



**CONESTOGA-ROVERS
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May 9, 2006

Reference No. 012559-53

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

Dear Ms. Price:

Re: Supplemental Confirmation Sampling Results
Voluntary Cleanup Investigation
Former GM Fairfax I Plant
Kansas City, Kansas

Conestoga-Rovers and Associates (CRA) on behalf of General Motors Corporation (GM) is providing this correspondence to the Kansas Department of Health & Environment (KDHE) in response to KDHE correspondence dated November 21, 2005 (KDHE correspondence). The KDHE correspondence approved CRA's supplemental confirmation sampling work plan dated October 13, 2005 (work plan). The work plan proposed to advance five (5) soil borings in the vicinity of previously advanced soil boring SB-110, install three (3) nested monitoring wells in the southern portion of the site, install two (2) nested monitoring wells in the northeastern portion of the site, collect additional groundwater samples from the monitoring well network, and collect additional groundwater elevation data.

1.0 INVESTIGATION RESULTS

The following sections will summarize work plan activities completed between December 2005 and January 2006 in response to KDHE correspondence.

SB-110 Area Investigation

In December 2005, five (5) soil borings (SB-118 through SB-122) were advanced between 10 and 12 feet below ground surface (bgs) in the vicinity of soil boring SB-110. The purpose of these borings was to verify the tetrachloroethene concentration previously detected at SB-110 and to delineate tetrachloroethene surrounding SB-110. SB-118 was advanced 20 feet north of SB-110, SB-119 was advanced 20 feet east of SB-110, SB-120 was advanced 20 feet south of SB-110, SB-121 was advanced 20 feet west of SB-110, and SB-122 was advanced in approximately the same location as SB-110. One (1) soil sample was collected from each soil boring location and submitted for tetrachloroethene laboratory analysis. The locations of soil borings SB-118 through SB-122 are illustrated on Figure 1 and the soil boring logs are provided in Attachment A. Soil laboratory analytical results are summarized in Table 1, laboratory



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analytical reports are provided in Attachment B, and data validation memoranda are provided in Attachment C.

Tetrachloroethene concentrations were initially compared to the KDHE Tier 2 soil to groundwater protection pathway objective for a non-residential scenario (Tier 2 soil objective). It should be noted that the Tier 2 soil objective for tetrachloroethene (0.18 mg/kg) was selected for comparison purposes only and may not be appropriate as the remediation objective to address tetrachloroethene concentrations in the vicinity of SB-110.

Tetrachloroethene concentrations were below the Tier 2 soil objective in soil samples SB-120 (10-12 ft) and SB-121 (9-10 ft). The tetrachloroethene laboratory detection limit was above the KDHE Tier 2 soil objective in soil samples SB-118 (9-10 ft) and SB-122 (9-10 ft). The tetrachloroethene concentration in soil sample SB-119 (10-12 ft) was above the KDHE Tier 2 soil objective.

Tetrachloroethene concentrations were below the KDHE Tier 2 groundwater pathway objective for a non-residential scenario (Tier 2 groundwater objective) in groundwater samples collected in December 2004 from monitoring wells MW-1, MW-1A, MW-105, MW-109, MW-110, MW-110A, MW-111, and MW-160A. These results were previously provided to the KDHE in the Results of Confirmatory Sampling Program Report dated April 2005 (April 2005 Report). Tetrachloroethene was also not observed in groundwater samples collected in January 2006 from monitoring wells MW-116A/B through MW-119A/B, and MW-121A/B.

Monitoring well locations are provided on Figures 2 through 4. Groundwater laboratory analytical results and groundwater elevation data are summarized in Table 2 and Table 3 respectively. Laboratory analytical reports are provided in Attachment B, and data validation memoranda are provided in Attachment C.

A groundwater contour map, based on water level measurements in December 2005 is provided on Figure 3 and analytes detected in the groundwater are provided on Figure 4

Upgradient Monitoring Well Installation, Development, and Sampling

In December 2005, three (3) nested monitoring wells (MW-116A/B through MW-118A/B) were installed in the southern portion of the site to evaluate the quality of groundwater that is migrating onto the site. MW-116A/B through MW-118A/B are located generally upgradient of the former Fairfax I Assembly Plant building¹. Each nested monitoring well consists of one shallow monitoring well screened from either 20 to 30 feet bgs or 24.5 to 34.5 feet bgs and one intermediate well screened from either 48.5 to 58.5 feet bgs or 49 to 59 feet bgs. A licensed

¹ Based on groundwater flow towards the Missouri River.



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surveyor was retained to survey the location and elevation of MW-116A/B through MW-118A/B.

In January 2006, MW-116A/B through MW-118A/B were developed. Groundwater samples were collected from these locations and submitted for laboratory analysis of target analyte list (TAL) volatile organic compounds (VOCs). Chloromethane, cis-1,2-dichloroethene, trans-1,3-dichloroethene, trichloroethene, and vinyl chloride were detected in one or more of the samples collected from these locations. The concentrations of these constituents were however, below Tier 2 groundwater objectives.

Downgradient Monitoring Well Installation, Development, and Sampling

In December 2005, two (2) nested monitoring wells (MW-119A/B and MW-121A/B) were installed in the northeastern portion of the site to evaluate the quality of groundwater that is migrating towards the Missouri River. MW-119A/B and MW-121A/B are located generally downgradient of the former Fairfax I Assembly Plant building². Each nested monitoring well consists of one shallow monitoring well screened from either 23.5 to 33.5 feet bgs or 25 to 35 feet bgs and one intermediate well screened from either 48.5 to 58.5 feet bgs or 49 to 59 feet bgs. A licensed surveyor was retained to survey the location and elevation of MW-119A/B and MW-121A/B.

In January 2006, MW-119A/B and MW-121A/B were developed. Groundwater samples were collected from these locations and submitted for laboratory analysis of TAL-VOCs. Carbon disulfide was detected in the sample collected from MW-119A. The carbon disulfide concentration was however, less than the Tier 2 groundwater objective.

Groundwater Elevation Data

Between December 2005 and January 2006, one or more groundwater elevation measurements were collected from monitoring wells MW-1, MW-1A, MW-1C, MW-102A, MW-102C, MW-103A, MW-103B, MW-103C, MW-104, MW-105, MW-108 through MW-111, MW-110A, MW-160A, MW-116A/B through MW-119A/B, and MW-121A/B.

2.0 ADDITIONAL GROUNDWATER SAMPLING

As proposed in the work plan, CRA will collect a second round of groundwater samples from nested MW-116A/B through MW-119A/B, and MW-121A/B and submit the samples for VOC laboratory analysis. CRA intends to collect these samples in the spring of 2006.

² Based on groundwater flow towards the Missouri River.



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3.0 SUMMARY OF FINDINGS

Soil samples exceeding KDHE Tier 2 soil objectives with respect to tetrachloroethene is limited to the vicinity of soil borings SB-110 and SB-119 at approximately 10 feet bgs. A potable water well is not present on-site, therefore the soil to groundwater pathway is incomplete. Tetrachloroethene concentrations are below the KDHE soil pathway objectives for a non-residential scenario (direct contact standard).

Groundwater samples collected from nested monitoring wells MW-116A/B through MW-119A/B, and MW-121A/B were all below Tier 2 groundwater objectives for TAL-VOCs.

4.0 RECOMMENDATIONS

CRA recommends that the exceedences of tetrachloroethane (Tier 2 soil to groundwater) in the soil at the SB-110 area be addressed through a combination of groundwater monitoring or use of an environmental use control. The groundwater monitoring could be performed in conjunction with the monitoring program associated with the remedial action that is planned for the area near MW-103A. CRA is currently evaluating final options and remedial design for the localized area of groundwater impacts at MW-103A (refer to the CRA document dated August, 2001 "Pre-design Investigation Work Plan" submitted to the KDHE).

If you have any questions regarding the Supplemental Confirmation Sampling Results, please do not hesitate to call me.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Phil Harvey

PH/ko/1
Attachments

c.c.: Ken Richards, GM (2)
Kevin Brown, GM

TABLE 1

SOIL ANALYTICAL RESULTS
SUPPLEMENTAL CONFIRMATION SAMPLING RESULTS
FORMER GM FAIRFAX I PLANT SITE
KANSAS CITY, KANSAS

Sample Location	Sample ID:	Sample Date	Sample Depth (ft bgs) ¹	SB-118	SB-119	SB-120	SB-121	SB-122	SB-122
				S-012559-122005-SC-006	S-012559-121505-SC-001	S-012559-121505-SC-002	S-012559-122005-SC-003	S-012559-122005-SC-004	S-012559-122005-SC-005
				12/20/2005	12/15/2005	12/15/2005	12/20/2005	12/20/2005	12/20/2005
				9 - 10 ft	10 - 12 ft	10 - 12 ft	9 - 10 ft	9 - 10 ft	9 - 10 ft
									Duplicate
Parameters	Units	Soil Pathway ²	Soil to Groundwater ³						
VOAs ⁴									
Tetrachloroethene	mg/kg ⁴	140	0.18		0.45	0.034	0.15	0.27 U	0.27 U

¹ft bgs - feet below ground surface

²Risk Based Standards for Kansas (RSK Manual), Appendix A, Tier 2, Non-Residential Soil Pathway Scenario, KDHE, March 1, 2003.

³Risk Based Standards for Kansas (RSK Manual), Appendix A, Tier 2, Non-Residential Soil to Groundwater Protection Pathway Scenario, KDHE, March 1, 2003.

⁴mg/kg - milligram per kilogram

⁵U - not detected at the associated value

0.45 - shading and bold denotes exceedence of regulatory standard

TABLE 2

**GROUNDWATER ANALYTICAL RESULTS
SUPPLEMENTAL CONFIRMATION SAMPLING RESULTS
FORMER GM FAIRFAX I PLANT SITE
KANSAS CITY, KANSAS**

Sample Location:

Sample ID:

Sample Date:

MW-116A	MW-116B	MW-117A	MW-117B	MW-118A
GW-011706-JH-001	GW-011706-JH-002	GW-011706-JH-003	GW-011706-JH-004	GW-011706-JH-006
1/17/2006	1/17/2006	1/17/2006	1/17/2006	1/17/2006

*Groundwater
Pathway²*

Parameters (mg/L)¹

Units

Volatile Organic Compounds

1,1,1-Trichloroethane	0.2	0.001 U ³	0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	0.001	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	1.3	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.007	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloroethane	0.005	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005	0.001 U	0.001 U	0.001 U	0.001 U
2-Butanone (Methyl Ethyl Ketone)	2.8	0.01 U	0.01 U	0.01 U	0.01 U
2-Hexanone	NS ⁴	0.01 U	0.01 U	0.01 U	0.01 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	0.23	0.01 U	0.01 U	0.01 U	0.01 U
Acetone	0.93	0.01 U	0.01 U	0.01 U	0.01 U
Benzene	0.005	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.08	0.001 U	0.001 U	0.001 U	0.001 U
Bromoform	0.08	0.001 U	0.001 U	0.001 U	0.001 U
Bromomethane (Methyl Bromide)	0.01	0.001 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	0.03	0.001 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.1	0.001 U	0.001 U	0.001 U	0.001 U
Chloroethane	NS	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform (Trichloromethane)	0.08	0.001 U	0.001 U	0.001 U	0.001 U
Chloromethane (Methyl Chloride)	0.04	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.07	0.0005 U	0.0005 U	0.0005 U	0.0029
cis-1,3-Dichloropropene	NS	0.001 U	0.001 U	0.001 U	0.001 U
Dibromochloromethane	0.08	0.001 U	0.001 U	0.001 U	0.001 U
Ethylbenzene	0.7	0.001 U	0.001 U	0.001 U	0.001 U
Methylene chloride	0.005	0.001 U	0.001 U	0.001 U	0.001 U
Styrene	0.1	0.001 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	1	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,2-Dichloroethene	0.1	0.0005 U	0.0005 U	0.0005 U	0.0005 U
trans-1,3-Dichloropropene	NS	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005	0.001 U	0.001 U	0.001 U	0.0016
Vinyl chloride	0.002	0.001 U	0.001 U	0.001 U	0.001 U
Xylene (total)	10	0.001 U	0.001 U	0.001 U	0.001 U

Sample Location:
Sample ID:
Sample Date:

¹mg/l - milligrams per liter

⁵¹ - estimated at the associated value⁵⁷ - estimated at the associated value

TABLE 3

GROUNDWATER ELEVATION DATA
SUPPLEMENTAL CONFIRMATION SAMPLE RESULTS
FORMER GM FAIRFAX I PLANT SITE
KANSAS CITY, KANSAS

Monitoring Well	Top of Casing Elevation (ft AMSL) ¹	December 2005		January 2006	
		Water Level (ft BTOC) ²	Groundwater Elevation (ft AMSL)	Water Level (ft BTOC)	Groundwater Elevation (ft AMSL)
MW-1	746.43	28.49	717.94	NM ³	NM
MW-1A	745.93	28.58	717.35	29.02	716.91
MW-1B	745.40	NM	NM	NA	NA
MW-1C	746.13	NM	NM	29.15	716.98
MW-102A	748.82	31.72	717.10	DRY ⁴	DRY
MW-102B	746.13	NM	NM	NA ⁵	NA
MW-102C	749.20	NM	NM	32.18	717.02
MW-103A	747.71	NM ⁵	NM	31.82 ⁶	715.88
MW-103B	746.30	NM	NM	29.22	717.08
MW-103C	745.90	NM	NM	28.99	716.91
MW-104	746.51	29.37	717.14	29.52	716.99
MW-105	746.70	29.57	717.13	29.74	716.96
MW-108	747.17	29.93	717.24	30.22	716.95
MW-109	746.11	28.41	717.70	28.97	717.14
MW-110	745.79	28.24	717.55	28.68	717.11
MW-110A	743.89	26.42	717.47	26.91	716.98
MW-111	745.96	28.37	717.59	NM	NM
MW-115A	748.07	NM	NM	DRY	DRY
MW-116A	743.54	NM	NM	26.60	716.94
MW-116B	743.37	NM	NM	26.45	716.92
MW-117A	743.72	NM	NM	26.89	716.83
MW-117B	743.75	NM	NM	26.90	716.85
MW-118A	747.02	NM	NM	30.34	716.68
MW-118B	746.86	NM	NM	30.18	716.68
MW-119A	746.69	NM	NM	30.28	716.41
MW-119B	746.65	NM	NM	30.25	716.40
MW-121A	745.53	NM	NM	29.30	716.23
MW-121B	745.80	NM	NM	29.55	716.25
MW-160A	746.56	29.83	716.73	29.99	716.57

¹ ft AMSL - feet above mean sea level

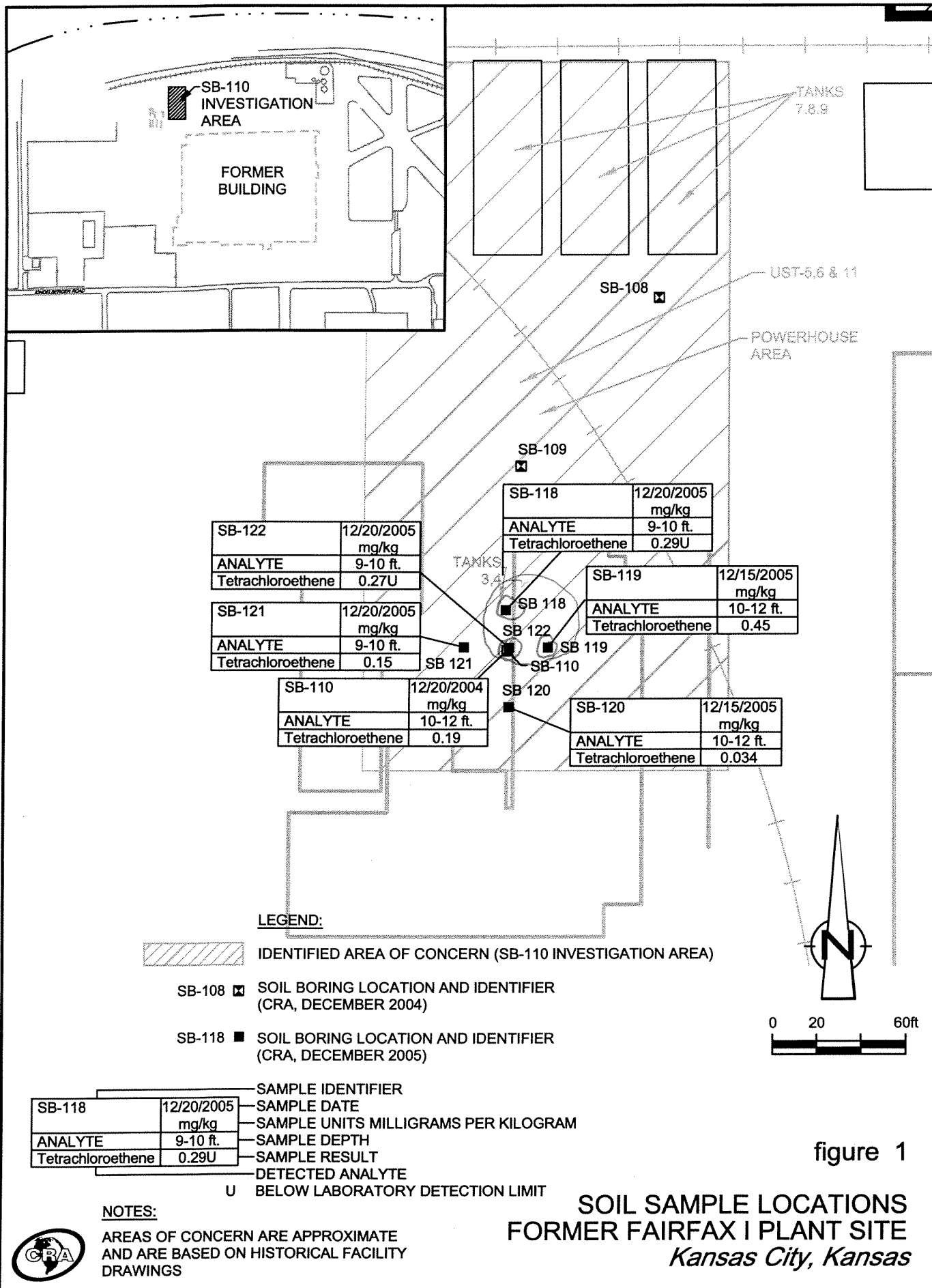
² ft BTOC - feet below top of casing

³ NM - well location was not measured during this site visit

⁴ DRY - groundwater was not present within well during this site visit

⁵ NA - well location was not accessible during this site visit

⁶ approximately 1.34 feet of free product was observed in MW-103A during this site visit



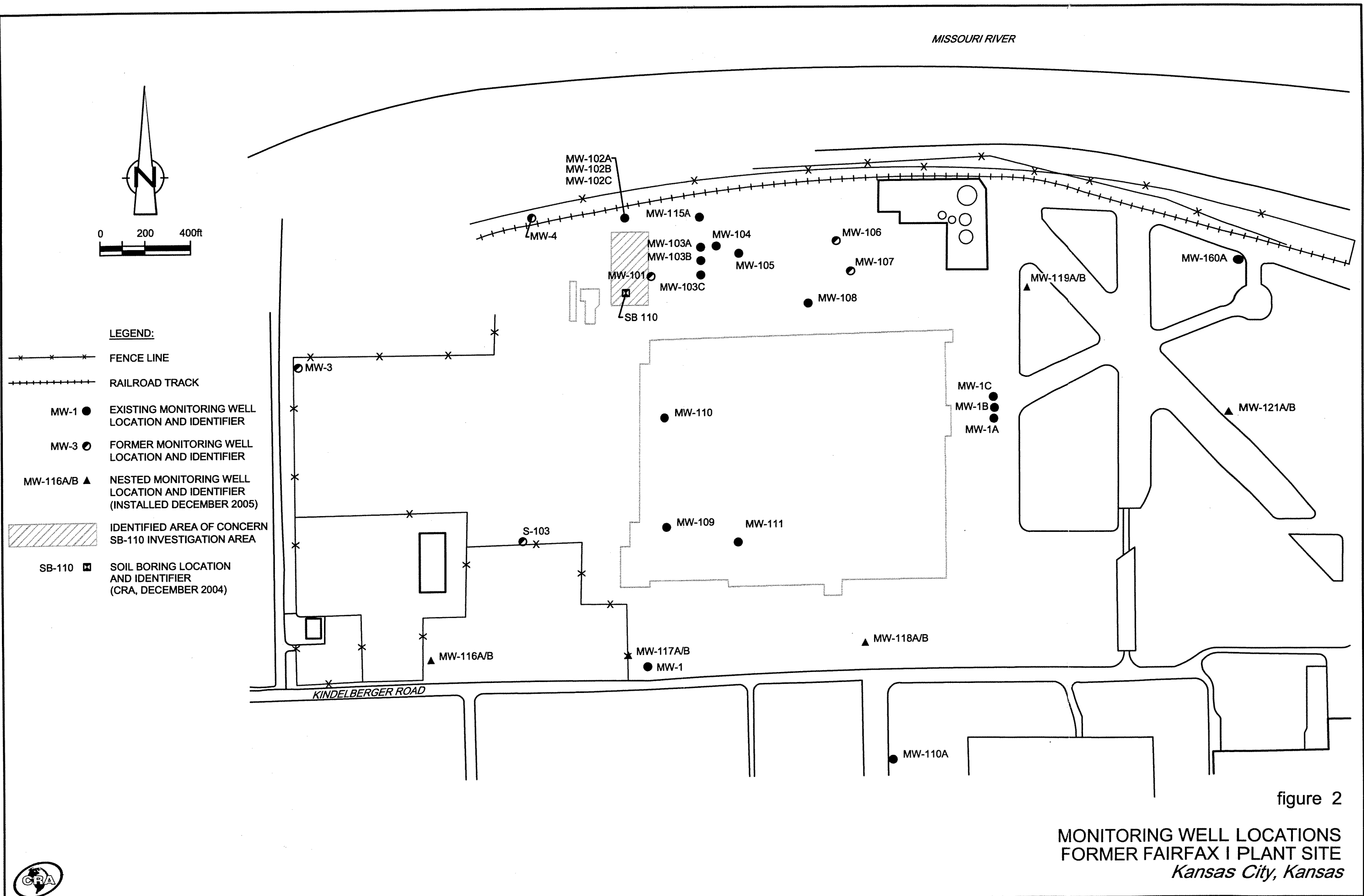
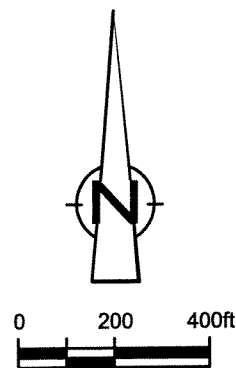


figure 2



MISSOURI RIVER



LEGEND:

- FENCE LINE
- RAILROAD TRACK
- MW-1 ● EXISTING MONITORING WELL LOCATION AND IDENTIFIER
- MW-3 ○ FORMER MONITORING WELL LOCATION AND IDENTIFIER
- IDENTIFIED AREA OF CONCERN SB-110 INVESTIGATION AREA
- 717.90 — GROUNDWATER CONTOUR
- (717.94) GROUNDWATER ELEVATION

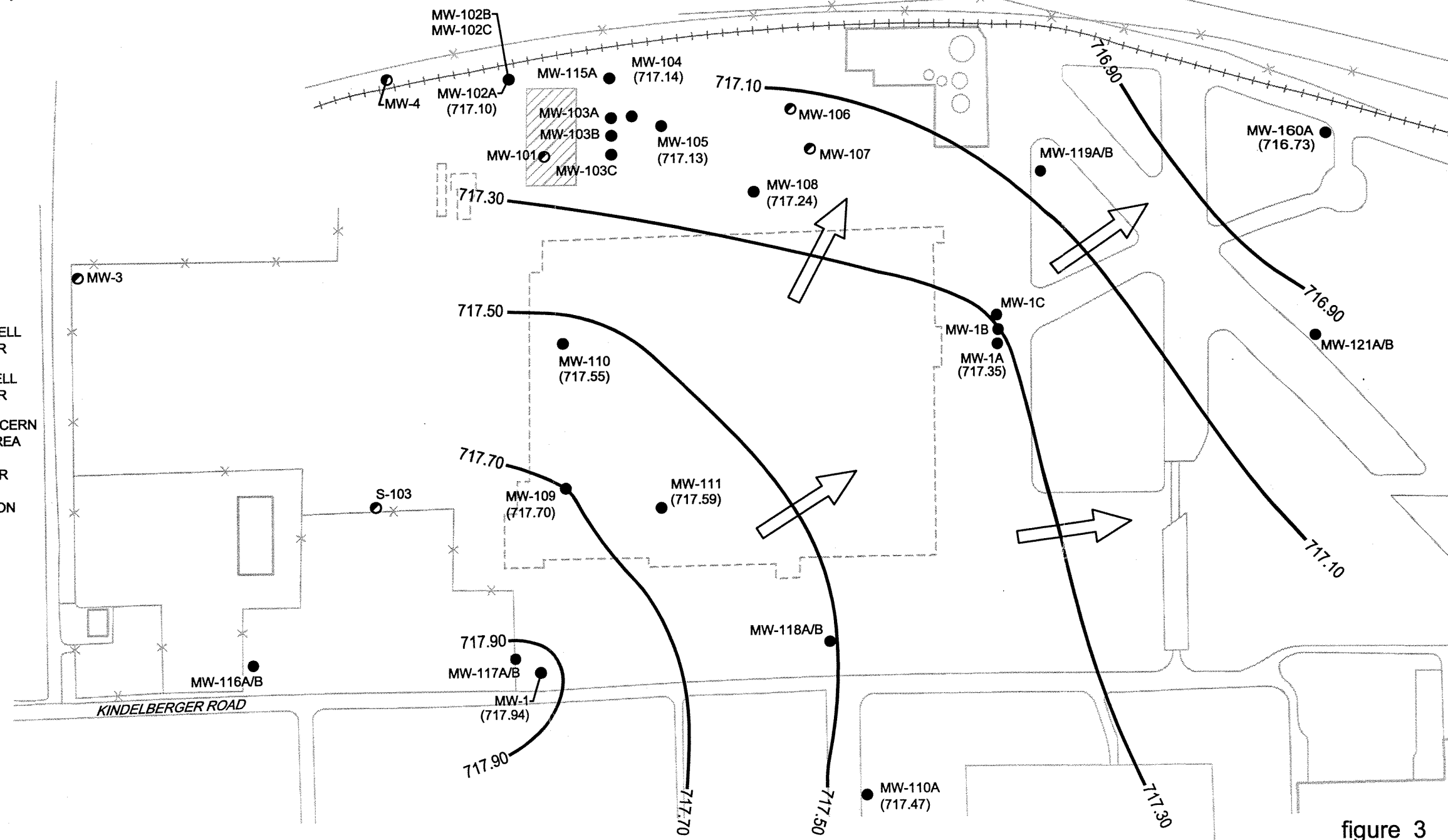


figure 3

GROUNDWATER CONTOUR
DECEMBER 2005
FORMER FAIRFAX I PLANT SITE
Kansas City, Kansas



