May 22, 2008 Reference No. 012559

Ms. Laura C. Price
Voluntary Cleanup Unit/Remedial Section
Bureau of Environmental Remediation
Kansas Department of Health & Environment
1000 SW Jackson Street, Suite 410
Topeka, Kansas 66612-1367

Dear Ms. Price:

Re: Results of LNAPL Investigations - TMW-130 Area
Former General Motors Fairfax I Plant
Kansas City, Kansas

On behalf of General Motors (GM), Conestoga-Rovers & Associates (CRA) is pleased to submit this letter summarizing the results of the investigation into the presence and distribution of light non-aqueous phase liquid (LNAPL) detected in temporary monitoring well TMW-130. This well is located on the eastern portion of the former General Motors Fairfax I Plant (Site) located in Kansas City, Kansas.

1.0 INTRODUCTION

1.1 BACKGROUND

Correspondence from the Kansas Department of Health & Environment (KDHE) for this Site dated March 12, 2007 entitled "Former GM Fairfax I Plant, Voluntary Cleanup Investigation (VCI) Report" presented KDHE's responses to their review of the report entitled "Additional Groundwater and Soil Sampling Data" (CRA, February 2007). In their March 12, 2007 correspondence and in a subsequent March 22, 2007 conference call, the KDHE expressed the following:

- Additional investigation is required with concern to temporary monitoring well TMW-130 to demonstrate that the LNAPL present in the well is not affecting the condition of the downgradient wells; and
- Additional monitoring wells are to be installed in areas "where new contamination has been identified".

In response to the March 12, 2007 KDHE correspondence, field activities have been performed in accordance with the Scope of Work (SOW) and procedures outlined in the previously approved "LNAPL Investigation Work Plan, TMW-130 Area" that was submitted to the KDHE by CRA in June, 2007. GM's overall goal in the investigation is to pursue a No Further Action (NFA) Determination for the former GM Fairfax I Plant Site.

1.2 SITE LOCATION AND DESCRIPTION

The Site is located at 100 Kindelberger Road, Kansas City, Kansas and is located in the floodplain of the Missouri River. Refer to Figure 1 for the Site location. The Site is vacant as operations ceased throughout 1986 and 1987, and the facility was demolished in 1987. A number of monitoring wells, however, remain on the Site. Figure 2 presents the Site layout with the locations of existing monitoring wells and highlights the TMW-130 LNAPL investigation area.

2.0 SCOPE OF WORK

As outlined in the June 2007 LNAPL Investigation Work Plan (and in the Work Plan Addendum submitted to the KDHE on February 5, 2008), an investigation of the source and extent of LNAPL detected previously at temporary monitoring well TMW-130 was conducted. This investigation included the following tasks:

- Soil Boring Advancement and Logging
- Temporary Monitoring Well Installation and Development
- LNAPL Bailout Tests
- LNAPL Sampling and Analysis
- Laser Induced Fluorescence (LIF) Investigation

3.0 FIELD PROCEDURES

3.1 SOIL BORING COMPLETION

A total of 16 soil borings (Figure 3) were completed from October 16 to 31, 2007 to a depth of 25 feet below ground surface (ft bgs) using hollow-stem auger (HSA) drilling methods. The locations of the soil borings were reviewed and approved beforehand by the Fairfax Drainage District (FDD). The location of each boring was also cleared for subsurface utilities by a private locator before drilling began. During the drilling of soil borings, soil samples were collected continuously, described and classified according the Unified Soil Classification System (USCS) by a CRA geologist, and screened for the presence of petroleum hydrocarbons using field-screening techniques. Field screening was performed using a photoionization detector (PID) as well as by the use of visual and olfactory techniques. Soil samples were prepared for field screening in the following manner:

- A discrete, representative portion of soil was collected from each split-spoon sample and was deposited into a polyethylene bag. The bag was sealed immediately and labeled with the location, date, time, and sample depth;
- The soil remained undisturbed for several minutes to equilibrate;
- The PID was used to monitor the air contained in the bag for the presence of organic vapors; and
- Visual and olfactory observations of petroleum impact were noted in the log book.

Two soil samples were submitted to Soil Technology™ in Bainbridge Island, Washington for laboratory testing using the following American Society for Testing and Materials (ASTM) methods:

- Flexible & Rigid Wall Hydraulic Conductivity of Shelby Tube Specimens (ASTM D-2434);
- Flexible Wall Hydraulic Conductivity (ASTM D-5084);
- Total Volatile Solids (ASTM D-2974);
- Particle Size Distribution (ASTM D-422); and
- Visual Classification (ASTM D-2488).

After completion, each of the 16 soil borings was abandoned by backfilling the borehole with cement/bentonite grout. A tremie pipe was used to fill the borehole from the bottom up. The ground surface at each location was restored as closely as possible to its original condition.

Stratigraphic logs for the TMW-130 Area soil borings are provided in Attachment A.

3.2 TEMPORARY MONITORING WELL INSTALLATION AND DEVELOPMENT

In addition to the 16 soil borings, eight temporary monitoring wells (TMW-139, 140, 141, 142, 143, 144, 145, and 146) were installed in October 2007 to further delineate the lateral extent of LNAPL observed at TMW-130. The locations and construction of the temporary monitoring wells (Figure 3) were reviewed and approved beforehand by the FDD. The temporary wells were installed using a HSA drill rig with 3.25-inch inside diameter augers, and were constructed of nominal 2-inch diameter polyvinyl chloride (PVC) screens (No. 10 slot) and nominal 2-inch diameter schedule 40 PVC riser pipe. The temporary wells were installed through the hollow stem of the augers. During construction, the riser pipe was capped temporarily to prevent foreign material from entering into the well.

Each temporary monitoring well was backfilled with sand to a minimum depth of 2 feet above the well screen and completed to the surface with bentonite. All drill cuttings were drummed

for proper disposal. The PVC riser at each temporary monitoring well location was completed above grade. Each well casing was capped, and a protective casing was placed over the well but was not cemented in place.

In order to establish good hydraulic communication with the aquifer and reduce the volume of sediment in the wells, the temporary monitoring wells were developed. Well development was conducted in accordance with the procedures outlined below:

i) Water was purged from the well using an electronic submersible pump and dedicated tubing.

ii) Groundwater was collected at regular intervals and the pH, temperature, and conductivity were measured using field instruments that were calibrated daily according to the manufacturer's specifications. Additionally, observations such as color, odor, and turbidity of the purged water were recorded.

Development continued until the turbidity of the monitoring wells was significantly reduced and three consistent readings of pH, temperature, and conductivity were recorded, or a minimum of ten well volumes was purged.

The temporary monitoring wells will remain in place until this investigation program is completed, after which time they will be abandoned in accordance with State regulations.

Stratigraphic and instrumentation logs for the TMW-130 Area temporary monitoring wells are provided in Attachment A. Table 1 provides well development parameters.

3.3 LNAPL BAILOUT

After well installation and development, fluid levels in each well were measured (Table 1). Those wells that initially exhibited the presence of LNAPL (TMW-139 and TMW-140) were bailed using a well-dedicated disposable polyethylene bailer until the standing oil within the well was removed. After a period of 24 hours, fluid level monitoring was again conducted at each well to determine the in-well thickness of LNAPL that had recharged into the well (Table 2).

Following the initial LNAPL bailout, fluid level monitoring in all TMW locations surrounding TMW-130 (including TMW-130) continued weekly for 6 weeks. If LNAPL was observed in a well during this period, the LNAPL was bailed until the standing oil within the well was removed. Recovered LNAPL was stored in a sealed and labeled 55-gallon drum pending characterization and proper disposal.

3.4 LNAPL SAMPLING

Following the initial bailout test, a sample of LNAPL was collected from TMW-140. The sample was collected using a disposable bailer, which allowed for the LNAPL to be poured directly into the sample container.

The sample was placed in an appropriate shipping container and sent to GW/S Environmental Consulting of Tulsa, Oklahoma for analysis.

3.5 LIF INVESTIGATION

Based on an initial evaluation of the results of the above-described assessment activities, GM proceeded with a supplemental investigation using Laser-Induced Fluorescence (LIF) to provide a better indication of the extent of LNAPL present in the subsurface, especially in soils below the water table. The scope of the LIF investigation was described in detail in the February 5, 2008, "Work Plan Addendum – TMW-130 Area LNAPL Investigation."

Matrix Environmental, LLC of Osseo, Minnesota was contracted to perform a site investigation using an ultraviolet optical screening tool (UVOST) system to investigate the presence of LNAPL in the TMW-130 area (UVOST is one of the commercially available LIF systems). From February 26 to 28, 2008, 24 UVOST locations (Figure 4) were completed in the area surrounding TMW-130. The UVOST locations were completed across a gridded area to provide an accurate lateral and vertical representation of subsurface LNAPL presence.

CRA was on Site to provide oversight for the UVOST survey. The UVOST system delineates LNAPL impacts by detecting the presence of polynuclear aromatic hydrocarbons (PAHs) during the advancement of the probe. The UVOST probe is equipped with a sapphire window through which a laser is directed. The laser light is adsorbed by aromatic hydrocarbon molecules in contact with the window as the probe is advanced. This addition of energy (photons) to the aromatic hydrocarbons causes them to fluoresce as they return to ground state after being excited. A portion of the fluorescence emitted from any encountered aromatic constituents is returned through the sapphire window and conveyed by a fiber optic cable to a detection system attached to the Geoprobe rig. The emission data from the pulsed laser light is averaged into one reading per one-second intervals and is recorded continuously. The intensity of the fluorescence is proportional to the amount of aromatic hydrocarbon present (i.e., LNAPL saturation). The UVOST technology does not detect dissolved phase hydrocarbons. Thus, only product phase concentrations are recorded.

The UVOST investigation was conducted at 24 locations throughout the LNAPL area. At each UVOST location, the probe was pushed to a depth of 35-40 feet bgs. This depth was as much as 15 feet below the current water table and typically 5-10 feet below the deepest petroleum impacts previously identified in the saturated zone.

The use of UVOST enabled the delineation of LNAPL without having to obtain soil samples from the subsurface. The time saved on collecting subsurface soil samples meant that additional locations could be investigated for the presence of LNAPL versus conventional soil sampling methods (UVOST can enable the investigation of three to five times the amount of locations as compared to traditional soil sampling in a given time period). This technology provided an effective means of conducting a comprehensive LNAPL delineation program.

4.0 RESULTS

4.1 BORING ADVANCEMENT AND HYDRAULIC CONDUCTIVITY TESTING

A total of 16 boreholes (Figure 3) were advanced to a depth of 25 feet ft bgs. Field descriptions of soil samples indicate that the soil consists of sand, silt, and clay. Laboratory hydraulic conductivity tests conducted by Soil Technology™ were performed on two soil samples collected from the field. Sample S-101707-JH-001 was collected from soil boring SB-202 at a depth of 11.1-11.4 ft bgs. Sample S-101707-JH-002 was collected from soil boring SB-203 at a depth of 16.2-16.6 ft bgs. Laboratory tests show that sample S-101707-JH-001 had a hydraulic conductivity of $3x10^{-6}$ centimeters per second (cm/sec) and sample S-101707-JH-002 had a hydraulic conductivity of $2x10^{-2}$ cm/sec. From this data, it was concluded that sample S-101707-JH-001 can be classified (according to USCS classification) as a silt and sample S-101707-JH-002 can be classified as poorly graded/well-sorted sand. The data are included as Attachment B.

4.2 FLUID LEVEL MONITORING

Fluid level monitoring in all TMW locations around TMW-130 (including TMW-130) continued after the installation of the eight new monitoring wells. The results of the fluid level monitoring can be found in Table 2. The results of the monitoring indicate that the maximum in-well thickness of observed LNAPL was 3.31 feet, found at TMW-140, on February 28, 2008.

4.3 LNAPL NATURE AND EXTENT

Based on fluid level monitoring conducted between October 2007 and March 2008, and field screening of the soil borings drilled in October 2007, the approximate extent of the observed LNAPL was determined (Figure 5). Using field-screening data in conjunction with water/product levels taken from the monitoring wells, two hydrogeologic cross-sections were constructed in an east/west and north/south configuration (Figure 6) to present the limits of observed LNAPL. The cross-sections are depicted on Figure 7.

The laboratory analysis of the LNAPL sample collected from TMW-140 indicates that the LNAPL is a very degraded distillate (diesel/fuel oil) with no other petroleum products present. The results of the LNAPL analysis are included as Attachment C.

4.4 LIF RESULTS

The locations where UVOST was conducted and a general overview of the results are provided on Figure 8. A total of 24 UVOST locations were completed in order to delineate the LNAPL horizontally and vertically, as well as to approximate the LNAPL saturation profile and LNAPL type at each location. A CRA geologist was on Site to identify UVOST test locations and oversee the UVOST process.

The UVOST results (graphs of relative fluorescence response against depth below ground surface) are provided in Attachment D. In general, the results indicate that the majority of LNAPL impacts detected across the impacted area were of a consistent product-type. The spectral product-type waveforms indicated by the UVOST results are consistent with a product-type heavier than gasoline or diesel, such as a highly degraded diesel or heavier oil. This is consistent with the LNAPL fingerprinting results discussed in Section 4.3. In comparison to current water table elevations, the UVOST profiles indicate that the majority of impacts are in the vadose zone, with some instances of the impacted zones being submerged. Because a significant portion of the more heavily impacted areas appear to be currently situated predominantly in the vadose zone, the LNAPL thicknesses currently observed in Site monitoring wells may be approaching the maximum that will be observed over time. Consequently, the current Site conditions may be used to conservatively approximate the potential for LNAPL mobility.

Plan view interpolations of the average UVOST results across the plume are provided on Figure 8. The maximum and average UVOST readings are summarized in Table 3. It is important to note that some of the maximum fluorescence intensities identified by UVOST in various locations were only measured over a very small vertical interval, and that the majority of intensities over larger vertical intervals decreased significantly. Consequently, plotting average fluorescence intensities provides a more useful depiction of effective LNAPL impacts at each location.

5.0 CONCLUSIONS

Based on the results of the soil boring investigation, soils exhibiting visual staining or odors have been identified and delineated on the basis of visual and olfactory observations, as well as by field screening using a PID. Results of fluid level monitoring in the temporary monitoring wells show that the extent of LNAPL in the area has also been delineated. As depicted on Figure 5, these results identify a likely historical source area that appears to be centered in the TMW-130 area. The total area encompassed by soils exhibiting visual staining or odors and temporary monitoring wells that have measurable thicknesses of LNAPL measures approximately 170 feet by 300 feet.

The presence and distribution of soils exhibiting staining and/or odors and LNAPL is further supported by the results of the LIF investigation. Review of the average UVOST fluorescence

(Figure 8) indicates that the historical source may be located between TMW-130 and TMW-140, where the highest average fluorescence was observed and which is the area of the greatest observed LNAPL thickness. In the vicinity of the TMW-140 area, the UVOST results also indicate that LNAPL appears to be present as much as 10 feet below the water table (on February 28, 2008).

Should you have any questions on the above, please do not hesitate to contact us.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Phil Harvey

PH/lg/10
Encl.

c.c.: Ken Richards, GM

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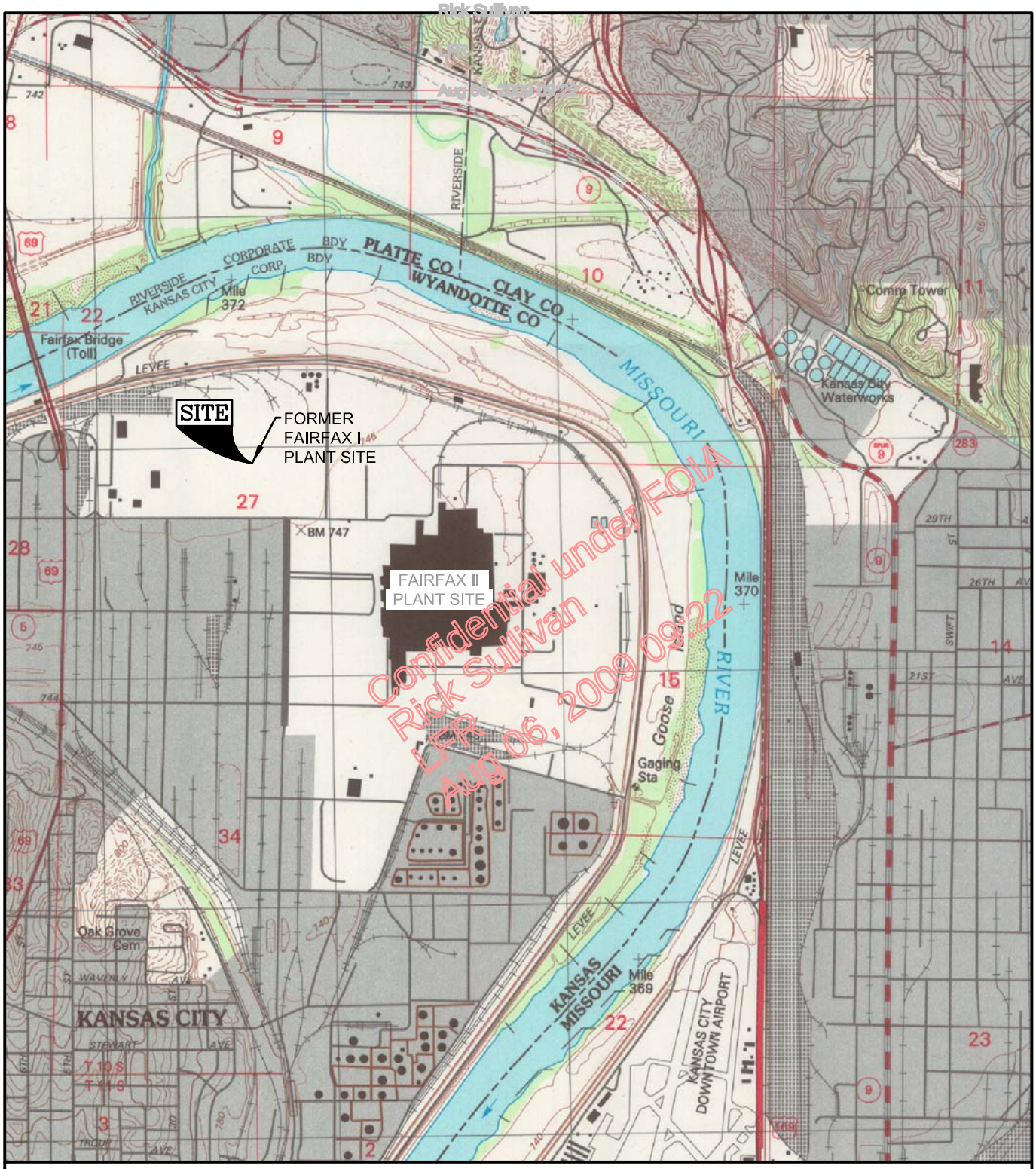

BASE SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE;
NORTH KANSAS CITY, MO-KS 1990

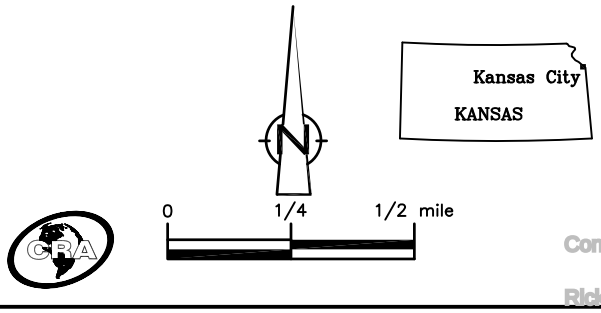

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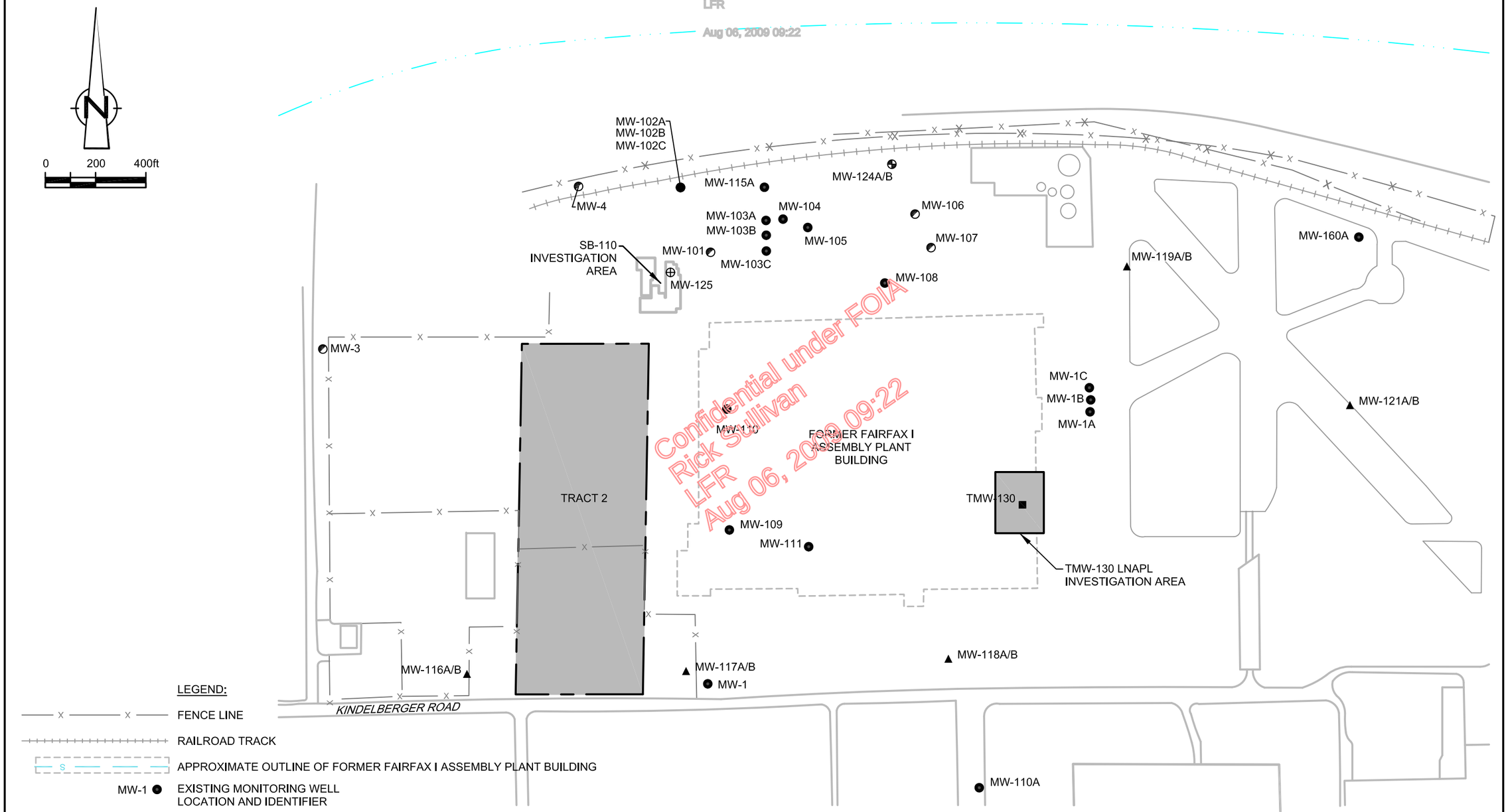
figure 1

SITE LOCATION MAP
FORMER FAIRFAX I PLANT
Kansas City, Kansas

12559-04-202080(PRIC010)GN-CO001 APR 16/2008



LEGEND:

- FENCE LINE
- RAILROAD TRACK
- APPROXIMATE OUTLINE OF FORMER FAIRFAX I ASSEMBLY PLANT BUILDING
- MW-1 ● EXISTING MONITORING WELL LOCATION AND IDENTIFIER
- MW-3 ◐ FORMER MONITORING WELL LOCATION AND IDENTIFIER
- MW-116A/B ▲ NESTED MONITORING WELL LOCATION AND IDENTIFIER (INSTALLED DECEMBER 2005)
- TMW-130 ■ TEMPORARY MONITORING WELL LOCATION AND IDENTIFIER (INSTALLED NOVEMBER 2006)
- MW-124A/B ⊕ NESTED MONITORING WELL LOCATION AND IDENTIFIER (INSTALLED NOVEMBER 2006)
- MW-125 ⊕ MONITORING WELL LOCATION AND IDENTIFIER (INSTALLED NOVEMBER 2007)

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figure 2

SITE PLAN
FORMER FAIRFAX I PLANT
Kansas City, Kansas

12559-04-202080(PRIC010)GN-CO002 APR 16/2008

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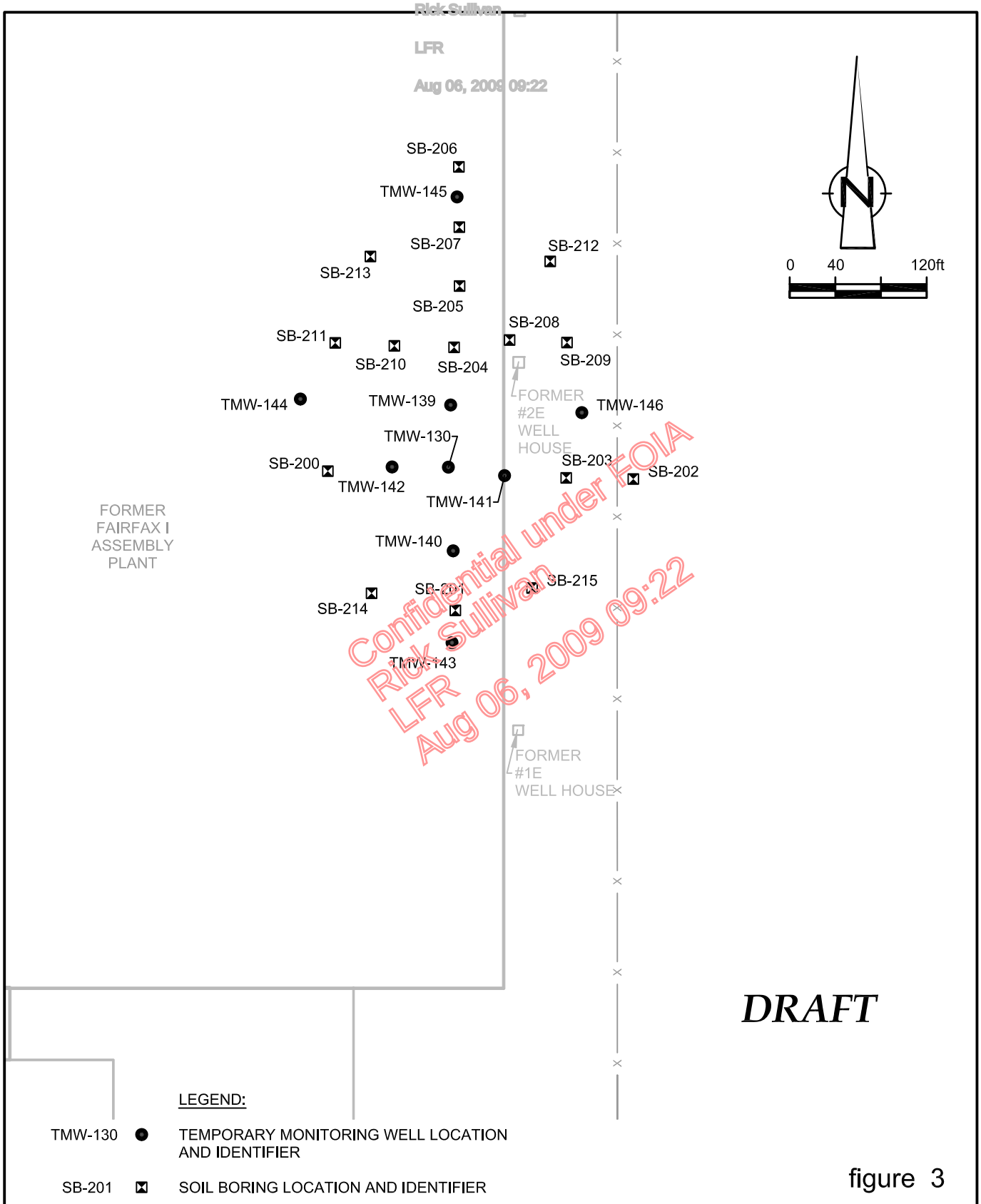
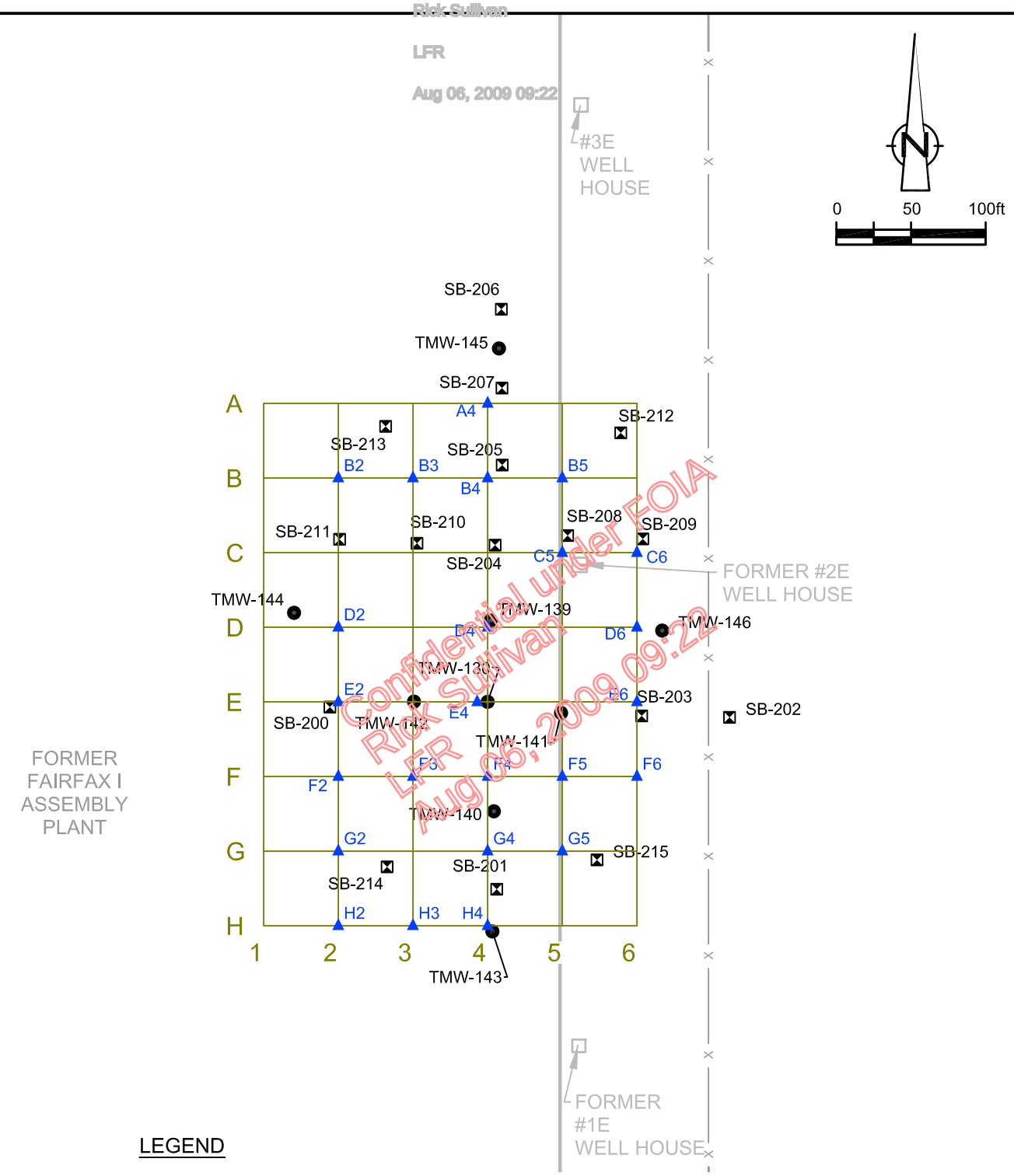


figure 3

SOIL BORING AND TEMPORARY MONITORING WELL LOCATIONS
TMW-130 LNAPL INVESTIGATION AREA
FORMER FAIRFAX I PLANT
Kansas City, Kansas

12559-04-202080(PRIC010)GN-CO003 APR 16/2008



LEGEND

TMW-130	●	TEMPORARY MONITORING WELL LOCATION AND IDENTIFIER
SB-201	⊠	SOIL BORING LOCATION AND IDENTIFIER
A4	▲	UVOST BORING LOCATION AND IDENTIFIER

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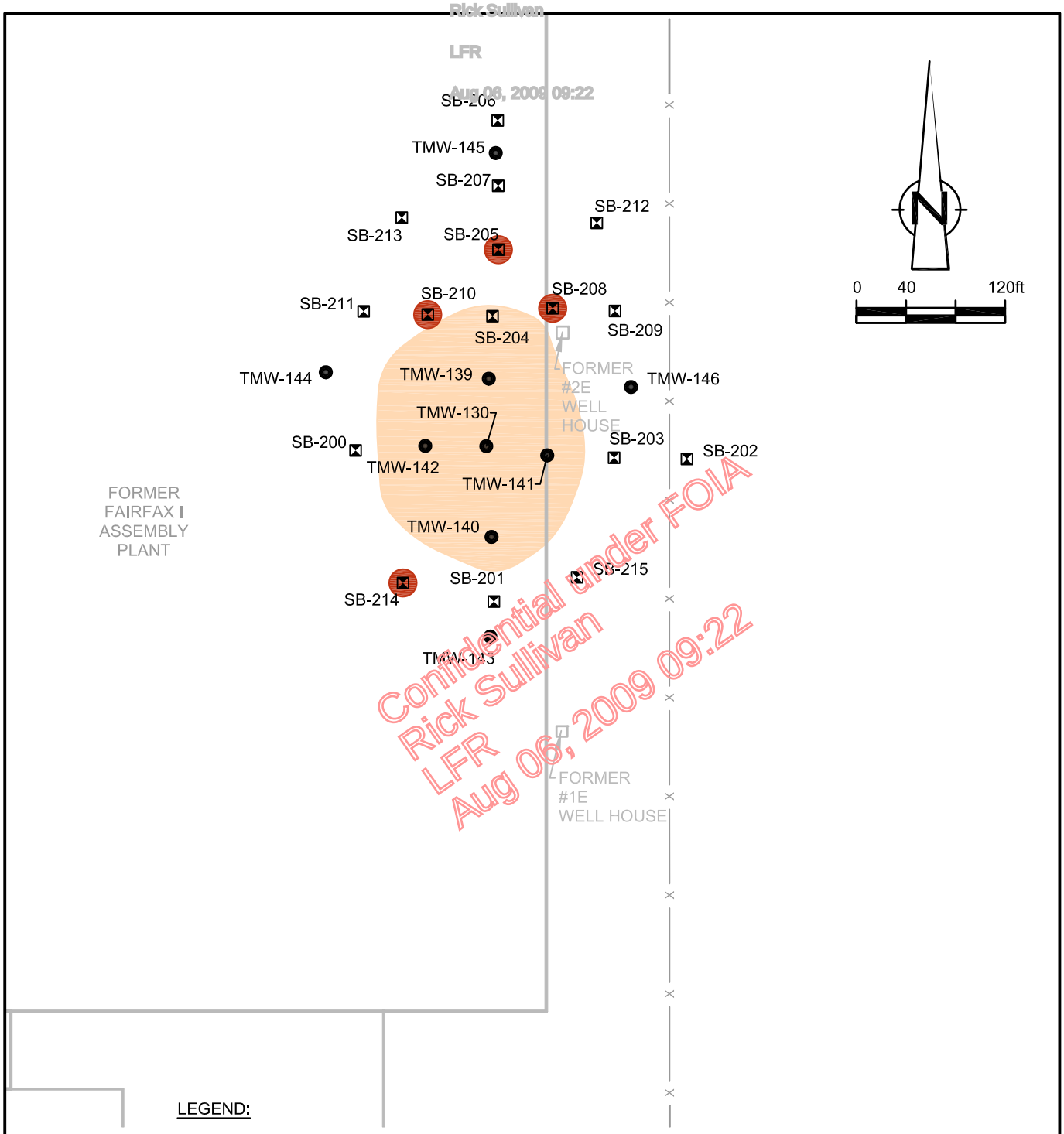
figure 4

UVOST BORING LOCATIONS
TMW-130 LNAPL INVESTIGATION AREA
FORMER FAIRFAX I PLANT
Kansas City, Kansas

12559-04-202080(PRIC010)GN-CO009 APR 16/2008



LEGEND:

- TMW-130 ● TEMPORARY MONITORING WELL LOCATION AND IDENTIFIER
- SB-201 ⊠ SOIL BORING LOCATION AND IDENTIFIER
- APPROXIMATE EXTENT OF LNAPL
- STAINED SOILS/ODORS

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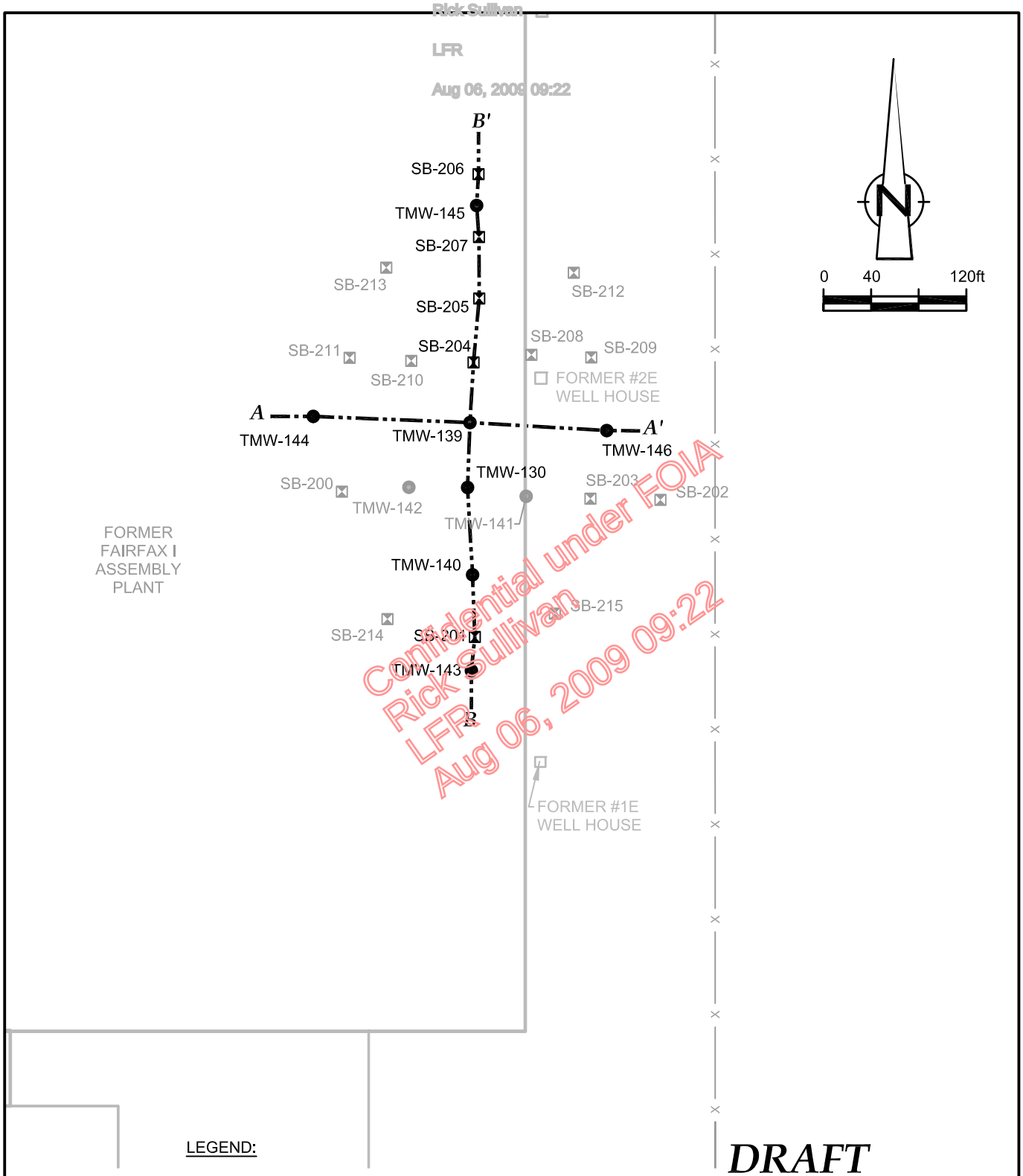
figure 5

APPROXIMATE EXTENT OF OBSERVED LNAPL OCTOBER 2007-MARCH 2008 TMW-130 LNAPL INVESTIGATION AREA FORMER FAIRFAX I PLANT

Kansas City, Kansas

12559-04-202080(PRIC010)GN-CO004 APR 16/2008



LEGEND:

TMW-130 ● TEMPORARY MONITORING WELL LOCATION AND IDENTIFIER

SB-201 ⊠ SOIL BORING LOCATION AND IDENTIFIER

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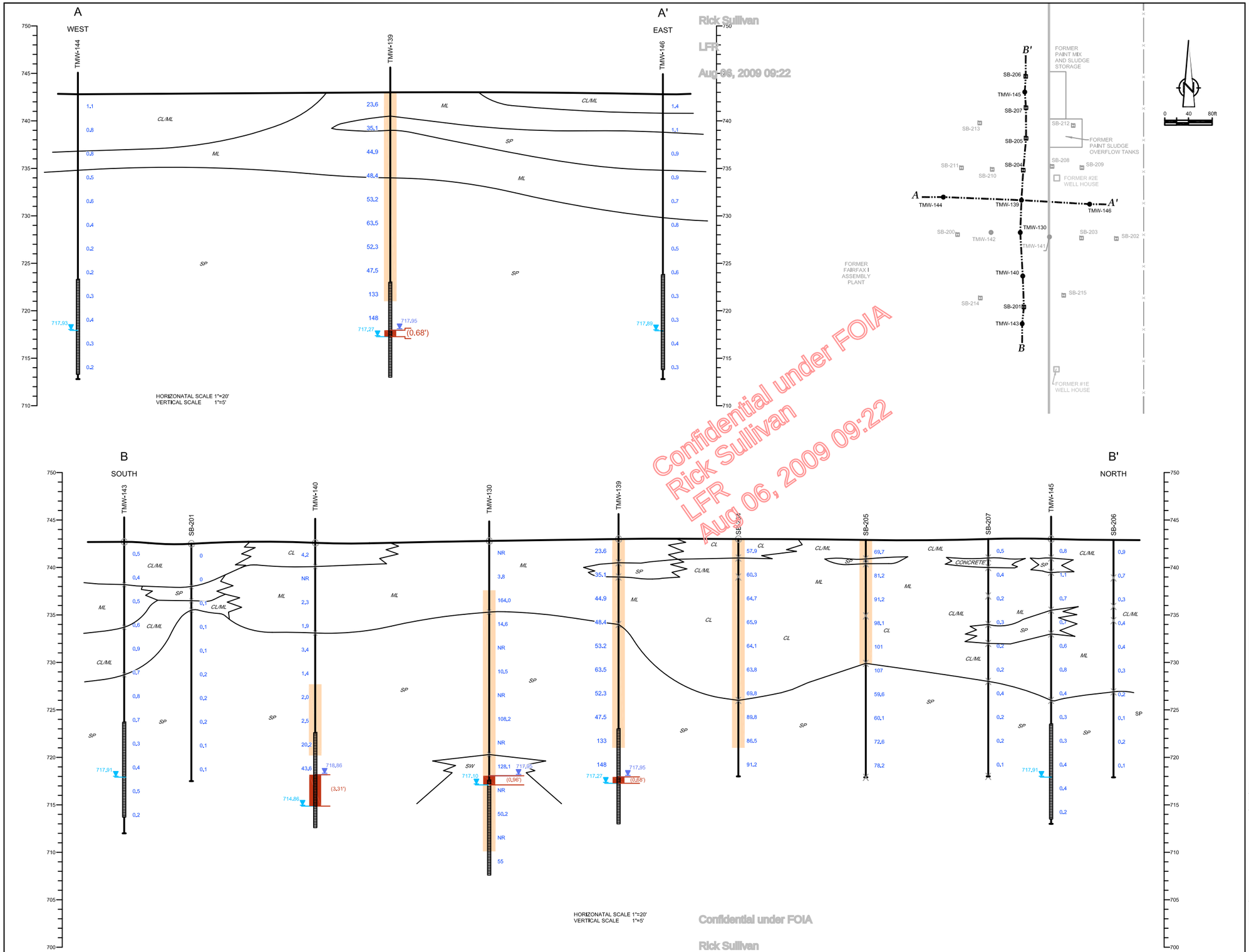
figure 6

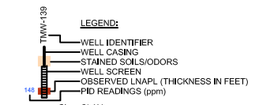
LOCATION OF CROSS SECTIONS
TMW-130 LNAPL INVESTIGATION AREA
FORMER FAIRFAX I PLANT
Kansas City, Kansas

12559-04-202080(PRIC010)GN-CO005 APR 16/2008



FORMER FAIRFAX I ASSEMBLY PLANT

No	Revision	Date	Initial



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SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial

FORMER FAIRFAX I PLANT
KANSAS CITY, KANSAS

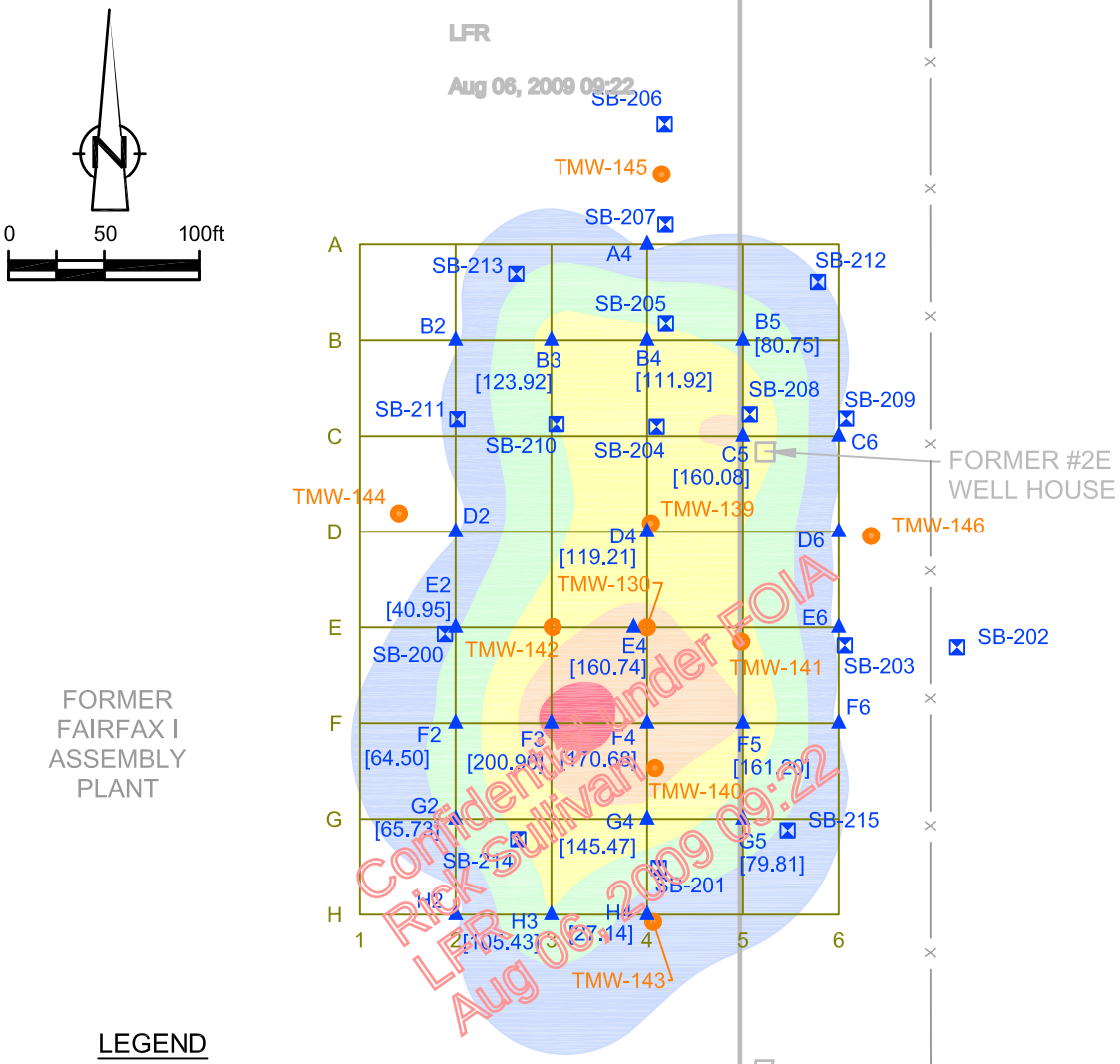
FORMER FAIRFAX I PLANT

HYDROGEOLOGIC CROSS SECTIONS A-A' & B-B'
TMW-130 LNAPL INVESTIGATION AREA

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:			
Project Manager: P. HARVEY	Reviewed By: J. GREETIS	Date: 4/02/08	
Scale: AS SHOWN	Project No: 12559-04-202080	Report No: PRIC010	Drawing No: figure 7

12559-04-202080(PRIC010)GN-CO010 APR 16/2008



LEGEND

TMW-130 ●	TEMPORARY MONITORING WELL LOCATION AND IDENTIFIER
SB-201 ⊠	SOIL BORING LOCATION AND IDENTIFIER
A4 ▲	UVOST BORING LOCATION AND IDENTIFIER
[37.82]	AVERAGE FLUORESCENCE COMPARED TO REFERENCE EMITTER
	AVERAGE FLUORESCENCE CONTOURS (10%)
	AVERAGE FLUORESCENCE CONTOURS (50%)
	AVERAGE FLUORESCENCE CONTOURS (100%)
	AVERAGE FLUORESCENCE CONTOURS (150%)
	AVERAGE FLUORESCENCE CONTOURS (180%)
*	AVERAGE UVOST FLUORESCENCE BY USING AN INTERVAL OF ON OR MORE FEET ABOVE AND BELOW THE MAXIMUM UVOST FLUORESCENCE

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figure 8

AVERAGE UVOST FLUORESCENCE
TMW-130 LNAPL INVESTIGATION AREA
FORMER FAIRFAX I PLANT
Kansas City, Kansas

TABLE 1

SUMMARY OF TEMPORARY MONITORING WELL DEVELOPMENT PARAMETERS
FORMER FAIRFAX I PLANT
KANSAS CITY, KANSAS

Location	*Date*	*Well Volume (Gallons)*	*Volume Removed (Gallons)*	*pH (Standard Units)*	*Conductivity (µS)* [1]	*Temperature (°C)*	*Turbidity (NTU)* [2]	*Other*
TMW-139	10/18/07	1.3	13	Parameters not measured due to the presence of LNAPL.				
TMW-140	10/18/07	1.3	13	Parameters not measured due to the presence of LNAPL.				
TMW-141	10/18/07	1.3	13	Parameters not measured due to the presence of LNAPL.				
TMW-142	10/18/07	1.3	13	Parameters not measured due to the presence of LNAPL.				
TMW-143	10/31/07	1.3	5.0	6.91	946	15.3	170	Cloudy, brown
			7.5	6.74	967	15.3	40	Slightly cloudy
			10.0	6.66	983	15.3	21	Clear
			12.5	6.64	994	15.3	13	Clear
			15.0	6.62	1,002	15.3	11	Clear
TMW-144	10/31/07	1.4	5.0	6.68	984	15.2	180	Slightly cloudy
			7.5	6.67	998	15.2	39	Clear
			10.0	6.70	1,008	15.2	20	Clear
			12.5	6.72	1,009	15.3	15	Clear
			15.0	6.72	1,010	15.3	12	Clear
TMW-145	11/1/07	1.2	5.0	7.22	917	15.0	450	Cloudy, brown
			10.0	6.81	943	15.1	45	Slightly cloudy
			12.5	6.75	953	15.1	18	Clear
			15.0	6.74	957	15.1	15	Clear
TMW-146	11/1/07	1.6	5.0	7.33	1,115	15.1	170	Cloudy, brown
			10.0	7.02	1,114	15.2	38	Slightly cloudy
			12.5	6.97	1,131	15.3	24	Clear
			15.0	6.95	1,137	15.3	17	Clear
			17.5	6.92	1,143	15.3	13	Clear

[1] µS/cm - microsiemens per centimeter

[2] NTU - nephelometric turbidity units

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Aug 06, 2009 09:22

TABLE 2

LNAPL GAUGING
FORMER FAIRFAX I PLANT
KANSAS CITY, KANSAS

Well ID	*Date*	*Top of Casing Elevation (ft AMSL)* [1]	*Depth to Water (ft BTOC)* [2]	*Depth to LNAPL* [3] *(ft BTOC)*	*LNAPL Thickness (feet)*	*Groundwater Elevation (ft AMSL)*
TMW-130	10/18/2007	744.86	NM[4]	NM	--[5]	NM
TMW-130	10/19/2007	744.86	NM	NM	--	NM
TMW-130	10/23/2007	744.86	23.17	23.14	0.03	721.69
TMW-130	11/1/2007	744.86	22.49	trace	--	722.37
TMW-130	11/7/2007	744.86	22.78	22.76	0.02	722.08
TMW-130	11/13/2007	744.86	23.21	23.19	0.02	721.65
TMW-130	11/20/2007	744.86	23.78	23.77	0.01	721.08
TMW-130	11/29/2007	744.86	25.54	--	--	719.32
TMW-130	12/3/2007	744.86	24.80	24.79	0.01	720.06
TMW-130	2/6/2008	744.86	27.30	26.71	0.59	717.56
TMW-130	2/28/2008	744.86	27.76	26.80	0.96	717.10
TMW-130	3/10/2008	744.86	26.32	25.79	0.53	718.54
TMW-139	10/18/2007	745.63	24.74	trace	--	720.89
TMW-139	10/19/2007	745.63	24.75	24.74	0.01	720.88
TMW-139	10/23/2007	745.63	23.94	--	--	721.69
TMW-139	11/1/2007	745.63	23.30	trace	--	722.33
TMW-139	11/7/2007	745.63	23.61	--	--	722.02
TMW-139	11/13/2007	745.63	24.06	24.05	0.01	721.57
TMW-139	11/20/2007	745.63	24.70	24.64	0.06	720.93
TMW-139	11/29/2007	745.63	25.49	25.40	0.09	720.14
TMW-139	12/3/2007	745.63	25.68	--	--	719.95
TMW-139	2/6/2008	745.63	28.71	27.52	1.19	716.92
TMW-139	2/28/2008	745.63	28.36	27.68	0.68	717.27
TMW-139	3/10/2008	745.63	26.74	26.62	0.12	718.89
TMW-140	10/18/2007	745.13	24.65	24.35	0.30	720.48
TMW-140	10/19/2007	745.13	24.62	24.36	0.26	720.51
TMW-140	10/23/2007	745.13	23.65	23.60	0.05	721.48
TMW-140	11/1/2007	745.13	23.72	22.79	0.93	721.41
TMW-140	11/7/2007	745.13	24.09	23.04	1.05	721.04
TMW-140	11/13/2007	745.13	24.45	23.43	1.02	720.68
TMW-140	11/20/2007	745.13	25.32	23.95	1.37	719.81
TMW-140	11/29/2007	745.13	26.52	24.68	1.84	718.61
TMW-140	12/3/2007	745.13	25.45	25.06	0.39	719.68
TMW-140	2/6/2008	745.13	30.05	26.80	3.25	715.08
TMW-140	2/28/2008	745.13	30.27	26.96	3.31	714.86
TMW-140	3/10/2008	745.13	26.25	--	--	718.88
TMW-141	10/18/2007	745.39	24.55	--	--	720.84
TMW-141	10/19/2007	745.39	24.55	trace	--	720.84
TMW-141	10/23/2007	745.39	23.80	--	--	721.59
TMW-141	11/1/2007	745.39	23.09	trace	--	722.30

TABLE 2

LNAPL GAUGING
FORMER FAIRFAX I PLANT
KANSAS CITY, KANSAS

Well ID	*Date*	*Top of Casing Elevation (ft AMSL)* [1]	*Depth to Water (ft BTOC)* [2]	*Depth to LNAPL* [3] *(ft BTOC)*	*LNAPL Thickness (feet)*	*Groundwater Elevation (ft AMSL)*
TMW-141	11/7/2007	745.39	23.38	sheen	--	722.01
TMW-141	11/13/2007	745.39	23.81	23.77	0.04	721.58
TMW-141	11/20/2007	745.39	24.41	24.33	0.08	720.98
TMW-141	11/29/2007	745.39	26.10	25.01	1.09	719.29
TMW-141	12/3/2007	745.39	25.47	25.36	0.11	719.92
TMW-141	2/6/2008	745.39	28.82	27.22	1.60	716.57
TMW-141	2/28/2008	745.39	29.16	27.32	1.84	716.23
TMW-141	3/10/2008	745.39	26.42	--	--	718.97
TMW-142	10/18/2007	744.93	24.09	--	--	720.84
TMW-142	10/19/2007	744.93	24.09	trace	--	720.84
TMW-142	10/23/2007	744.93	23.30	--	--	721.63
TMW-142	11/1/2007	744.93	22.60	trace	--	722.33
TMW-142	11/7/2007	744.93	23.79	22.86	0.93	721.14
TMW-142	11/13/2007	744.93	24.16	23.26	0.90	720.77
TMW-142	11/20/2007	744.93	24.15	23.88	0.27	720.78
TMW-142	11/29/2007	744.93	24.78	24.71	0.07	720.15
TMW-142	12/3/2007	744.93	24.97	24.95	0.02	719.96
TMW-142	2/6/2008	744.93	27.27	26.86	0.41	717.66
TMW-142	2/28/2008	744.93	27.49	26.96	0.53	717.44
TMW-142	3/10/2008	744.93	25.56	--	--	719.37
TMW-143	10/18/2007	745.28	NI[6]	--	--	NM
TMW-143	10/19/2007	745.28	NI	--	--	NM
TMW-143	10/23/2007	745.28	NI	--	--	NM
TMW-143	11/1/2007	745.28	23.04	--	--	722.24
TMW-143	11/7/2007	745.28	23.31	--	--	721.97
TMW-143	11/13/2007	745.28	23.64	--	--	721.64
TMW-143	11/20/2007	745.28	24.25	--	--	721.03
TMW-143	11/29/2007	745.28	24.96	--	--	720.32
TMW-143	12/3/2007	745.28	25.21	--	--	720.07
TMW-143	2/6/2008	745.28	27.20	--	--	718.08
TMW-143	2/28/2008	745.28	27.37	--	--	717.91
TMW-143	3/10/2008	745.28	26.45	--	--	718.83
TMW-144	10/18/2007	745.08	NI	--	--	NM
TMW-144	10/19/2007	745.08	NI	--	--	NM
TMW-144	10/23/2007	745.08	NI	--	--	NM
TMW-144	11/1/2007	745.08	22.71	--	--	722.37
TMW-144	11/7/2007	745.08	23.10	--	--	721.98
TMW-144	11/13/2007	745.08	23.50	--	--	721.58
TMW-144	11/20/2007	745.08	24.12	--	--	720.96
TMW-144	11/29/2007	745.08	25.90	--	--	719.18

TABLE 2

LNAPL GAUGING
FORMER FAIRFAX I PLANT
KANSAS CITY, KANSAS

Well ID	*Date*	*Top of Casing Elevation (ft AMSL)* [1]	*Depth to Water (ft BTOC)* [2]	*Depth to LNAPL* [3] *(ft BTOC)*	*LNAPL Thickness (feet)*	*Groundwater Elevation (ft AMSL)*
TMW-144	12/3/2007	745.08	25.16	--	--	719.92
TMW-144	2/6/2008	745.08	27.05	--	--	718.03
TMW-144	2/28/2008	745.08	27.15	--	--	717.93
TMW-144	3/10/2008	745.08	26.05	--	--	719.03
TMW-145	10/18/2007	745.36	NI	--	--	NM
TMW-145	10/19/2007	745.36	NI	--	--	NM
TMW-145	10/23/2007	745.36	NI	--	--	NM
TMW-145	11/1/2007	745.36	22.95	--	--	722.41
TMW-145	11/7/2007	745.36	23.39	--	--	721.97
TMW-145	11/13/2007	745.36	23.83	--	--	721.53
TMW-145	11/20/2007	745.36	24.50	--	--	720.86
TMW-145	11/29/2007	745.36	25.33	--	--	720.03
TMW-145	12/3/2007	745.36	25.55	--	--	719.81
TMW-145	2/6/2008	745.36	27.41	--	--	717.95
TMW-145	2/28/2008	745.36	27.45	--	--	717.91
TMW-145	3/10/2008	745.36	26.16	--	--	719.20
TMW-146	10/18/2007	744.93	NI	--	--	NM
TMW-146	10/19/2007	744.93	NI	--	--	NM
TMW-146	10/23/2007	744.93	NI	--	--	NM
TMW-146	11/1/2007	744.93	22.63	--	--	722.30
TMW-146	11/7/2007	744.93	22.94	--	--	721.99
TMW-146	11/13/2007	744.93	23.36	--	--	721.57
TMW-146	11/20/2007	744.93	23.94	--	--	720.99
TMW-146	11/29/2007	744.93	24.71	--	--	720.22
TMW-146	12/3/2007	744.93	24.97	--	--	719.96
TMW-146	2/6/2008	744.93	26.93	--	--	718.00
TMW-146	2/28/2008	744.93	27.04	--	--	717.89
TMW-146	3/10/2008	744.93	25.98	--	--	718.95

[1] ft AMSL - feet above mean sea level
[2] ft BTOC - feet below top of casing
[3] LNAPL - light non-aqueous phase liquid
[4] NM - not measured
[5] -- measurable LNAPL not detected
[6] NI - not installed at this time

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TABLE 3

MAXIMUM AND AVERAGE UVOST RESULTS
FORMER FAIRFAX I PLANT
KANSAS CITY, KANSAS

Boring ID	*Max Signal (%RE)*	*Average Signal (%RE)*
A4	10	0
B2	1	0
B3	397	123.93
B4	348	111.92
B5	189	80.75
C5	370	160.09
C6	6	0
D2	7	0
D4/TMW-139	371	119.21
D6	2	0
E2	114	40.95
E4/TMW-130	318	160.75
E6	1	0
F2	173	64.50
F3	358	200.90
F4	329	170.68
F5	387	161.20
F6	2	0
G2	157	65.73
G4	263	145.47
G5	221	79.81
H2	2	0
H3	260	105.43
H4	131	27.14

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