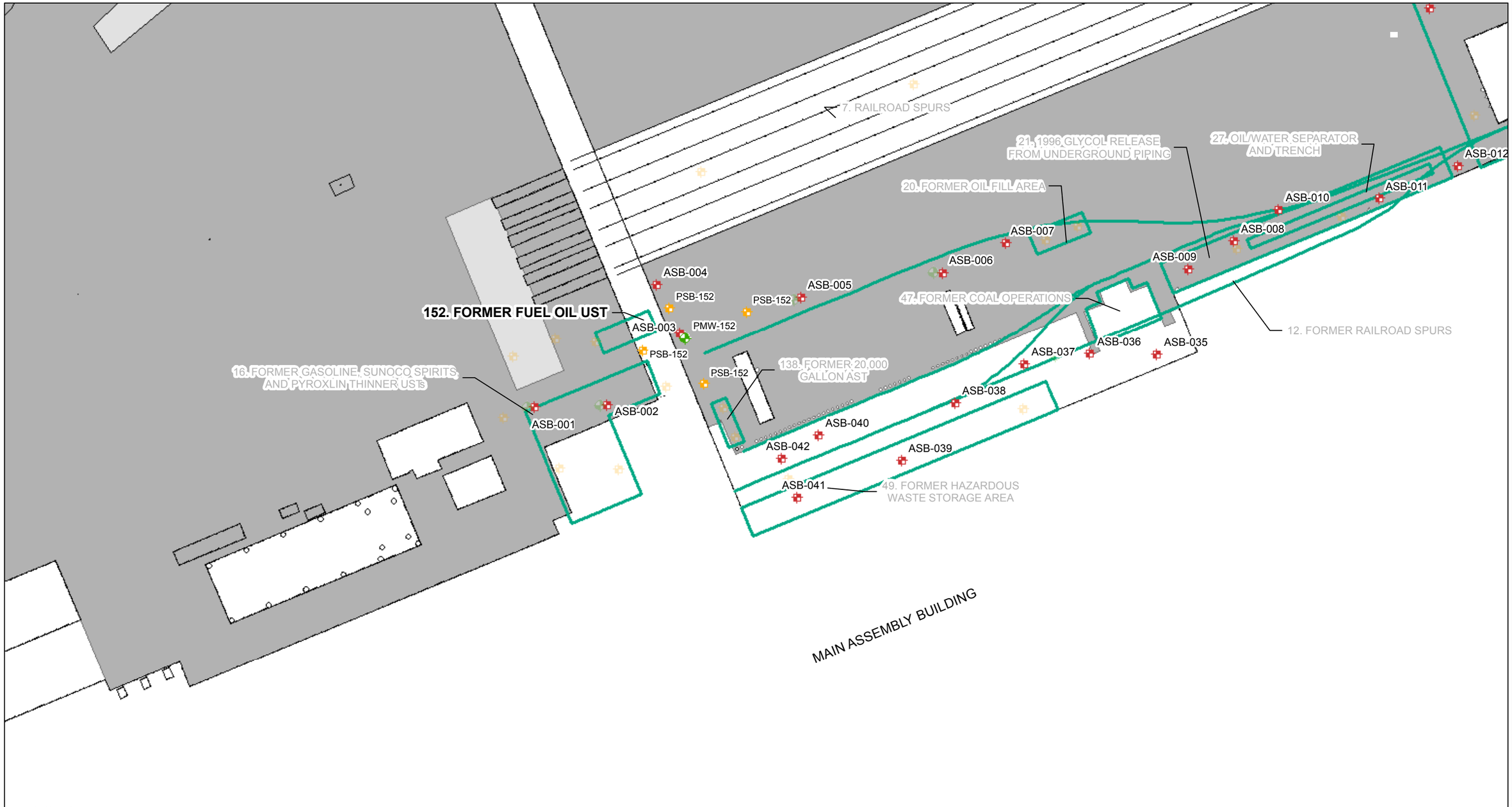


LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

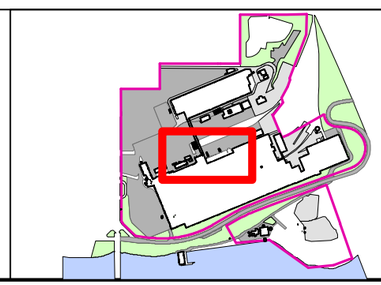
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PMW Proposed Monitoring Well
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Features 152 - Former Fuel Oil UST
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
30

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
G:\GIS\Projects\Ford Ranger\ArcMap\Delineation_WorkPlan\Final\Revised_20080414\Feature_152_20080414.mxd - 4/16/2008 @ 2:22:54 PM

153. FORMER COAL GASIFICATION PLANT

154. FORMER TAR DECANTER HOUSE

134. WASTEWATER TREATMENT AREA

140. FORMER WASTE DISPOSAL AREA

41. FORMER FUEL OIL UST (CLOSED IN PLACE)

42. FORMER FUEL OIL ASTs

44. WASTEWATER COLLECTION ASTs

STEAM PLANT

AMW-07

PSB-153

PSB-153

PSB-153

PSB-153/154

ASB-027

ASB-023

AMW-05

AMW-05B

ASB-024

ASB-025

ASB-026

LEGEND:

Proposed Locations

- Monitoring Well
- Soil Boring

Completed Locations

- Monitoring Well
- Soil Boring

Historic Locations

- Monitoring Well
- Soil Boring
- Surface Soil Sample

- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings

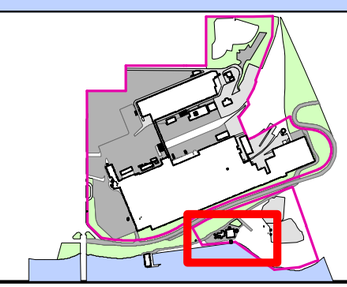
- Asphalt
- Concrete
- Grass
- Mississippi River
- Detention Basin

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



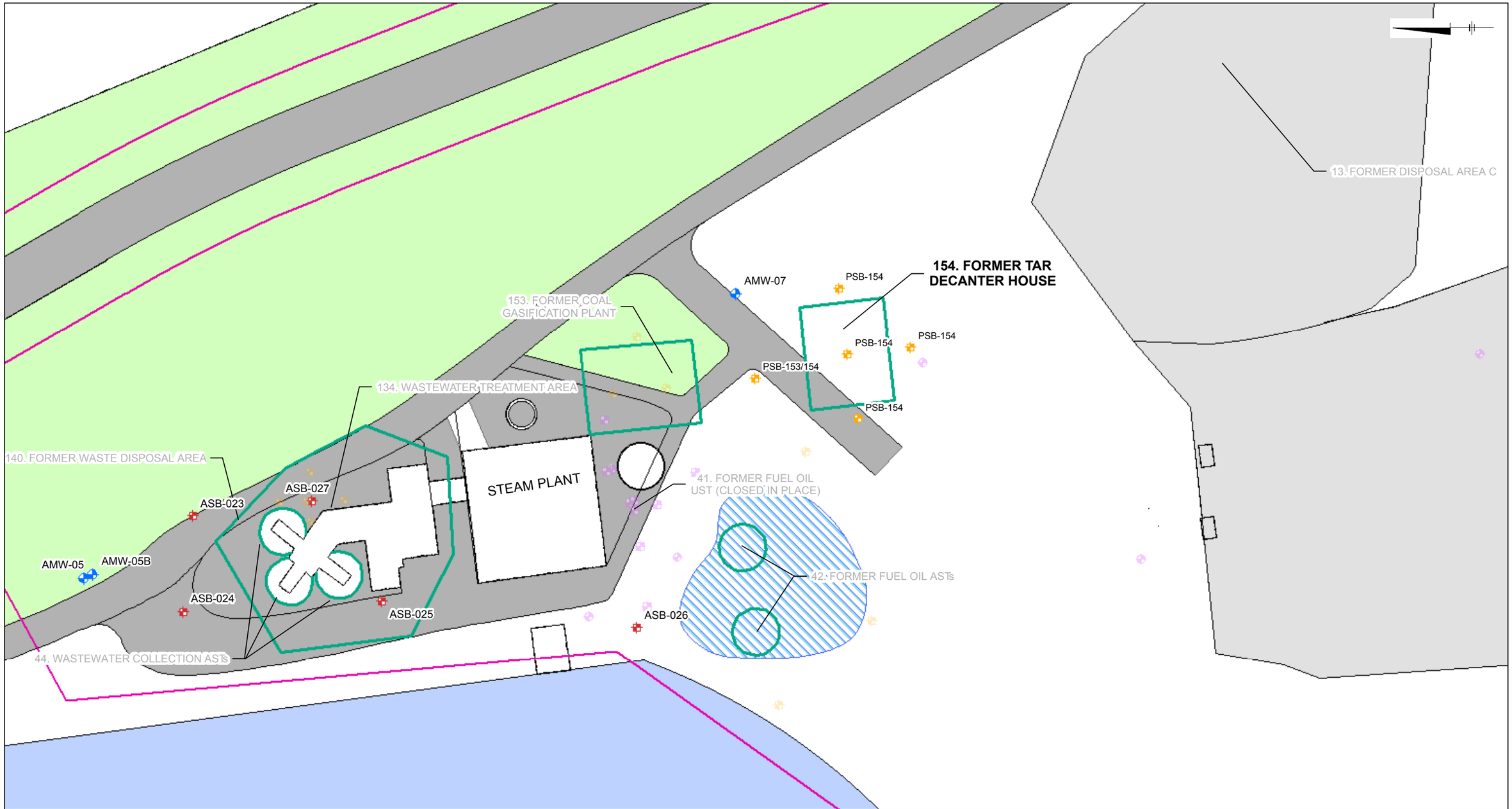
Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 153 - Former Coal Gasification Plant
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
31

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
G:\GIS\Projects\Ford Ranger\ArcMap\Delineation_WorkPlan\Final\Revised_20080414\Feature_153_20080414.mxd - 4/28/2008 @ 10:12:17 AM



LEGEND:

Proposed Locations
- Monitoring Well
- Soil Boring

Completed Locations
- Monitoring Well
- Soil Boring

Historic Locations
- Monitoring Well
- Soil Boring
- Surface Soil Sample

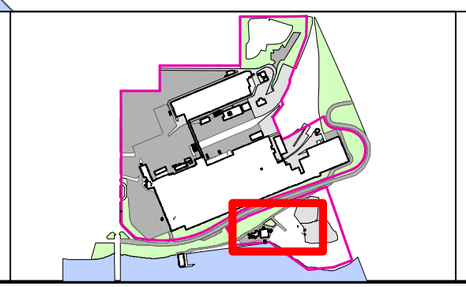
- Feature
- Ford Property Boundary
- Roads
- Rail
- Buildings
- Asphalt
- Concrete
- Grass
- Mississippi River
- Detention Basin

0 75 150 Feet

1 inch equals 75 feet

NOTES:

AMW ARCADIS Monitoring Well
ASB ARCADIS Soil Boring
PSB Proposed Soil Boring



Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Feature 154 - Former Tar Decanter House
Proposed Soil and Groundwater Sampling Locations
Supplemental Exterior Phase II Investigation

ARCADIS

FIGURE
32

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
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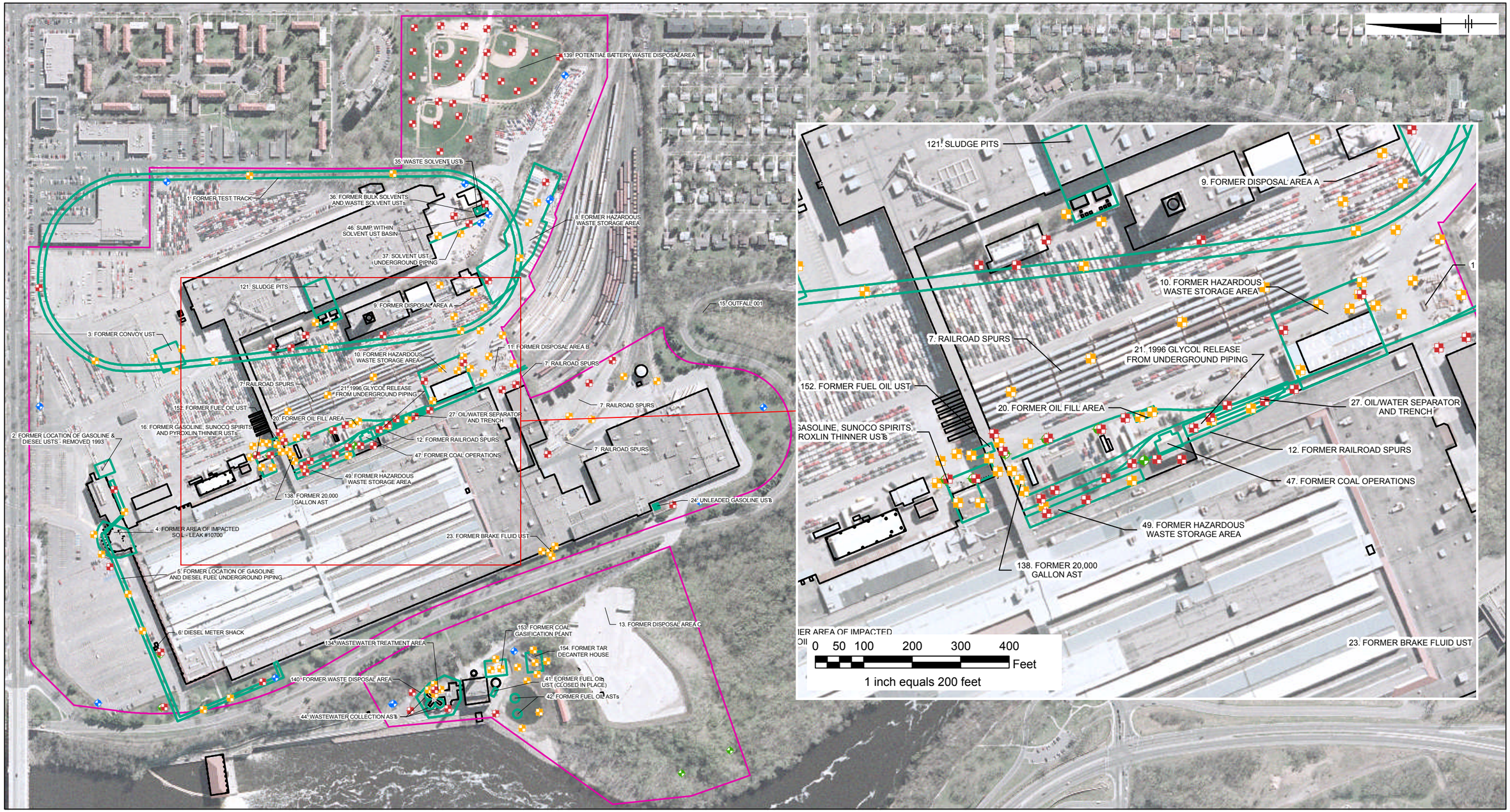

LEGEND:

Completed Locations
- Monitoring Well
- Soil Boring

Proposed Locations
- Monitoring Well
- Soil Boring

Exterior Feature

Ford Property Boundary

0 200 400 600 800 1,000 1,200 Feet

1 inch equals 400 feet

NOTE:

Imagery Source: United States Geological Survey
High Resolution Orthoimagery for the Minneapolis-St. Paul, Minnesota Urban Area

Twin Cities Assembly Plant
Ford Motor Company
St. Paul, Minnesota

Proposed Soil and Groundwater Sampling Locations

ARCADIS

FIGURE
33

CITY: Minneapolis, MN DB: MGress PM: BZinda
Project: MN000593
G:\GIS\Projects\Ford Ranger\ArcMap\Delineation_WorkPlan\Final\Revised_20080414\AllProposedLocations_20080414.mxd - 5/8/2008 @ 10:01:01 AM