



August 12, 2021

Jeff Ackerman
Wisconsin Department of Natural Resources
3911 Fish Hatchery Rd
Fitchburg, WI 53711

**Re: Remedial Action Options Evaluation and Interim Action Design Report
Wagner Property
401 N. Wisconsin Street
Elkhorn, Wisconsin 53121
BRRTS# 02-65-544400**

Dear Mr. Ackerman:

EnviroForensics, LLC (EnviroForensics) is pleased to submit this Remedial Action Options Evaluation and Interim Action Design Report (Report) for the Wagner Property site located at 401 N. Wisconsin Street in Elkhorn, Wisconsin. An electronic copy has been uploaded to the RR Program Submittal Portal. The Report has been prepared in accordance with the requirements of Wisconsin Administrative Code (WAC) Chapter NR 724.

The estimated costs to complete the tasks presented in the Report are summarized in the enclosed cost detail sheets and DERF Reimbursement Linking Spreadsheet (Form 4400-214D). These costs represent project change order #2. The cost estimate assumes that contaminated soil removed as part of the proposed excavation will be accepted at the landfill as daily cover based on waste characterization sampling results. If this is not the case, and/or if some portion of the soil is characterized as hazardous waste, then disposal costs will increase and a separate change order will be submitted for approval.

On behalf of the responsible party, EnviroForensics is requesting a written response to the Report and/or approval to proceed with the actions presented therein.

Sincerely,
EnviroForensics, LLC

A handwritten signature in blue ink, appearing to read "Brian Kappen".

Brian Kappen, PG
Project Manager

enclosures

Copy: Karin Wagner, Wagner & Gustafson, LLC

Site Name: Wagner Property

BRRTS #: 02-65-544400

Type of Action: Remediation

Dry Cleaner Environmental Response Program
Reimbursement Cost Detail Linking Spreadsheet Form 4400-214D (R 08/12)

TASKS Bid / Budgeted Description	BUDGET				INVOICES		DERF COST BREAKOUT (this claim)								Budget Remaining Use (-) to indicate cost over-run	% Task Complete, Remarks
	Bid / Budgeted Amount	Total Approved Budget	DC-599	DC-640	Provider Name, Invoice #, Billing Date	Total Invoiced Costs	A Soil Investigation	B Soil Remediation	C Groundwater Investigation	D Groundwater Remediation	E Air/Vapor Investigation	F Air/Vapor Remediation	G Lab & Other Analysis	H Miscellaneous Costs		
Consultant Costs																
Phase 1a - Remedial Action Evaluation and Interim Action Design Report	\$ 9,875.00	\$ 9,875.00				\$ -									\$ 9,875.00	Task % Complete
Phase 1b - HASP and Waste Characterization Sampling	\$ 2,940.00	\$ 2,940.00				\$ -									\$ 2,940.00	
Phase 1c - Excavation, Transport, Disposal, Backfill, Compaction, and Post-Excavation Soil Sampling	\$ 6,945.00	\$ 6,945.00				\$ -									\$ 6,945.00	
Phase 1d - Interim Action Completion Report	\$ 4,095.00	\$ 4,095.00				\$ -									\$ 4,095.00	
Phase 1e - Well Installation and Sampling	\$ 7,745.00	\$ 7,745.00				\$ -									\$ 7,745.00	
Phase 1f - Project Coordination	\$ 1,870.00	\$ 1,870.00				\$ -									\$ 1,870.00	
<i>Consultant Cost Total</i>	\$ 33,470.00	\$ 33,470.00	\$ -	\$ -	\$ -	\$ -									\$ 33,470.00	
Sub-Contractor Costs																
Driller	\$ 5,900.00	\$ 5,900.00				\$ -									\$ 5,900.00	
Analytical	\$ 7,040.00	\$ 7,040.00				\$ -									\$ 7,040.00	
Excavator	\$ 25,050.00	\$ 25,050.00				\$ -									\$ 25,050.00	
Waste Disposal	\$ 17,275.00	\$ 17,275.00				\$ -									\$ 17,275.00	
Surveyor	\$ 900.00	\$ 900.00				\$ -									\$ 900.00	
<i>Sub-Contractor Cost Total</i>	\$ 56,165.00	\$ 56,165.00	\$ -	\$ -	\$ -	\$ -									\$ 56,165.00	
DERF ELIGIBLE SUB-TOTALS	\$ 89,635.00	\$ 89,635.00	\$ 52,851.43	\$ 49,981.79	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 89,635.00	

Non-DERF Eligible Expenses						
						\$ -
						\$ -
<i>Non-DERF Cost Total</i>						\$ -
INVOICE GRAND TOTAL						\$ -

Total DERF Eligible Costs This Claim \$ -

Check Numbers



TABLE 1
INTERIM ACTION AND DATA COLLECTION COST ESTIMATE

Wagner Property
 Elkhorn, Wisconsin

TASK	LABOR COSTS	SUB-CONTRACTOR COSTS	DIRECT COSTS	PHASE COST
Phase 1a				
Remedial Action Evaluation and Interim Action Design Report	\$9,860	\$0	\$15	\$9,875
Phase 1b				
HASP and Waste Characterization Sampling	\$2,530	\$3,200	\$410	\$6,140
Phase 1c				
Excavation, Transport, Disposal, Backfill, Compaction, and Post Excavation Soil Sampling	\$6,075	\$40,935	\$870	\$47,880
Phase 1d				
Interim Action Completion Report	\$4,075	\$0	\$20	\$4,095
Phase 1e				
Well Installation and Sampling	\$5,820	\$12,030	\$1,925	\$19,775
Phase 1f				
Project Coordination	\$1,870	\$0	\$0	\$1,870
TOTAL	\$30,230	\$56,165	\$3,240	\$89,635

	Expense	(hr/unit)	Hrs/Units	(day/use)	# days/use	(weeks/use)	weeks/use	Subtotal
Vehicles	Field Vehicle - Full Day	\$ 20.00		\$ 130.00				\$ -
	Support Vehicle - Full Day	\$ 30.00		\$ 180.00				\$ -
	only for daily use over 230 miles)	\$ 0.545						\$ -
Meters	Air Velocity Meter (per use)			\$ 25.00				\$ -
	Multi-meter Conductivity/pH/Temp/TDS			\$ 165.00				\$ -
	Dissolved Oxygen Meter			\$ 40.00				\$ -
	FID Foxboro/Sensidyne (TIP)			\$ 155.00				\$ -
	Flow Calibrator			\$ 30.00				\$ -
	Methane Meter			\$ 116.00				\$ -
	PID or 580 OVM			\$ 120.00				\$ -
	Turbidity Meter			\$ 30.00				\$ -
	ppb RAE			\$ 175.00				\$ -
	Ozone Leak Detector			\$ 135.00				\$ -
	Inline Ozone Meter			\$ 230.00				\$ -
ORP Meter			\$ 30.00				\$ -	
Pumps	Air Pump - Low Flow (Barcad)			\$ 25.00				\$ -
	Development Pump			\$ 130.00				\$ -
	Electric Submersible Pump with Control Box (Units)			\$ 130.00				\$ -
	Low-Flow Sampling Bladder	\$ 12.00						\$ -
	Peristaltic Pump			\$ 105.00				\$ -
	Pumping Test Accessory Equipment (Flow Meters)	\$ 100.00						\$ -
	Portable SVE Unit - 1.5 HP			\$ 155.00				\$ -
	Intrinsically Safe Vapor Evacuation Blower			\$ 125.00				\$ -
	Pneumatic Low-Flow Pump - 1" Well			\$ 50.00				\$ -
	and Multimeter			\$ 270.00				\$ -
Other	Asbestos Sampling Kit			\$ 250.00				\$ -
	Asbestos Investigation Supplies			\$ 130.00				\$ -
	Asbestos Sampling Core	\$ 2.50						\$ -
	Backpack Blower			\$ 75.00		\$ 200.00		\$ -
	Bailers (Disposable)	\$ 10.00						\$ -
	Bailers (Non-Disposable)			\$ 15.00				\$ -
	Core Boxes	\$ 10.00						\$ -
	Core Sampler			\$ 55.00				\$ -
	De-scaler			\$ 100.00				\$ -
	Data Logger with Transducer			\$ 155.00				\$ -
	Well Caps	\$ 30.00						\$ -
	Elec. Well Sounder (Probe)			\$ 30.00				\$ -
	Metal Detector			\$ 50.00				\$ -
	5035 Sample Kit	\$ 16.00						\$ -
	P/T Plugs	\$ 5.00						\$ -
	Field Book	\$ 11.00						\$ -
	Filter - Large	\$ 23.00						\$ -
	Filter - Small	\$ 11.00						\$ -
	Generator			\$ 105.00				\$ -
	Hand Auger			\$ 30.00				\$ -
	Helium QA/QC Kit			\$ 265.00				\$ -
	Helium QA/QC Accessories	\$ 20.00						\$ -
	Oil/Water Interface Probe			\$ 105.00				\$ -
	Nitrile Sampling Gloves (Disposable)	\$ 0.13						\$ -
	Padlocks	\$ 15.00						\$ -
	Passive Diffusion Bag	\$ 35.00						\$ -
	PDB Harness	\$ 80.00						\$ -
	Steam Cleaner			\$ 130.00				\$ -
	Transducer (ea)			\$ 40.00				\$ -
	Coring Machine			\$ 200.00				\$ -
	Rotary Hammer Drill			\$ 170.00				\$ -
	Hand Drill			\$ 75.00				\$ -
	NAPL Sample Kit			\$ 40.00				\$ -
	Surveying Equipment			\$ 50.00		\$ 200.00		\$ -
	SVE Inlet Air Filter			\$ 80.00				\$ -
	SVE Dilution Air Filter			\$ 28.00				\$ -
	SVE Blower Oil (quart)			\$ 32.00				\$ -
	SVE Blower Grease (tube)			\$ 20.00				\$ -
	O2 Meter			\$ 50.00		\$ 175.00		\$ -
	Ozone Air Filter Holder			\$ 18.00				\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/4" OD	\$ 1.50						\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/4" OD	\$ 1.20						\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/16" OD	\$ 1.25						\$ -
	Tubing (Bonded) - Polyethylene: 1/4" OD X 3/8"	\$ 1.10						\$ -
	Tubing - Polyethylene: 1/4" OD (per foot)	\$ 0.60						\$ -
	Tubing - Polyethylene: 1/2" OD (per foot)	\$ 0.85						\$ -
	Tubing - Tygon: 3/8" STD (per foot)	\$ 4.45						\$ -
	Tubing - Silicone: 3/8" STD (per foot)	\$ 4.50						\$ -
	System Wiring (per foot)	\$ 0.60						\$ -
	PFA Tubing - 1/2-inch ID	\$ 5.00						\$ -
Manual Drive Point Kit	\$ 90.00						\$ -	
55-Gallon Drum	\$ 55.00						\$ -	
550 gal poly tank			\$ 40.00				\$ -	
325 gal poly tank			\$ 30.00				\$ -	
Temporary Sampling Port	\$ 25.00						\$ -	
Trimmer			\$ 50.00				\$ -	
Vapor Pin Sub-Slab Sampling Port	\$ 75.00						\$ -	
Sub-Slab Cover (Stainless Steel)	\$ 40.00						\$ -	
Well abandonment kit	\$ 25.00						\$ -	
Well Cover 8X12"	\$ 105.00						\$ -	
Measuring Wheel			\$ 15.00				\$ -	
Measuring Wheel or Pole			\$ 15.00				\$ -	
Camera			\$ 25.00				\$ -	
1L Tedlar Bag	\$ 20.00						\$ -	
Radon Sample Kit	\$ 30.00						\$ -	
HAZMAT Exemption Shipper	\$ 40.00						\$ -	
Manometers	\$ 105.00						\$ -	
Westlaw	\$ 105.00						\$ -	
CAD/drafting/graphics	\$ 90.00						\$ -	
Safety	Barriades & Traffic Signs			\$ 10.00				\$ -
	Fall Protection			\$ 25.00				\$ -
	Gloves (Chemical Resistant)	\$ 10.00						\$ -
	Level "B": Level "C1" plus SCBA			\$ 210.00				\$ -
	Level "C1": Level "C2" plus Polycoat Suit			\$ 85.00				\$ -
	Level "C2": Level "D" plus Respirator			\$ 40.00				\$ -
	Standby SCBA			\$ 130.00				\$ -
Routine Field and Safety Equipment			\$ 60.00				\$ -	
Production	1 Inch Binder	\$ 9.00						\$ -
	2 Inch Binder	\$ 12.00						\$ -
	3 Inch Binder	\$ 15.00						\$ -
	4 Inch Binder	\$ 22.00						\$ -
	Binder Tabs (Set of 8)	\$ 5.00						\$ -
	Color Copies	\$ 0.40	10					\$ 4.00
	B/W Copies	\$ 0.25	44					\$ 11.00
	Document - Format/Sending	\$ 15.00						\$ -
Report CD Copy	\$ 5.00						\$ -	
								\$ 15.00
PHASE TOTAL								\$9,875.00

	Expense	(hr/unit)	Hrs/Units	(day/use)	# days/use	(weeks/use)	weeks/use	Subtotal
Vehicles	Field Vehicle - Full Day	\$ 20.00		\$ 130.00	1			\$ 130.00
	Support Vehicle - Full Day only for daily use over 230 miles)	\$ 30.00		\$ 180.00				\$ -
		\$ 0.545						\$ -
Meters	Air Velocity Meter (per use)			\$ 25.00				\$ -
	Multi-meter Conductivity/pH/Temp/TDS			\$ 165.00				\$ -
	Dissolved Oxygen Meter			\$ 40.00				\$ -
	FID Foxboro/Sensidyne (TIP)			\$ 155.00				\$ -
	Flow Calibrator			\$ 30.00				\$ -
	Methane Meter			\$ 116.00				\$ -
	PID or 580 OVM			\$ 120.00	1			\$ 120.00
	Turbidity Meter			\$ 30.00				\$ -
	ppb RAE			\$ 175.00				\$ -
	Ozone Leak Detector			\$ 135.00				\$ -
Pumps	Inline Ozone Meter			\$ 230.00				\$ -
	ORP Meter			\$ 30.00				\$ -
	Air Pump - Low Flow (Barcad)			\$ 25.00				\$ -
	Development Pump			\$ 130.00				\$ -
	Electric Submersible Pump with Control Box (Units)			\$ 130.00				\$ -
	Low-Flow Sampling Bladder	\$ 12.00						\$ -
	Peristaltic Pump			\$ 105.00				\$ -
	Pumping Test Accessory Equipment (Flow Meters)	\$ 100.00						\$ -
	Portable SVE Unit - 1.5 HP			\$ 155.00				\$ -
	Intrinsically Safe Vapor Evacuation Blower			\$ 125.00				\$ -
Other	Pneumatic Low-Flow Pump - 1" Well and Multimeter			\$ 50.00				\$ -
				\$ 270.00				\$ -
	Asbestos Sampling Kit			\$ 250.00				\$ -
	Asbestos Investigation Supplies			\$ 130.00				\$ -
	Asbestos Sampling Core	\$ 2.50						\$ -
	Backpack Blower			\$ 75.00		\$ 200.00		\$ -
	Bailers (Disposable)	\$ 10.00						\$ -
	Bailers (Non-Disposable)			\$ 15.00				\$ -
	Core Boxes	\$ 10.00						\$ -
	Core Sampler			\$ 55.00				\$ -
	De-scaler			\$ 100.00				\$ -
	Data Logger with Transducer			\$ 155.00				\$ -
	Well Caps	\$ 30.00						\$ -
	Elec. Well Sounder (Probe)			\$ 30.00				\$ -
	Metal Detector			\$ 50.00				\$ -
	5035 Sample Kit	\$ 16.00						\$ -
	P/T Plugs	\$ 5.00						\$ -
	Field Book	\$ 11.00						\$ -
	Filter - Large	\$ 23.00						\$ -
	Filter - Small	\$ 11.00						\$ -
	Generator			\$ 105.00				\$ -
	Hand Auger			\$ 30.00				\$ -
	Helium QA/QC Kit			\$ 265.00				\$ -
	Helium QA/QC Accessories	\$ 20.00						\$ -
	Oil/Water Interface Probe			\$ 105.00				\$ -
	Nitrile Sampling Gloves (Disposable)	\$ 0.13						\$ -
	Padlocks	\$ 15.00						\$ -
	Passive Diffusion Bag	\$ 35.00						\$ -
	PDB Harness	\$ 80.00						\$ -
	Steam Cleaner			\$ 130.00				\$ -
	Transducer (ea)			\$ 40.00				\$ -
	Coring Machine			\$ 200.00				\$ -
	Rotary Hammer Drill			\$ 170.00				\$ -
	Hand Drill			\$ 75.00				\$ -
	NAPL Sample Kit			\$ 40.00				\$ -
	Surveying Equipment			\$ 50.00		\$ 200.00		\$ -
	SVE Inlet Air Filter			\$ 80.00				\$ -
	SVE Dilution Air Filter			\$ 28.00				\$ -
	SVE Blower Oil (quart)			\$ 32.00				\$ -
	SVE Blower Grease (tube)			\$ 20.00				\$ -
	O2 Meter			\$ 50.00		\$ 175.00		\$ -
	Ozone Air Filter Holder			\$ 18.00				\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/4" OI	\$ 1.50						\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/4" OI	\$ 1.20						\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/16" OI	\$ 1.25						\$ -
	Tubing (Bonded) - Polyethylene: 1/4" OD X 3/8"	\$ 1.10						\$ -
	Tubing - Polyethylene: 1/4" OD (per foot)	\$ 0.60						\$ -
	Tubing - Polyethylene: 1/2" OD (per foot)	\$ 0.85						\$ -
	Tubing - Tygon: 3/8" STD (per foot)	\$ 4.45						\$ -
	Tubing - Silicone: 3/8" STD (per foot)	\$ 4.50						\$ -
System Wiring (per foot)	\$ 0.60						\$ -	
PFA Tubing - 1/2-inch ID	\$ 5.00						\$ -	
Manual Drive Point Kit	\$ 90.00						\$ -	
55-Gallon Drum	\$ 55.00						\$ -	
550 gal poly tank			\$ 40.00				\$ -	
325 gal poly tank			\$ 30.00				\$ -	
Temporary Sampling Port	\$ 25.00						\$ -	
Trimmer			\$ 50.00				\$ -	
Vapor Pin Sub-Slab Sampling Port	\$ 75.00						\$ -	
Sub-Slab Cover (Stainless Steel)	\$ 40.00						\$ -	
Well abandonment kit	\$ 25.00						\$ -	
Well Cover 8X12"	\$ 105.00						\$ -	
Measuring Wheel			\$ 15.00				\$ -	
Measuring Wheel or Pole			\$ 15.00				\$ -	
Camera			\$ 25.00				\$ -	
1L Tedlar Bag	\$ 20.00						\$ -	
Radon Sample Kit	\$ 30.00						\$ -	
HAZMAT Exemption Shipper	\$ 40.00						\$ -	
Manometers	\$ 105.00						\$ -	
Westlaw	\$ 105.00						\$ -	
CAD/drafting/graphics	\$ 90.00						\$ -	
Safety	Barricades & Traffic Signs			\$ 10.00				\$ -
	Fall Protection			\$ 25.00				\$ -
	Gloves (Chemical Resistant)	\$ 10.00						\$ -
	Level "B": Level "C1" plus SCBA			\$ 210.00				\$ -
	Level "C1": Level "C2" plus Polycoat Suit			\$ 85.00				\$ -
	Level "C2": Level "D" plus Respirator			\$ 40.00				\$ -
Production	Standby SCBA			\$ 130.00				\$ -
	Routine Field and Safety Equipment			\$ 60.00	1			\$ 60.00
Production	1 Inch Binder	\$ 9.00						\$ -
	2 Inch Binder	\$ 12.00						\$ -
	3 Inch Binder	\$ 15.00						\$ -
	4 Inch Binder	\$ 22.00						\$ -
	Binder Tabs (Set of 8)	\$ 5.00						\$ -
	Color Copies	\$ 0.40						\$ -
	B/W Copies	\$ 0.25						\$ -
Document - Format/Sending	\$ 15.00						\$ -	
Report CD Copy	\$ 5.00						\$ -	
								\$ 310.00
PHASE TOTAL								\$6,140.00

Project Title: Interim Remedial Action
Project Number/Name: 6526 Wagner Property
Date: 11/13/2019



Phase 1c Excavation, Transport, Disposal, Backfill, Compaction, and Post Excavation Soil Samp							
Labor - Field	Price	Unit	# Units			Subtotal	Task Total
Principal	\$ 210.00	hr				\$0.00	
Chief Technical Officer	\$ 200.00	hr				\$0.00	
Director	\$ 160.00	hr				\$0.00	
Sr Project Manager	\$ 155.00	hr				\$0.00	
Sr Professional	\$ 155.00	hr				\$0.00	
Project Manager	\$ 130.00	hr				\$0.00	
Project Professional	\$ 130.00	hr	8.0			\$1,040.00	
Staff Professional-Office	\$ 120.00	hr				\$0.00	
Staff Professional-Field	\$ 105.00	hr				\$0.00	
Field Professional	\$ 100.00	hr	36.0			\$3,600.00	
Drafting	\$ 95.00	hr				\$0.00	
Admin	\$ 65.00	hr				\$0.00	
Compliance Specialist	\$ 130.00	hr				\$0.00	
Vapor Intrusion Specialist	\$ 170.00	hr				\$0.00	
Health and Safety Specialist	\$ 130.00	hr				\$0.00	
						\$0.00	
						\$4,640.00	\$4,640.00

Labor - Office/Reporting	Price	Unit	# Units			Subtotal	Task Total
Principal	\$ 210.00	hr				\$0.00	
Chief Technical Officer	\$ 200.00	hr				\$0.00	
Director	\$ 160.00	hr	1.0			\$160.00	
Sr Project Manager	\$ 155.00	hr	5.0			\$775.00	
Sr Professional	\$ 155.00	hr				\$0.00	
Project Manager	\$ 130.00	hr				\$0.00	
Project Professional	\$ 130.00	hr				\$0.00	
Staff Professional-Office	\$ 120.00	hr				\$0.00	
Staff Professional-Field	\$ 105.00	hr				\$0.00	
Field Professional	\$ 100.00	hr	5.0			\$500.00	
Drafting	\$ 95.00	hr				\$0.00	
Admin	\$ 65.00	hr				\$0.00	
Compliance Specialist	\$ 130.00	hr				\$0.00	
Vapor Intrusion Specialist	\$ 170.00	hr				\$0.00	
Health and Safety Specialist	\$ 130.00	hr				\$0.00	
						\$0.00	
						\$1,435.00	\$1,435.00

Contractors/Consultants	Price	Unit	# Units	Markup		Subtotal	Task Total
Utility Locate		LS		1.00		\$0.00	
Driller (Waste Characterization)		LS		1.00		\$0.00	
Excavation and Backfilling	\$ 25,050.00	LS	1.0	1.00		\$25,050.00	
Waste Disposal	\$ 37.50	ton	390.0	1.00		\$14,625.00	
						\$0.00	
						\$0.00	
						\$0.00	
						\$0.00	
						\$0.00	
						\$0.00	
						\$0.00	
						\$39,675.00	\$39,675.00

Contractor/Consultant - Laboratory	Price	Unit	# Units	Markup		Subtotal	Task Total
Soil VOC 8260 dry wt	\$ 70.00	ea	18.0	1.00		\$1,260.00	
Soil VOC TCLP 1311	\$ 130.00	ea		1.00		\$0.00	
GW VOC 8260	\$ 65.00	ea		1.00		\$0.00	
GW VOC 8260 QA/QC	\$ 65.00	ea		1.00		\$0.00	
Air TO-15 -- Soil Gas	\$ 180.00	ea		1.00		\$0.00	
Air TO-15 -- Sub-Slab	\$ 180.00	ea		1.00		\$0.00	
Air TO-15 -- Indoor Air	\$ 180.00	ea		1.00		\$0.00	
Air - Individual Certification	\$ 50.00	ea		1.00		\$0.00	
Air - Batch Certification	\$ 50.00	LS		1.00		\$0.00	
Trip Blank VOCs 8260	\$ 65.00	ea		1.00		\$0.00	
Level IV QA/QC (15%)						\$0.00	
						\$1,260.00	\$1,260.00

Direct Costs - Expenses	Price	Unit	# Units	Markup		Subtotal	Task Total
Hotel		day		1.00		\$0.00	
Meals		LS		1.00		\$0.00	
Misc Materials		LS		1.00		\$0.00	
Equipment Rental (Barricades)		LS		1.00		\$0.00	
Sample Shipping	\$ 100.00	LS	1.0	1.00		\$100.00	
						\$0.00	
						\$0.00	
						\$0.00	
						\$0.00	
						\$100.00	\$100.00

	Expense	(hr/unit)	Hrs/Units	(day/use)	# days/use	(weeks/use)	weeks/use	Subtotal
Vehicles	Field Vehicle - Full Day	\$ 20.00		\$ 130.00	3			\$ 390.00
	Support Vehicle - Full Day only for daily use over 230 miles)	\$ 30.00		\$ 180.00				\$ -
		\$ 0.545						\$ -
Meters	Air Velocity Meter (per use)			\$ 25.00				\$ -
	Multi-meter Conductivity/pH/Temp/TDS			\$ 165.00				\$ -
	Dissolved Oxygen Meter			\$ 40.00				\$ -
	FID Foxboro/Sensidyne (TIP)			\$ 155.00				\$ -
	Flow Calibrator			\$ 30.00				\$ -
	Methane Meter			\$ 116.00				\$ -
	PID or 580 OVM			\$ 120.00	2			\$ 240.00
	Turbidity Meter			\$ 30.00				\$ -
	ppb RAE			\$ 175.00				\$ -
	Ozone Leak Detector			\$ 135.00				\$ -
Pumps	Inline Ozone Meter			\$ 230.00				\$ -
	ORP Meter			\$ 30.00				\$ -
	Air Pump - Low Flow (Barcad)			\$ 25.00				\$ -
	Development Pump			\$ 130.00				\$ -
	Electric Submersible Pump with Control Box (Units)			\$ 130.00				\$ -
	Low-Flow Sampling Bladder	\$ 12.00						\$ -
	Peristaltic Pump			\$ 105.00				\$ -
	Pumping Test Accessory Equipment (Flow Meters)	\$ 100.00						\$ -
	Portable SVE Unit - 1.5 HP			\$ 155.00				\$ -
	Intrinsically Safe Vapor Evacuation Blower			\$ 125.00				\$ -
Other	Pneumatic Low-Flow Pump - 1" Well and Multimeter			\$ 50.00				\$ -
	Asbestos Sampling Kit			\$ 250.00				\$ -
	Asbestos Investigation Supplies			\$ 130.00				\$ -
	Asbestos Sampling Core	\$ 2.50						\$ -
	Backpack Blower			\$ 75.00		\$ 200.00		\$ -
	Bailers (Disposable)	\$ 10.00						\$ -
	Bailers (Non-Disposable)			\$ 15.00				\$ -
	Core Boxes	\$ 10.00						\$ -
	Core Sampler			\$ 55.00				\$ -
	De-scaler			\$ 100.00				\$ -
	Data Logger with Transducer			\$ 155.00				\$ -
	Well Caps	\$ 30.00						\$ -
	Elec. Well Sounder (Probe)			\$ 30.00				\$ -
	Metal Detector			\$ 50.00				\$ -
	5035 Sample Kit	\$ 16.00						\$ -
	P/T Plugs	\$ 5.00						\$ -
	Field Book	\$ 11.00						\$ -
	Filter - Large	\$ 23.00						\$ -
	Filter - Small	\$ 11.00						\$ -
	Generator			\$ 105.00				\$ -
	Hand Auger			\$ 30.00				\$ -
	Helium QA/QC Kit			\$ 265.00				\$ -
	Helium QA/QC Accessories	\$ 20.00						\$ -
	Oil/Water Interface Probe			\$ 105.00				\$ -
	Nitrile Sampling Gloves (Disposable)	\$ 0.13						\$ -
	Padlocks	\$ 15.00						\$ -
	Passive Diffusion Bag	\$ 35.00						\$ -
	PDB Harness	\$ 80.00						\$ -
	Steam Cleaner			\$ 130.00				\$ -
	Transducer (ea)			\$ 40.00				\$ -
	Coring Machine			\$ 200.00				\$ -
	Rotary Hammer Drill			\$ 170.00				\$ -
	Hand Drill			\$ 75.00				\$ -
	NAPL Sample Kit			\$ 40.00				\$ -
	Surveying Equipment			\$ 50.00		\$ 200.00		\$ -
	SVE Inlet Air Filter			\$ 80.00				\$ -
	SVE Dilution Air Filter			\$ 28.00				\$ -
	SVE Blower Oil (quart)			\$ 32.00				\$ -
	SVE Blower Grease (tube)			\$ 20.00				\$ -
	O2 Meter			\$ 50.00		\$ 175.00		\$ -
	Ozone Air Filter Holder			\$ 18.00				\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/4" OI	\$ 1.50						\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/4" OI	\$ 1.20						\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/16" OI	\$ 1.25						\$ -
	Tubing (Bonded) - Polyethylene: 1/4" OD X 3/8"	\$ 1.10						\$ -
	Tubing - Polyethylene: 1/4" OD (per foot)	\$ 0.60						\$ -
	Tubing - Polyethylene: 1/2" OD (per foot)	\$ 0.85						\$ -
	Tubing - Tygon: 3/8" STD (per foot)	\$ 4.45						\$ -
	Tubing - Silicone: 3/8" STD (per foot)	\$ 4.50						\$ -
	System Wiring (per foot)	\$ 0.60						\$ -
PFA Tubing - 1/2-inch ID	\$ 5.00						\$ -	
Manual Drive Point Kit	\$ 90.00						\$ -	
55-Gallon Drum	\$ 55.00						\$ -	
550 gal poly tank			\$ 40.00				\$ -	
325 gal poly tank			\$ 30.00				\$ -	
Temporary Sampling Port	\$ 25.00						\$ -	
Trimmer			\$ 50.00				\$ -	
Vapor Pin Sub-Slab Sampling Port	\$ 75.00						\$ -	
Sub-Slab Cover (Stainless Steel)	\$ 40.00						\$ -	
Well abandonment kit	\$ 25.00						\$ -	
Well Cover 8X12"	\$ 105.00						\$ -	
Measuring Wheel			\$ 15.00	1			\$ 15.00	
Measuring Wheel or Pole			\$ 15.00				\$ -	
Camera			\$ 25.00				\$ -	
1L Tedlar Bag	\$ 20.00						\$ -	
Radon Sample Kit	\$ 30.00						\$ -	
HAZMAT Exemption Shipper	\$ 40.00						\$ -	
Manometers	\$ 105.00						\$ -	
Westlaw	\$ 105.00						\$ -	
CAD/drafting/graphics	\$ 90.00						\$ -	
Safety	Barricades & Traffic Signs			\$ 10.00				\$ -
	Fall Protection			\$ 25.00				\$ -
	Gloves (Chemical Resistant)	\$ 10.00						\$ -
	Level "B": Level "C1" plus SCBA			\$ 210.00				\$ -
	Level "C1": Level "C2" plus Polycoat Suit			\$ 85.00				\$ -
	Level "C2": Level "D" plus Respirator			\$ 40.00				\$ -
Production	Standby SCBA			\$ 130.00				\$ -
	Routine Field and Safety Equipment			\$ 60.00	2			\$ 120.00
Production	1 Inch Binder	\$ 9.00						\$ -
	2 Inch Binder	\$ 12.00						\$ -
	3 Inch Binder	\$ 15.00						\$ -
	4 Inch Binder	\$ 22.00						\$ -
	Binder Tabs (Set of 8)	\$ 5.00						\$ -
	Color Copies	\$ 0.40	10					\$ 4.00
	B/W Copies	\$ 0.25	4					\$ 1.00
Document - Format/Sending	\$ 15.00						\$ -	
Report CD Copy	\$ 5.00						\$ -	
								\$ 770.00
PHASE TOTAL								\$47,880.00

	Expense	(hr/unit)	Hrs/Units	(day/use)	# days/use	(weeks/use)	weeks/use	Subtotal
Vehicles	Field Vehicle - Full Day	\$ 20.00		\$ 130.00				\$ -
	Support Vehicle - Full Day only for daily use over 230 miles)	\$ 30.00		\$ 180.00				\$ -
		\$ 0.545						\$ -
Meters	Air Velocity Meter (per use)			\$ 25.00				\$ -
	Multi-meter Conductivity/pH/Temp/TDS			\$ 165.00				\$ -
	Dissolved Oxygen Meter			\$ 40.00				\$ -
	FID Foxboro/Sensidyne (TIP)			\$ 155.00				\$ -
	Flow Calibrator			\$ 30.00				\$ -
	Methane Meter			\$ 116.00				\$ -
	PID or 580 OVM			\$ 120.00				\$ -
	Turbidity Meter			\$ 30.00				\$ -
	ppb RAE			\$ 175.00				\$ -
	Ozone Leak Detector			\$ 135.00				\$ -
Pumps	Inline Ozone Meter			\$ 230.00				\$ -
	ORP Meter			\$ 30.00				\$ -
	Air Pump - Low Flow (Barcad)			\$ 25.00				\$ -
	Development Pump			\$ 130.00				\$ -
	Electric Submersible Pump with Control Box (Units)			\$ 130.00				\$ -
	Low-Flow Sampling Bladder	\$ 12.00						\$ -
	Peristaltic Pump			\$ 105.00				\$ -
	Pumping Test Accessory Equipment (Flow Meters)	\$ 100.00						\$ -
	Portable SVE Unit - 1.5 HP			\$ 155.00				\$ -
	Intrinsically Safe Vapor Evacuation Blower			\$ 125.00				\$ -
Other	Pneumatic Low-Flow Pump - 1" Well and Multimeter			\$ 50.00				\$ -
				\$ 270.00				\$ -
	Asbestos Sampling Kit			\$ 250.00				\$ -
	Asbestos Investigation Supplies			\$ 130.00				\$ -
	Asbestos Sampling Core	\$ 2.50						\$ -
	Backpack Blower			\$ 75.00		\$ 200.00		\$ -
	Bailers (Disposable)	\$ 10.00						\$ -
	Bailers (Non-Disposable)			\$ 15.00				\$ -
	Core Boxes	\$ 10.00						\$ -
	Core Sampler			\$ 55.00				\$ -
	De-scaler			\$ 100.00				\$ -
	Data Logger with Transducer			\$ 155.00				\$ -
	Well Caps	\$ 30.00						\$ -
	Elec. Well Sounder (Probe)			\$ 30.00				\$ -
	Metal Detector			\$ 50.00				\$ -
	5035 Sample Kit	\$ 16.00						\$ -
	P/T Plugs	\$ 5.00						\$ -
	Field Book	\$ 11.00						\$ -
	Filter - Large	\$ 23.00						\$ -
	Filter - Small	\$ 11.00						\$ -
	Generator			\$ 105.00				\$ -
	Hand Auger			\$ 30.00				\$ -
	Helium QA/QC Kit			\$ 265.00				\$ -
	Helium QA/QC Accessories	\$ 20.00						\$ -
	Oil/Water Interface Probe			\$ 105.00				\$ -
	Nitrile Sampling Gloves (Disposable)	\$ 0.13						\$ -
	Padlocks	\$ 15.00						\$ -
	Passive Diffusion Bag	\$ 35.00						\$ -
	PDB Harness	\$ 80.00						\$ -
	Steam Cleaner			\$ 130.00				\$ -
	Transducer (ea)			\$ 40.00				\$ -
	Coring Machine			\$ 200.00				\$ -
	Rotary Hammer Drill			\$ 170.00				\$ -
	Hand Drill			\$ 75.00				\$ -
	NAPL Sample Kit			\$ 40.00				\$ -
	Surveying Equipment			\$ 50.00		\$ 200.00		\$ -
	SVE Inlet Air Filter			\$ 80.00				\$ -
	SVE Dilution Air Filter			\$ 28.00				\$ -
	SVE Blower Oil (quart)			\$ 32.00				\$ -
	SVE Blower Grease (tube)			\$ 20.00				\$ -
	O2 Meter			\$ 50.00		\$ 175.00		\$ -
	Ozone Air Filter Holder			\$ 18.00				\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/4" OI	\$ 1.50						\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/4" OI	\$ 1.20						\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/16" C	\$ 1.25						\$ -
Tubing (Bonded) - Polyethylene: 1/4" OD X 3/8"	\$ 1.10						\$ -	
Tubing - Polyethylene: 1/4" OD (per foot)	\$ 0.60						\$ -	
Tubing - Polyethylene: 1/2" OD (per foot)	\$ 0.85						\$ -	
Tubing - Tygon: 3/8" STD (per foot)	\$ 4.45						\$ -	
Tubing - Silicone: 3/8" STD (per foot)	\$ 4.50						\$ -	
System Wiring (per foot)	\$ 0.60						\$ -	
PFA Tubing - 1/2-inch ID	\$ 5.00						\$ -	
Manual Drive Point Kit	\$ 90.00						\$ -	
55-Gallon Drum	\$ 55.00						\$ -	
550 gal poly tank			\$ 40.00				\$ -	
325 gal poly tank			\$ 30.00				\$ -	
Temporary Sampling Port	\$ 25.00						\$ -	
Trimmer			\$ 50.00				\$ -	
Vapor Pin Sub-Slab Sampling Port	\$ 75.00						\$ -	
Sub-Slab Cover (Stainless Steel)	\$ 40.00						\$ -	
Well abandonment kit	\$ 25.00						\$ -	
Well Cover 8X12"	\$ 105.00						\$ -	
Measuring Wheel			\$ 15.00				\$ -	
Measuring Wheel or Pole			\$ 15.00				\$ -	
Camera			\$ 25.00				\$ -	
1L Tedlar Bag	\$ 20.00						\$ -	
Radon Sample Kit	\$ 30.00						\$ -	
HAZMAT Exemption Shipper	\$ 40.00						\$ -	
Manometers	\$ 105.00						\$ -	
Westlaw	\$ 105.00						\$ -	
CAD/drafting/graphics	\$ 90.00						\$ -	
Safety	Barricades & Traffic Signs			\$ 10.00				\$ -
	Fall Protection			\$ 25.00				\$ -
	Gloves (Chemical Resistant)	\$ 10.00						\$ -
	Level "B": Level "C1" plus SCBA			\$ 210.00				\$ -
	Level "C1": Level "C2" plus Polycoat Suit			\$ 85.00				\$ -
	Level "C2": Level "D" plus Respirator			\$ 40.00				\$ -
Production	Standby SCBA			\$ 130.00				\$ -
	Routine Field and Safety Equipment			\$ 60.00				\$ -
Production	1 Inch Binder	\$ 9.00						\$ -
	2 Inch Binder	\$ 12.00						\$ -
	3 Inch Binder	\$ 15.00						\$ -
	4 Inch Binder	\$ 22.00						\$ -
	Binder Tabs (Set of 8)	\$ 5.00						\$ -
	Color Copies	\$ 0.40	12					\$ 4.80
	B/W Copies	\$ 0.25	60					\$ 15.00
Document - Format/Sending	\$ 15.00						\$ -	
Report CD Copy	\$ 5.00						\$ -	
								\$ 19.80
PHASE TOTAL								\$4,094.80

	Expense	(hr/unit)	Hrs/Units	(day/use)	# days/use	(weeks/use)	weeks/use	Subtotal
Vehicles	Field Vehicle - Full Day	\$ 20.00	4	\$ 130.00	4			\$ 600.00
	Support Vehicle - Full Day only for daily use over 230 miles)	\$ 30.00		\$ 180.00				\$ -
		\$ 0.545						\$ -
Meters	Air Velocity Meter (per use)			\$ 25.00				\$ -
	Multi-meter Conductivity/pH/Temp/TDS			\$ 165.00				\$ -
	Dissolved Oxygen Meter			\$ 40.00				\$ -
	FID Foxboro/Sensidyne (TIP)			\$ 155.00				\$ -
	Flow Calibrator			\$ 30.00				\$ -
	Methane Meter			\$ 116.00				\$ -
	PID or 580 OVM			\$ 120.00	1			\$ 120.00
	Turbidity Meter			\$ 30.00				\$ -
	ppb RAE			\$ 175.00				\$ -
	Ozone Leak Detector			\$ 135.00				\$ -
Pumps	Inline Ozone Meter			\$ 230.00				\$ -
	ORP Meter			\$ 30.00				\$ -
	Air Pump - Low Flow (Barcad)			\$ 25.00				\$ -
	Development Pump			\$ 130.00				\$ -
	Electric Submersible Pump with Control Box (Units)			\$ 130.00				\$ -
	Low-Flow Sampling Bladder	\$ 12.00						\$ -
	Peristaltic Pump			\$ 105.00				\$ -
	Pumping Test Accessory Equipment (Flow Meters)	\$ 100.00						\$ -
	Portable SVE Unit - 1.5 HP			\$ 155.00				\$ -
	Intrinsically Safe Vapor Evacuation Blower			\$ 125.00				\$ -
Other	Pneumatic Low-Flow Pump - 1" Well and Multimeter			\$ 50.00				\$ -
				\$ 270.00	2			\$ 540.00
	Asbestos Sampling Kit			\$ 250.00				\$ -
	Asbestos Investigation Supplies			\$ 130.00				\$ -
	Asbestos Sampling Core	\$ 2.50						\$ -
	Backpack Blower			\$ 75.00		\$ 200.00		\$ -
	Bailers (Disposable)	\$ 10.00	8					\$ 80.00
	Bailers (Non-Disposable)			\$ 15.00				\$ -
	Core Boxes	\$ 10.00						\$ -
	Core Sampler			\$ 55.00				\$ -
	De-scaler			\$ 100.00				\$ -
	Data Logger with Transducer			\$ 155.00				\$ -
	Well Caps	\$ 30.00						\$ -
	Elec. Well Sounder (Probe)			\$ 30.00	1			\$ 30.00
	Metal Detector			\$ 50.00				\$ -
	5035 Sample Kit	\$ 16.00						\$ -
	P/T Plugs	\$ 5.00						\$ -
	Field Book	\$ 11.00						\$ -
	Filter - Large	\$ 23.00	4					\$ 92.00
	Filter - Small	\$ 11.00						\$ -
	Generator			\$ 105.00				\$ -
	Hand Auger			\$ 30.00				\$ -
	Helium QA/QC Kit			\$ 265.00				\$ -
	Helium QA/QC Accessories	\$ 20.00						\$ -
	Oil/Water Interface Probe			\$ 105.00				\$ -
	Nitrile Sampling Gloves (Disposable)	\$ 0.13						\$ -
	Padlocks	\$ 15.00						\$ -
	Passive Diffusion Bag	\$ 35.00						\$ -
	PDB Harness	\$ 80.00						\$ -
	Steam Cleaner			\$ 130.00				\$ -
	Transducer (ea)			\$ 40.00				\$ -
	Coring Machine			\$ 200.00				\$ -
	Rotary Hammer Drill			\$ 170.00				\$ -
	Hand Drill			\$ 75.00				\$ -
	NAPL Sample Kit			\$ 40.00				\$ -
	Surveying Equipment			\$ 50.00		\$ 200.00		\$ -
	SVE Inlet Air Filter			\$ 80.00				\$ -
	SVE Dilution Air Filter			\$ 28.00				\$ -
	SVE Blower Oil (quart)			\$ 32.00				\$ -
	SVE Blower Grease (tube)			\$ 20.00				\$ -
	O2 Meter			\$ 50.00		\$ 175.00		\$ -
	Ozone Air Filter Holder			\$ 18.00				\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/4" OI	\$ 1.50						\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/4" OI	\$ 1.20						\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/16" OI	\$ 1.25						\$ -
	Tubing (Bonded) - Polyethylene: 1/4" OD X 3/8"	\$ 1.10						\$ -
	Tubing - Polyethylene: 1/4" OD (per foot)	\$ 0.60	15					\$ 9.00
	Tubing - Polyethylene: 1/2" OD (per foot)	\$ 0.85						\$ -
Tubing - Tygon: 3/8" STD (per foot)	\$ 4.45						\$ -	
Tubing - Silicone: 3/8" STD (per foot)	\$ 4.50	2					\$ 9.00	
System Wiring (per foot)	\$ 0.60						\$ -	
PFA Tubing - 1/2-inch ID	\$ 5.00						\$ -	
Manual Drive Point Kit	\$ 90.00						\$ -	
55-Gallon Drum	\$ 55.00	4					\$ 220.00	
550 gal poly tank			\$ 40.00				\$ -	
325 gal poly tank			\$ 30.00				\$ -	
Temporary Sampling Port	\$ 25.00						\$ -	
Trimmer			\$ 50.00				\$ -	
Vapor Pin Sub-Slab Sampling Port	\$ 75.00						\$ -	
Sub-Slab Cover (Stainless Steel)	\$ 40.00						\$ -	
Well abandonment kit	\$ 25.00						\$ -	
Well Cover 8X12"	\$ 105.00						\$ -	
Measuring Wheel			\$ 15.00				\$ -	
Measuring Wheel or Pole			\$ 15.00				\$ -	
Camera			\$ 25.00				\$ -	
1L Tedlar Bag	\$ 20.00						\$ -	
Radon Sample Kit	\$ 30.00						\$ -	
HAZMAT Exemption Shipper	\$ 40.00						\$ -	
Manometers	\$ 105.00						\$ -	
Westlaw	\$ 105.00						\$ -	
CAD/drafting/graphics	\$ 90.00						\$ -	
Safety	Barricades & Traffic Signs			\$ 10.00				\$ -
	Fall Protection			\$ 25.00				\$ -
	Gloves (Chemical Resistant)	\$ 10.00						\$ -
	Level "B": Level "C1" plus SCBA			\$ 210.00				\$ -
	Level "C1": Level "C2" plus Polycoat Suit			\$ 85.00				\$ -
	Level "C2": Level "D" plus Respirator			\$ 40.00				\$ -
Production	Standby SCBA			\$ 130.00				\$ -
	Routine Field and Safety Equipment			\$ 60.00	2			\$ 120.00
Production	1 Inch Binder	\$ 9.00						\$ -
	2 Inch Binder	\$ 12.00						\$ -
	3 Inch Binder	\$ 15.00						\$ -
	4 Inch Binder	\$ 22.00						\$ -
	Binder Tabs (Set of 8)	\$ 5.00						\$ -
	Color Copies	\$ 0.40	5					\$ 2.00
	B/W Copies	\$ 0.25	12					\$ 3.00
Document - Format/Sending	\$ 15.00						\$ -	
Report CD Copy	\$ 5.00						\$ -	
								\$ 1,825.00
PHASE TOTAL								\$19,775.00

	Expense	(hr/unit)	Hrs/Units	(day/use)	# days/use	(weeks/use)	weeks/use	Subtotal
Vehicles	Field Vehicle - Full Day	\$ 20.00		\$ 130.00				\$ -
	Support Vehicle - Full Day	\$ 30.00		\$ 180.00				\$ -
	only for daily use over 230 miles)	\$ 0.545						\$ -
Meters	Air Velocity Meter (per use)			\$ 25.00				\$ -
	Multi-meter Conductivity/pH/Temp/TDS			\$ 165.00				\$ -
	Dissolved Oxygen Meter			\$ 40.00				\$ -
	FID Foxboro/Sensidyne (TIP)			\$ 155.00				\$ -
	Flow Calibrator			\$ 30.00				\$ -
	Methane Meter			\$ 116.00				\$ -
	PID or 580 OVM			\$ 120.00				\$ -
	Turbidity Meter			\$ 30.00				\$ -
	ppb RAE			\$ 175.00				\$ -
	Ozone Leak Detector			\$ 135.00				\$ -
Pumps	Inline Ozone Meter			\$ 230.00				\$ -
	ORP Meter			\$ 30.00				\$ -
	Air Pump - Low Flow (Barcad)			\$ 25.00				\$ -
	Development Pump			\$ 130.00				\$ -
	Electric Submersible Pump with Control Box (Units)			\$ 130.00				\$ -
	Low-Flow Sampling Bladder	\$ 12.00						\$ -
	Peristaltic Pump			\$ 105.00				\$ -
	Pumping Test Accessory Equipment (Flow Meters)	\$ 100.00						\$ -
	Portable SVE Unit - 1.5 HP			\$ 155.00				\$ -
	Intrinsically Safe Vapor Evacuation Blower			\$ 125.00				\$ -
Other	Pneumatic Low-Flow Pump - 1" Well and Multimeter			\$ 50.00				\$ -
	Asbestos Sampling Kit			\$ 250.00				\$ -
	Asbestos Investigation Supplies			\$ 130.00				\$ -
	Asbestos Sampling Core	\$ 2.50						\$ -
	Backpack Blower			\$ 75.00		\$ 200.00		\$ -
	Bailers (Disposable)	\$ 10.00						\$ -
	Bailers (Non-Disposable)			\$ 15.00				\$ -
	Core Boxes	\$ 10.00						\$ -
	Core Sampler			\$ 55.00				\$ -
	De-scaler			\$ 100.00				\$ -
	Data Logger with Transducer			\$ 155.00				\$ -
	Well Caps	\$ 30.00						\$ -
	Elec. Well Sounder (Probe)			\$ 30.00				\$ -
	Metal Detector			\$ 50.00				\$ -
	5035 Sample Kit	\$ 16.00						\$ -
	P/T Plugs	\$ 5.00						\$ -
	Field Book	\$ 11.00						\$ -
	Filter - Large	\$ 23.00						\$ -
	Filter - Small	\$ 11.00						\$ -
	Generator			\$ 105.00				\$ -
	Hand Auger			\$ 30.00				\$ -
	Helium QA/QC Kit			\$ 265.00				\$ -
	Helium QA/QC Accessories	\$ 20.00						\$ -
	Oil/Water Interface Probe			\$ 105.00				\$ -
	Nitrile Sampling Gloves (Disposable)	\$ 0.13						\$ -
	Padlocks	\$ 15.00						\$ -
	Passive Diffusion Bag	\$ 35.00						\$ -
	PDB Harness	\$ 80.00						\$ -
	Steam Cleaner			\$ 130.00				\$ -
	Transducer (ea)			\$ 40.00				\$ -
	Coring Machine			\$ 200.00				\$ -
	Rotary Hammer Drill			\$ 170.00				\$ -
	Hand Drill			\$ 75.00				\$ -
	NAPL Sample Kit			\$ 40.00				\$ -
	Surveying Equipment			\$ 50.00		\$ 200.00		\$ -
	SVE Inlet Air Filter			\$ 80.00				\$ -
	SVE Dilution Air Filter			\$ 28.00				\$ -
	SVE Blower Oil (quart)			\$ 32.00				\$ -
	SVE Blower Grease (tube)			\$ 20.00				\$ -
	O2 Meter			\$ 50.00		\$ 175.00		\$ -
	Ozone Air Filter Holder			\$ 18.00				\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/4" OD	\$ 1.50						\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/4" OD	\$ 1.20						\$ -
	Tubing (Bonded) - Polyethylene (Teflon): 1/16" OD	\$ 1.25						\$ -
	Tubing (Bonded) - Polyethylene: 1/4" OD X 3/8"	\$ 1.10						\$ -
	Tubing - Polyethylene: 1/4" OD (per foot)	\$ 0.60						\$ -
	Tubing - Polyethylene: 1/2" OD (per foot)	\$ 0.85						\$ -
	Tubing - Tygon: 3/8" STD (per foot)	\$ 4.45						\$ -
Tubing - Silicone: 3/8" STD (per foot)	\$ 4.50						\$ -	
System Wiring (per foot)	\$ 0.60						\$ -	
PFA Tubing - 1/2-inch ID	\$ 5.00						\$ -	
Manual Drive Point Kit	\$ 90.00						\$ -	
55-Gallon Drum	\$ 55.00						\$ -	
550 gal poly tank			\$ 40.00				\$ -	
325 gal poly tank			\$ 30.00				\$ -	
Temporary Sampling Port	\$ 25.00						\$ -	
Trimmer			\$ 50.00				\$ -	
Vapor Pin Sub-Slab Sampling Port	\$ 75.00						\$ -	
Sub-Slab Cover (Stainless Steel)	\$ 40.00						\$ -	
Well abandonment kit	\$ 25.00						\$ -	
Well Cover 8X12"	\$ 105.00						\$ -	
Measuring Wheel			\$ 15.00				\$ -	
Measuring Wheel or Pole			\$ 15.00				\$ -	
Camera			\$ 25.00				\$ -	
1L Tedlar Bag	\$ 20.00						\$ -	
Radon Sample Kit	\$ 30.00						\$ -	
HAZMAT Exemption Shipper	\$ 40.00						\$ -	
Manometers	\$ 105.00						\$ -	
Westlaw	\$ 105.00						\$ -	
CAD/drafting/graphics	\$ 90.00						\$ -	
Safety	Barriades & Traffic Signs			\$ 10.00				\$ -
	Fall Protection			\$ 25.00				\$ -
	Gloves (Chemical Resistant)	\$ 10.00						\$ -
	Level "B": Level "C1" plus SCBA			\$ 210.00				\$ -
	Level "C1": Level "C2" plus Polycat Suit			\$ 85.00				\$ -
	Level "C2": Level "D" plus Respirator			\$ 40.00				\$ -
Production	Standby SCBA			\$ 130.00				\$ -
	Routine Field and Safety Equipment			\$ 60.00				\$ -
	1 Inch Binder	\$ 9.00						\$ -
	2 Inch Binder	\$ 12.00						\$ -
	3 Inch Binder	\$ 15.00						\$ -
	4 Inch Binder	\$ 22.00						\$ -
	Binder Tabs (Set of 8)	\$ 5.00						\$ -
	Color Copies	\$ 0.40						\$ -
	B/W Copies	\$ 0.25						\$ -
	Document - Format/Sending	\$ 15.00						\$ -
Report CD Copy	\$ 5.00						\$ -	
								\$ -
PHASE TOTAL								\$1,870.00



**REMEDIAL ACTION OPTIONS EVALUATION AND
INTERIM ACTION DESIGN REPORT**

**WAGNER PROPERTY
401 NORTH WISCONSIN STREET
ELKHORN, WISCONSIN
BRRTS# 02-65-544400**

August 12, 2021

Prepared For:

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A handwritten signature in blue ink, appearing to read "Brian Kappen".

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Project Manager

A handwritten signature in blue ink, appearing to read "Robert Fedorchak".

Robert Fedorchak, PE
Senior Engineer

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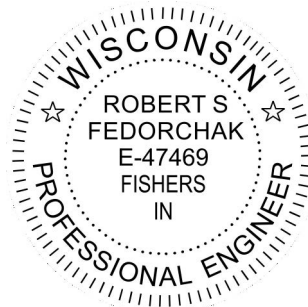
Appendix A	Figures from the Supplemental Site Investigation Report
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CERTIFICATIONS

I, Robert S. Fedorchak, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.



Senior Engineer



I, Wayne Fassbender, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.



Senior Project Manager

8/12/2021

Date

Document Reference:

Remedial Action Options Evaluation and Interim Action Design Report
PJW Properties LLC
401 North Wisconsin Street
Elkhorn, Wisconsin
BRRTS# 02-65-544400

1.0 BACKGROUND

EnviroForensics LLC (EnviroForensics) has prepared this *Remedial Action Options Evaluation and Interim Action Design Report* on behalf of PJW Properties LLC for the property located at 401 N. Wisconsin Street in Elkhorn, Wisconsin (Site). The Site location is depicted on **Figure 1**. This report follows the Supplemental Site Investigation Report (SSIR) submitted by The Sigma Group, Inc. (Sigma) in January 2016.

A commercial dry cleaning facility operated at the Site for an unknown number of years. The facility historically used tetrachloroethene (PCE) and possibly Stoddard solvent as dry cleaning solvents. Dry cleaning equipment was historically located in the northeastern part of the site building. The site was also previously used as a gasoline service station prior to the dry cleaning operation. The current layout of the Site, including Site features, and the surrounding area, is depicted on **Figure 2**.

The primary contaminants of concern at the Site are naphthalene and chlorinated volatile organic compounds (CVOCs) including PCE and intermediate products of the natural degradation [trichloroethene (TCE); dichloroethene (DCE); and vinyl chloride]. Residual concentrations of petroleum volatile organic compounds associated with a leaking underground storage tank (LUST) are also present. The LUST case was closed by the Wisconsin Department of Natural Resources (WDNR) in 2009.

1.1 Site Hydrogeology

According to the SSIR, the lithology at the Site generally consists of sandy silts and clays to a depth of approximately 12 to 13 feet below ground surface (bgs). A layer of stiff silty clay is generally encountered from 13 feet bgs to the maximum depth investigated (55 feet bgs). The water table was encountered at depths ranging from 3 to 8 feet bgs during the Site investigation (i.e., between 2008 and 2015). The shallow groundwater flow direction, as indicated by the water table observation well measurements, was reported to vary seasonally: flow to the north was indicated when the water table was deeper; flow to the west and south was indicated during monitoring events when the water table was shallower. Groundwater elevations measured in site piezometers (i.e., the piezometric surface) have indicated flow to the south.

The approximate horizontal hydraulic gradient based on the April 2015 groundwater elevation data was estimated to be 0.01 feet per foot. The approximate vertical gradient, based on groundwater elevation data measured in monitoring well MW-2/piezometer PZ-1, monitoring well MW-1/piezometer PZ-2, and monitoring well MW-4/piezometer PZ-3 is 0.09 feet per foot

downward. The estimated hydraulic conductivity of the shallow soil in the vicinity of tested monitoring wells ranged from 2.6×10^{-4} centimeters per second (cm/s) to 1.2×10^{-2} cm/s. The hydraulic conductivity of the deeper clayey soil was approximately 2.0×10^{-5} . Additional detail regarding Site hydrogeology was provided in the SSIR.

1.2 Nature and Extent of Contamination

The primary source area for naphthalene and PCE appears to be beneath and immediately north of the former dry cleaning machine location. A secondary source area, indicated by analytical results of samples collected from borings GP-1 and MW-1, is located south of the former building.

The lateral extent of naphthalene and CVOC impacts to soil at the Site appear to be defined with the possible exception of southwest of borings GP-7 and SGP-3. The horizontal extent of impacts is defined to the south by MW-6; to the west by MW-10, MW-7, and MW-3; to the north by SGP-6, SGP-7, and SGP-9; and to the east by MW-8, SGP-10, SGP-11, SGP-12, and MW-9. With the exception of the primary source area on the north side of the Site, the vertical extent of soil impacts do not appear to extend significantly into the silty clay material that begins at a depth of approximately 12 to 13 feet bgs. Saturated soil impacts in the primary source area extend as deep as 20 feet bgs.

Concentrations of PCE in groundwater are highest in groundwater samples collected from the primary source area well and piezometers, and in general decrease in monitoring wells interpreted to be at side-gradient, up-gradient and down-gradient locations. Concentrations of breakdown products cis-1,2-DCE and vinyl chloride are more widespread in shallow groundwater beneath the Site, and the distribution of impacts supports the conclusion that groundwater flow direction is variable. The horizontal and vertical extents of CVOC impacts to shallow groundwater have not been defined; however, an appropriate remedial strategy can be developed based on the existing data set. Data summary figures from the SSIR are included in **Appendix A** for reference.

2.0 IDENTIFICATION AND EVALUATION OF REMEDIAL ACTION OPTIONS

This section focuses on the evaluation of remedial action options for control, removal, containment, and/or treatment of impacted media at the Site. The initial identification and screening of remedial action options is based on information generated during site investigation activities, including the nature and extent of contamination and the hydrogeological conditions at the Site and surrounding areas. Remediation of contaminants in soil, groundwater, and soil gas to levels that no longer migrate or pose a risk of vapor intrusion to nearby occupied structures drives the remedial options evaluation.

2.1 Remedial Action Options Screening

Potential remedial actions were screened against the conceptual site model to identify whether they would be: 1) protective of human health and the environment; and 2) are appropriate for the Site, considering applicability for Site conditions, reasonably anticipated future land uses, and other factors which would pre-emptively preclude the action from further evaluation, as well as relevance to site-specific exposure pathways. The remedial technologies that did not pass the initial screening and were eliminated from further evaluation are *not* highlighted in **Table 1**.

The following were considered likely for remediation at the Site and selected for further evaluation:

- Multi-phase extraction
- Thermal desorption
- Soil mixing: In-situ chemical oxidation (ISCO)
- Soil mixing: In-situ chemical reduction (ISCR)
- Injection: Colloidal activated carbon
- Injection: Enhanced reductive dechlorination (ERD)
- Injection: ISCR
- Injection: ISCO
- Excavation and off-Site disposal.

2.2 Remedial Action Options Evaluation

Each likely remedial action, and combination of actions, was evaluated for the following performance metrics:

- Technical Feasibility
 - Short-Term Effectiveness,
 - Long-Term Effectiveness,
 - Ability to Implement, and
 - Restoration Time Frame.

- Economic Feasibility
 - Capital Costs,
 - Initial Cost,
 - Annual Operation and Maintenance, and
 - Future Liability.

Additionally, the need for continuing obligations after completion of a remedial action, such as maintenance of an engineering control, was considered.

2.2.1 *Technical Feasibility*

The feasibility of a technology to remediate impacted areas at any specific site is evaluated with regard to the following specific considerations:

- Proven technology: when a *technology* is fully developed and historical success case histories are available;
- Emerging technology: when a technology is not fully developed and may not be reliable;
- Inappropriate technology: when Site conditions are not technically suitable for the application of the technology; and
- Potential additional liability: whether the treatment technology may add additional liability.

Effectiveness

The key aspect of the technical feasibility evaluation is the effectiveness of each remedial action in protecting human health and the environment. Each potential remedial action is evaluated as to its effectiveness in providing protection and the reductions in toxicity, mobility, or volume of contamination that it would achieve. Both short- and long-term components of effectiveness are evaluated; short-term referring to the construction and implementation period until case closure, and long-term referring to the period after remediation is complete. Reduction of toxicity, mobility, or volume refers to changes in one or more characteristics of the contaminated media by the use of treatment that decreases the inherent risks. Any remedial action option under consideration should minimize adverse impacts to Site workers, visitors, the surrounding population, and the environment. Community impact is also important and the technology is considered a disadvantage if the application of the technology could be perceived as negatively impacting the local community or environment.

Ability to Implement

The ability to implement is a measure of both the technical and administrative feasibility of constructing, operating, and maintaining a remedial action option, and is used to evaluate combinations of remedial actions with respect to conditions at a specific site. The determination that an option is not readily implementable would usually preclude it from further consideration unless steps can be taken to change the conditions responsible for the determination.

The technical aspects related to the ability to implement refers to the ability to construct, reliably operate, and meet technology-specific regulations for remedial actions until remediation is complete; it also includes operation, maintenance, replacement, and monitoring of technical components of an action, if required, into the future after the remedial action is complete. Administrative feasibility considers the ability to obtain approvals and permitting from other offices and agencies, the availability of treatment, storage, and disposal services and capacity, and the requirements for, and availability of, specific equipment and technical specialists.

Restoration Time Frame

The estimated time for completion of a remedial action and restoration of the environment is based on the information available from vendor(s) with experience in remediating similar sites, and EnviroForensics' past experience using technologies in similar settings. Contaminant degradation rates, both naturally and under treatment conditions, are assumed based on

experience to estimate the duration of remedial actions. If necessary, the time frame for continuing obligations is also considered.

2.2.2 *Economic Feasibility*

The cost to implement various options is not an exact cost but represents a combination of typical contractor costs and consultant efforts coupled with the estimated time to achieve remedial endpoints. This is inherent because uncertainties associated with the definition of options often remain, and it may not be possible or practical to collect all of the data needed to refine costs better than a reliability level of +50% to -30%.

The focus is on comparative estimates of costs between options so that if costs go up or down during the remedial process, that they remain relative. The following cost factors are considered during the evaluation of options:

- Initial costs: those costs incurred for design and testing of the remedial action;
- Capital costs: the cost to construct, install, or otherwise implement the remedial action;
- Operation and maintenance (O&M) costs: the costs to operate and maintain the remedial system or technology. The evaluation includes those O&M costs that would be incurred for as long as necessary, even after the initial remedial action is complete; and
- Future liability: includes potential additional remedial action costs and costs for property re-development are considered during evaluation to the extent they can be estimated.

2.2.3 *Continuing Obligations*

The involvement of continuing obligations in the closure strategy is considered in the evaluation process. Post-closure obligations may include activities such as annual cover inspections and operation, maintenance, and inspections of vapor mitigation systems. These activities may be required for an indefinite period of time following case closure. A remedial action is considered more advantageous if the resulting need for continuing obligations is limited or eliminated.

2.3 **Remedial Action Options Selected**

The likely remedial options identified in Section 2.1 were evaluated according to the technical and economic feasibility criteria described above. The evaluation was documented and quantified using a ranking matrix, presented in **Table 2**, to identify the most suitable technology

or combination of technologies for remediation at the Site. A score was assigned for each category and the scores were summed across all categories to produce a metric for comparison of the remedial actions. Remedial actions that received the highest scores in the ranking matrix were selected to develop overall options for soil and groundwater remediation. Based on the outcome of that evaluation, the following remedial actions were selected for testing and/or implementation:

- Excavation and off-Site disposal – provides rapid removal of contaminant mass from accessible areas;
- Soil Mixing: ISCR – provides maximum distribution of remedial products in the most contaminated areas and the Site is readily accessible to mixing equipment;
- Injection: ISCR – readily available, proven technology suitable for treatment of high CVOC concentrations; and
- Injection: ERD – combined with ISCR for continuing long-term reduction.

ISCO technologies, applied by either soil mixing and/or injection, received the same score on **Table 2** as ISCR methods. Although ISCO has the advantage of potentially treating naphthalene as wells as CVOCs, reduction methods are preferred for the following reasons:

- Lower product cost; and
- Less concern with concentration rebound and the potential need for re-application.

While elevated concentrations of naphthalene have been detected in saturated soil samples, very little naphthalene is dissolved in groundwater. Therefore, the groundwater treatment approach focuses on the chlorinated compounds. The dechlorination of PCE is naturally occurring as evidenced by the elevated concentration of daughter products, specifically cis-1,2-DCE. The introduction of organic substrates, and dehalogenating microorganisms if appropriate, will expedite the process.

2.3.1 Option 1 – Excavation and Injection

Option 1 consists of the following actions:

- Excavation of the upper 5 feet of soil in the most contaminated areas with off-site disposal as non-hazardous special waste; and

- Injection of ISCR and ERD product(s) in the source area (north of building slab) and under the former building from 5 to 35 feet bgs.

Based on the investigation data, the concentrations of contaminants in composite samples of shallow soil may be below the applicable hazardous thresholds. Implementation of Option 1 would require the collection of several shallow soil samples for analysis according to Test Method 1311: Toxicity Characteristic Leaching Procedure (TCLP) to confirm non-hazardous concentrations and to profile the waste for disposal. The shallow soil sampling could be completed in one (1) day at minimal cost. If the analysis results exceed TCLP thresholds, excavation and off-site disposal would not be economically feasible.

The proposed excavation area covers part of the eastern half of the former building, where contaminant concentrations are highest in the unsaturated zone. The excavation area would extend from HA-3 (south) to GP-3 (north), and around the former dry cleaning machine location. Option 1 has the advantage of also removing near-surface soil containing naphthalene impacts. A secondary excavation area around GP-1 would remove the CVOC hotspot at that location. The remaining near-surface contaminated soil (0-5 feet) outside of the excavation area would be left in place.

Injection is anticipated to occur within the area currently defined by the 100 µg/L PCE contour. Three (3) additional monitoring wells and one (1) additional piezometer are proposed for both remedial design verification and post-injection performance monitoring.

2.3.2 Option 2 – Soil Mixing and Injection

Option 2 consists of the following actions:

- Soil mixing around the former location of the dry cleaning machines to a maximum depth of 15 feet bgs.
- Injection of same ISCR products as with Option 1, within a reduced treatment volume beneath and around the soil mixing zone which extend deeper than the excavation described under Option 1.

Soil mixing would be performed within a 2,200 square foot area in the northeast quadrant of the former building footprint, extending north to encompass SGP-21 and SGP-22. The 5 to 15 feet bgs depth interval in this area contains the highest contaminant concentrations, especially in the vicinity of the former dry cleaning machine locations. Soil mixing has the advantage of

maximizing contact between the ISCR products with the contaminated media. More rapid reduction of contaminant concentrations in the source area is likely with this focused treatment approach. The remaining near-surface contaminated soil (0-5 feet) outside of the mixing area would be left in place.

The aerial extent of groundwater injections would be the same as with Option 1, but the injection depth interval would be less below the soil mixing zone (i.e., 15 to 35 feet bgs), and therefore less product would be needed for the reduced treatment volume.

Both options address vapor intrusion risk to any future building.

3.0 INTERIM REMEDIAL ACTION PLAN

Remedial action Option 1, which consists of excavation and injection to treat unsaturated and saturated zone impacts, respectively, is preferred over Option 2 for the following reasons:

- Lower overall cost of implementation; and
- Shorter timeframe for potential redevelopment of the Site.

This section presents the plan for implementation of excavation activities, to be performed as an interim action prior to groundwater treatment. This section also presents a plan for additional groundwater data collection, which is needed to develop a detailed injection design. Specifically, more data on contaminant distribution beneath the footprint of the former building is needed. This area is positioned in the middle of the anticipated treatment area. Baseline concentrations of bioremediation performance indicators such as iron, manganese, sulfate, nitrate, total organic carbon, and dissolved gasses (ethene, ethane, and methane) are also important to understand for design purposes. Once the additional data is evaluated, a suitable injection product can be selected and application details such as amendment dosing, mixing ratios, and injection point spacing can be specified.

Waste characterization sampling activities are described in Section 3.1.1 below. If more than half of the waste sample analytical results exceed regulatory limits for non-hazardous characterization, the economic feasibility of the remedial action options will be revisited. Option 2 may become less expensive than Option 1 if all or most of the excavated soil would be considered hazardous waste.

3.1 Contaminated Soil Removal

Unsaturated soil exhibiting the highest concentrations of CVOCs will be excavated and transported off-Site for disposal. Elevated concentrations of naphthalene are also present in this soil. The excavation is not designed to remove all contaminated soil. Rather, the excavation targets the most contaminated areas identified during the site investigation, with the objective of reducing further contribution to the dissolved groundwater plume.

3.1.1 Waste Characterization Sampling

A site-specific health and safety plan will be prepared for Site work as required per Occupational Safety and Health Administration (OSHA) regulations. All personnel conducting field work will have current health and safety training as specified in OSHA, 29 CFR 1910.120.

EnviroForensics personnel and a drilling subcontractor will mobilize to the Site to advance direct-push borings to facilitate soil sample collection. The objective of the sampling event is to confirm that soil within the proposed excavation zones (depicted on **Figure 3**) can be characterized as non-hazardous for waste profiling and disposal purposes. EnviroForensics personnel will observe all field activities, prepare boring logs and other field documentation, and containerize all samples for analysis. Field screening of soil for organic vapors will be performed using a photo-ionization detector (PID). Screening will be conducted at approximately two-foot depth intervals.

Eight (8) soil borings are proposed, evenly distributed across the proposed excavation areas. The soil borings will be advanced to a depth of five (5) feet bgs. One (1) composite sample of the entire 5-foot soil core will be collected from each boring, including soil from the interval that exhibits the highest PID reading. The eight (8) soil samples will be analyzed for volatile organic compounds (VOCs) according to the TCLP, SW-846 Test Method 1311. The results of the TCLP analyses will be compared to hazardous thresholds to delineate zones of non-hazardous and hazardous waste.

3.1.2 *Excavation, Transportation, and Disposal*

The boundaries of two (2) proposed excavation areas are depicted on **Figure 3**. The objective of excavation in Area A is to remove soil containing the highest CVOC impacts. The objective of excavation in Area B is to remove the CVOC hotspot identified by boring GP-1. The concrete slab will be broken up at four (4) locations and pieces from each location will be collected for VOC analysis by the TCLP test method. The existing concrete slab will then be cut along the west side of excavation Area A, and the concrete overlying Area A will be broken part and transported off-site for disposal. The disposal site will depend on the results of the TCLP analyses. The target excavation depth in both areas will be five (5) feet. An excavator will load dump trucks continuously as the excavation progresses. All non-hazardous waste will be transported to Pheasant Run Landfill in Bristol, Wisconsin. A non-hazardous waste manifest will accompany each load, and documentation of disposal will be requested. EnviroForensics anticipates that 390 tons of soil will be removed.

Specific procedures for management of hazardous waste, of any, will be determined after the characterization sampling has been completed.

3.1.3 Post-Excavation Soil Sampling

Excavation floor and sidewall samples will be collected to document residual VOC concentrations and for use in estimating the VOC mass removed. Up to 8 floor samples and 10 sidewall samples may be collected using new Terra Core™ sampling devices, or similar. Soil samples will be immediately placed in a cooler on ice under chain of custody control and submitted to Synergy Environmental Lab for analysis of VOCs by the United States Environmental Protection Agency (U.S. EPA) Method 8260. The soil sampling results will be summarized and compared to Residual Contaminant Levels (RCLs).

3.2 Data Collection for Injection design

The remedial technology selected for groundwater is the application of ISCR and ERD solutions by injection. The target compounds for treatment are CVOCs, including PCE and its degradation products TCE, cis-1,2-DCE, and vinyl chloride. As of April 2015, each of these compounds was present in one (1) or more monitoring wells at concentrations above their respective enforcement standards and up to the following maximum concentrations:

- PCE at 37,000 micrograms per liter ($\mu\text{g/L}$) in PZ-3;
- TCE at 2,330 $\mu\text{g/L}$ in MW-1;
- cis-1,2-DCE at 15,500 $\mu\text{g/L}$ in MW-1; and
- Vinyl chloride at 1,330 $\mu\text{g/L}$ in PZ-2.

The anticipated treatment area is within the 100 parts per billion PCE contour shown on the Groundwater Quality Map - Figure 4 in **Appendix A**. Given the range in magnitude of these concentrations over a relatively small area, additional data is needed to develop an appropriate injection design and define objectives.

3.2.1 Monitoring Well Installation

Three (3) additional monitoring wells and one additional piezometer are proposed within footprint of the former building. The new wells will serve the dual purpose of further defining the distribution of VOC concentrations and providing monitoring points for evaluating the performance of the future remedial injection. The proposed monitoring well/piezometer locations are depicted on **Figure 4**. The water table monitoring wells, to be designated MW-14, MW-15, and MW-16, will be constructed of 2-inch diameter PVC screened from 4 to 14 feet

bgs. The piezometer, to be designated PZ-5, will be constructed of 2-inch diameter PVC screened from 30 to 35 feet bgs. As shown on **Figure 4**, MW-14 and PZ-5 will be nested.

The new monitoring wells are close to the locations of previous borings SGP-13, SGP-17, and SGP-20, respectively. Therefore, soil logging and sampling during well installation activities are not proposed.

3.2.2 *Groundwater Sampling*

EnviroForensics will develop the new wells by surging and bailing in accordance with Wisconsin Administrative Code (WAC) Chapter NR 141. Samples will then be collected from the new wells, along with select existing wells within the anticipated treatment area. The following wells will be sampled for VOCs and baseline bioremediation performance parameters:

- MW-1, MW-4, MW-14, MW-15, MW-16, PZ-2, PZ-3, and PZ-5.

The additional parameters will consist of total and dissolved iron; total and dissolved manganese; sulfate; nitrate; nitrite; total organic carbon; and ethene, ethane, and methane. In addition, the four (4) new wells will be sampled for dehalococoides (DHC) population and functional genes.

Based on information reviewed by EnviroForensics, low-flow sampling methods will not be suitable due to limited recharge rates. Therefore purging and sampling will be completed using new, disposable bailers. Field parameters including pH, specific conductivity, temperature, oxidation reduction potential, and dissolved oxygen will be measured during purging and recorded on a sampling form. The wells will be purged dry and allowed to recharge overnight.

One (1) duplicate sample and one (1) equipment blank will be collected for every 10 or fewer investigative samples, and one (1) trip blank sample will be analyzed per sample cooler for quality assurance/quality control (QA/QC) purposes. The groundwater samples will be transmitted to a state-certified laboratory for analysis according to U.S. EPA test methods. The DHC analyses will be performed by Microbial Insights laboratory in Knoxville, Tennessee.

3.2.3 *Investigation-Derived Media Management*

Investigation-derived media (IDM), including soil cuttings, purge water, and decontamination fluids, will be containerized in 55-gallon drums. The IDM will be characterized by collecting

composite samples from the drums at a rate of one (1) sample per two (2) drums. The soil and liquid IDM will be profiled and removed from the Site by a licensed contractor.

3.3 Reporting

In accordance with WAC Chapter NR 724.15, EnviroForensics will prepare documentation of the interim action that presents the excavation details as implemented in the field. Tables, maps, figures, and supporting data will also be included, as needed. Any deviation from design plans presented herein will be explained. Well construction and development forms (Form 4400-133A/B) will also be prepared to document installation of the new wells.

3.4 Implementation Schedule

Planning and contracting for excavation activities can be initiated immediately upon WDNR approval of the actions and cost estimate presented herein. The excavation and backfilling activities can be completed in three (3) days. Monitoring well installation and sampling activities will occur after excavation because three (3) of the proposed wells will be located within the excavation area. Well installation, development and sampling will be completed within a time period of one month. The Interim Action Completion Report will be submitted within 60 days of completion.

TABLES

TABLE 1
REMEDIAL ACTION OPTIONS SCREENING

Wagner Property
401 N. Wisconsin Street
Elkhorn, Wisconsin

General Response Action	Remedial Action	Description	Applicable and Appropriate?	Further Evaluation Warranted
No Remediation	Monitored Attenuation	Monitor to confirm adequate attenuation of contaminant concentrations is occurring and screen for potential changes in exposure potential.	No	No. The timeframe for restoration is unacceptable.
<i>In-Situ</i> Remediation	Soil Vapor Extraction	Volatilization of contaminant mass in unsaturated zone and removal via vacuum extraction.	No	No. This option is not suitable due to the shallow water table and vertical distribution of contaminant mass.
	Multi-Phase Extraction	Removal of contaminants in liquid and vapor phases via vacuum extraction.	Yes	Yes. This option is potentially suitable assuming permeability permits acceptable vapor and groundwater transport and recovery rates.
	Thermal Desorption	Removal of contaminants in aqueous, liquid, and sorbed phases by heating and volatilization, with subsequent vacuum extraction.	Yes	Yes. Thermal treatment is appropriate for the type of contaminant and depth.
	Soil Mixing: <i>In-Situ</i> Chemical Oxidation	Involves the addition of oxidation reagents to a contaminated material (e.g. soil or sludge) to facilitate oxidative destruction of contaminants. Mixing of is performed using heavy equipment such as augers or specialized soil mixing tools.	Yes	Yes. Oxidation is suitable for the type of contaminant, and mixing methods are feasible considering the depth of impacts.
	Soil Mixing: <i>In-Situ</i> Chemical Reduction	Involves the application of additives such as zero-valent iron to a contaminated material (e.g. soil or sludge) to facilitate reductive processes. Mixing of is performed using heavy equipment such as augers or specialized soil mixing tools.	Yes	Yes. Chemical reduction is suitable for the type of contaminant, and injection methods are feasible considering the depth of impacts.
	Soil Mixing: Solidification and Stabilization	Stabilization involves the addition of reagents to a contaminated material (e.g. soil or sludge) to produce more chemically stable constituents. Solidification involves the addition of reagents to a contaminated material to impart physical/dimensional stability to contain contaminants in a solid product and reduce access by external agents (e.g. air, rainfall). Mixing of is performed using heavy equipment such as augers or specialized soil mixing tools.	No	No. Stability and movement of contamination are not drivers for remediation.
	Injection: Air Sparging	Injection of air into the subsurface to promote volatilization and subsequent removal of contaminants via vapor extraction.	No	No. The required vapor extraction component is not suitable.
	Injection: Colloidal Activated Carbon	Injection of colloidal organic carbon in the saturated zone via direct-push methods to sequester organic contaminants and promote biodegradation of the contaminants via reductive processes.	Yes	Yes. The investigation results indicated that natural attenuation via biodegradation is in progress and could be enhanced.
	Injection: Enhanced Aerobic Bioremediation	Application of nutrients and/or oxygen to the subsurface to accelerate naturally-occurring breakdown of contaminants via aerobic bacteria.	No	No. This option is not suitable due to the poor suitability of the technology for remediating the targeted COCs.
	Injection: Enhanced Reductive Dechlorination	Injection of an organic substrate to stimulate the growth of dehalogenating bacteria and, by extension, stimulate the degradation of chlorinated compounds via reductive dechlorination.	Yes	Yes. The investigation results indicated that natural attenuation via biodegradation is in progress and could be enhanced with the addition of dehalogenating microorganisms.
	Injection: <i>In-Situ</i> Chemical Reduction	Injection of chemically reductive additives such as zero-valent iron to promote degradation of contaminants via reductive processes.	Yes	Yes. Chemical reduction is suitable for the type of contaminant, and injection methods are feasible considering the depth of impacts.
	Injection: Ozone Sparging	Combines air sparging with in-situ chemical oxidation. Ozone is added to air sparging injection stream to facilitate oxidative destruction of contaminants.	Yes	No. The required vapor extraction component is not suitable.
	Injection: <i>In-Situ</i> Chemical Oxidation	Injection of chemically oxidative groundwater additives such as hydrogen peroxide, potassium permanganate, or persulfates to destroy contaminants.	Yes	Yes. Oxidation is suitable for the type of contaminant, and injection methods are feasible considering the depth of impacts and pilot test results.
Phytoremediation	Use of plants to remove, contain, and/or degrade contaminants.	No	No. This option is not applicable due to the depth of residual impacts.	
Removal Action	Pump-and-Treat	Removal of contaminated groundwater via pumping and subsequent treatment.	No	No. This option is not suitable due to the size of the site and relatively compact plume.
	Excavation and Disposal	Removal of contaminated soil using excavation equipment.	Yes	Yes. The site is vacant and readily accessible to excavation equipment.
Containment	Physical Barrier or Permeable Reactive Barrier (PRB)	Linear placement of sheet piling or chemically reductive additives such as zero-valent iron or other compounds or solutions to prevent contamination from migrating outside a given area. PRB installed by trenching or jetting.	No	No. There is no definite and predictable groundwater flow direction.

Note:
Highlighted boxes indicate that this technology was selected for further evaluation

TABLE 2
REMEDIAL ACTIONS OPTIONS EVALUATION MATRIX

Wagner Property
401 N. Wisconsin Street
Elkhorn, Wisconsin

General Response Action	Remedial Action	Description	Effectiveness	Ability to Implement	Restoration Timeframe	Economic Feasibility	Cumulative Points
<i>In-Situ</i> Remediation	Multi-Phase Extraction	Removal of contaminants in liquid and vapor phases via vacuum extraction.	3	5	3	2	13
	Thermal Desorption	Removal of contaminants in aqueous, liquid, and sorbed phases by heating and volatilization, with subsequent vacuum extraction.	5	4	5	1	15
	Soil Mixing: <i>In-Situ</i> Chemical Oxidation	Involves the addition of oxidation reagents to a contaminated material (e.g. soil or sludge) to facilitate oxidative destruction of contaminants. Mixing of is performed using heavy equipment such as augers or specialized soil mixing tools.	4	5	4	3	16
	Soil Mixing: <i>In-Situ</i> Chemical Reduction	Involves the application of additives such as zero-valent iron to a contaminated material (e.g. soil or sludge) to facilitate reductive processes. Mixing of is performed using heavy equipment such as augers or specialized soil mixing tools.	4	5	4	3	16
	Injection: Colloidal Activated Carbon	Injection of colloidal organic carbon in the saturated zone via direct-push methods to sequester organic contaminants and promote biodegradation of the contaminants via reductive processes.	3	5	3	3	14
	Injection: Enhanced Reductive Dechlorination	Injection of an organic substrate to stimulate the growth of dehalogenating bacteria and, by extension, stimulate the degradation of chlorinated compounds via reductive dechlorination.	3	5	3	4	15
	Injection: <i>In-Situ</i> Chemical Reduction	Injection of chemically reductive additives such as zero-valent iron to promote degradation of contaminants via reductive processes.	4	5	3	4	16
	Injection: <i>In-Situ</i> Chemical Oxidation	Injection of chemically oxidative groundwater additives such as hydrogen peroxide, potassium permanganate, or persulfates to destroy contaminants.	4	5	3	4	16
Removal Action	Excavation and Disposal	Removal of contaminated soil using excavation equipment.	4	5	5	2	16

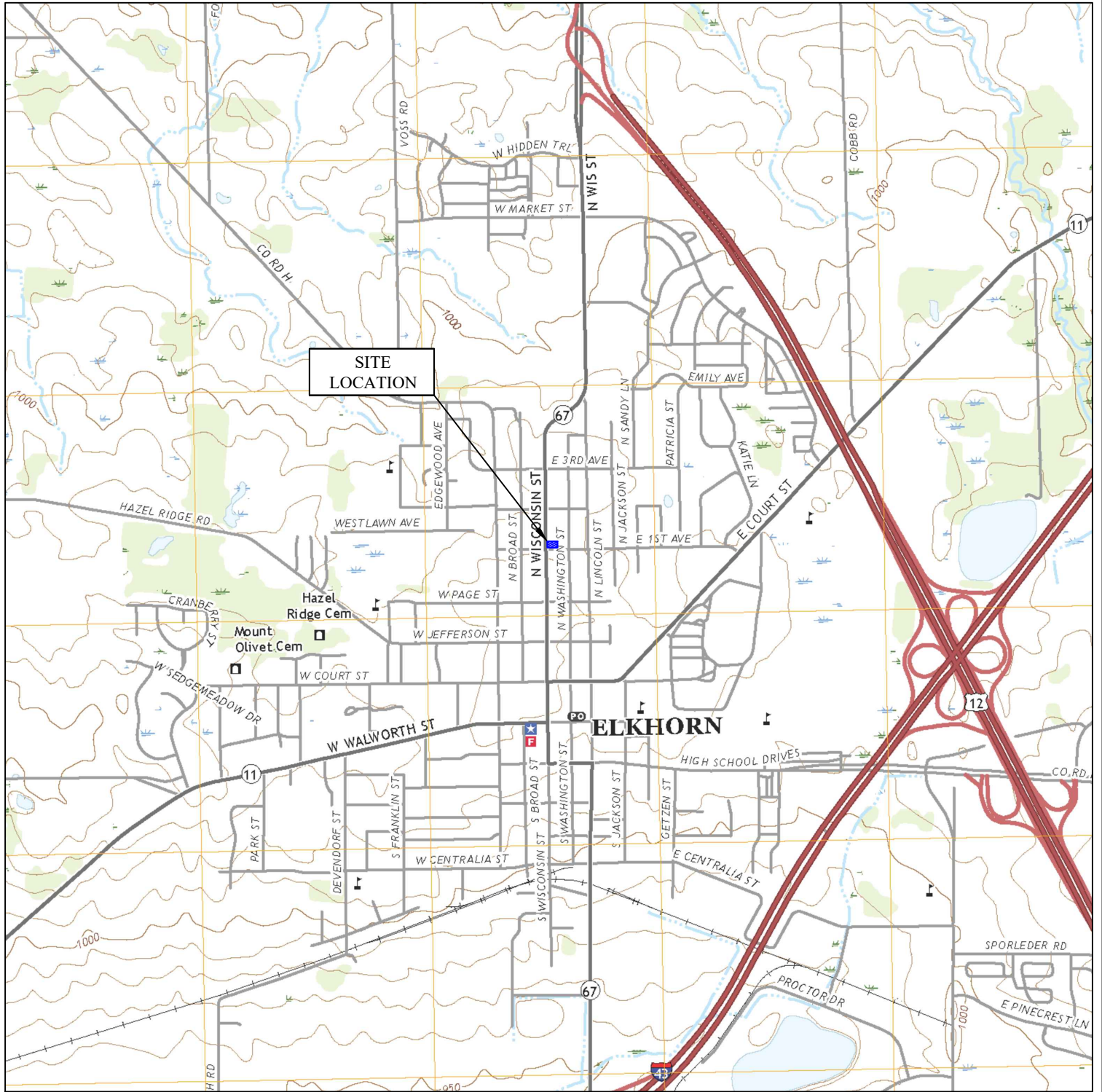
Notes:

Scores assigned represent the relative suitability of the process option for the given criteria, with 0 representing the lowest suitability and 5 representing the highest suitability.

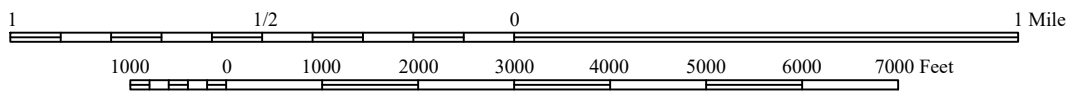
Relative Ranking (all criteria but cost): 0 = Very low to none; 1 = Low; 2 = Low to moderate; 3 = Moderate; 4 = Moderate to high; 5 = High

Relative Ranking for Cost: 0 = High; 1 = Moderate to high; 2 = Moderate; 3 = Low to moderate; 4 = Low; 5 = Very low to none

FIGURES



Scale 1:24,000



Source: US Geological Survey, Elkhorn, Wisconsin 7.5 Minute Series, 2018

No.	Date	Revision	Approved

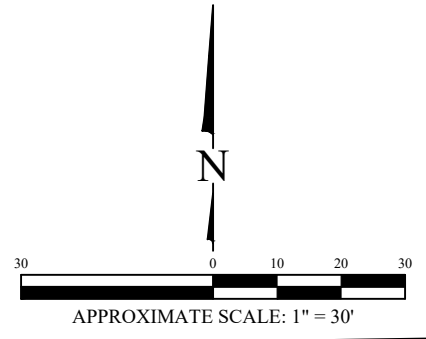
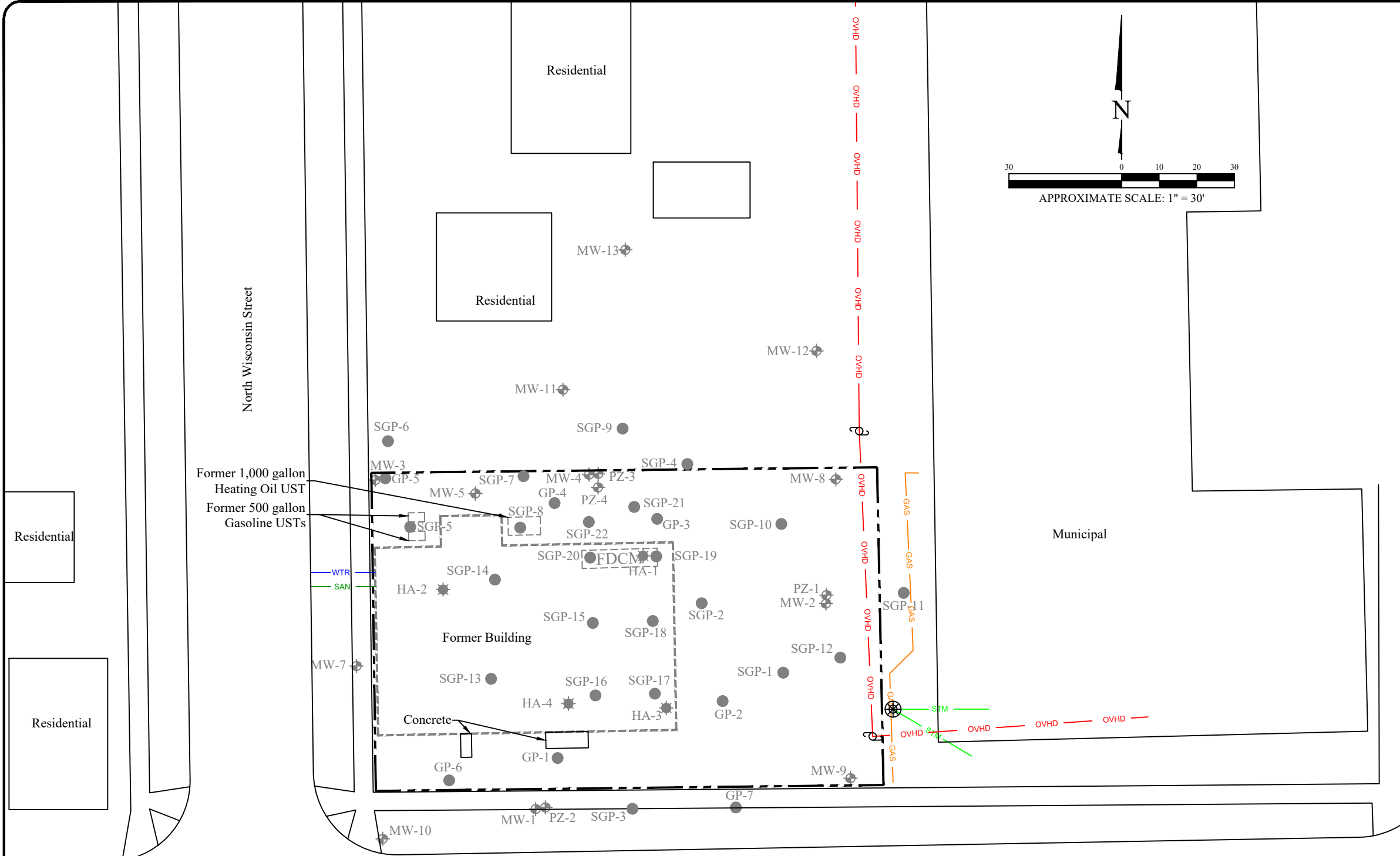


Date: 11/18/19
 Designed: EB
 Drawn: EB
 Checked: BK
 DWG file: 6526-0052

SITE TOPOGRAPHIC MAP

Wagner Property
 401 North Wisconsin Street
 Elkhorn, Wisconsin

Figure
 1
 Project
 6526



Legend

- Property boundary
- GAS Underground gas utility line
- WTR Underground water utility line
- SAN Underground sanitary utility line
- STM Underground storm utility line
- OVHD Over head electrical utility line
- Utility Pole
- Manhole
- FDCM Former dry cleaning machine location
- MW-1 Monitoring well (By Others)
- GP-1 Soil boring (By Others)
- HA-1 Hand Auger (By Others)

Former 1,000 gallon Heating Oil UST
Former 500 gallon Gasoline USTs

Residential

Residential

Municipal

Former Building

Concrete

East First Avenue

Commercial

Commercial

Commercial

SITE MAP

Wagner Property
401 North Wisconsin Street
Elkhorn, Wisconsin

Date:	11/18/19
Designed:	EB
Drawn:	EB
Checked:	BK
DWG file:	6526-0053



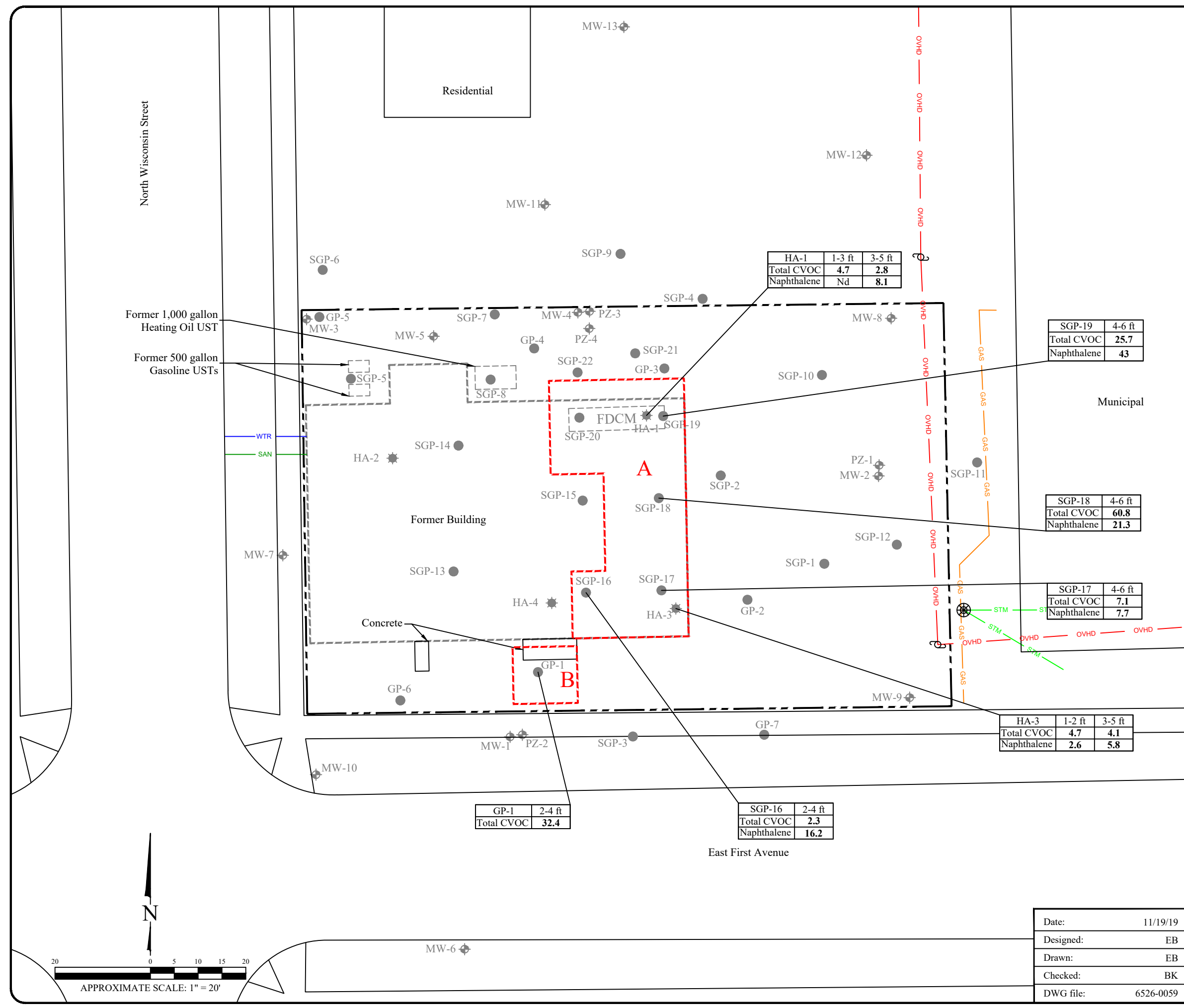
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EnviroForensics.com

Figure	2
Project	6526

Legend

- Property boundary
- GAS Underground gas utility line
- WTR Underground water utility line
- SAN Underground sanitary utility line
- STM Underground storm utility line
- OVHD Over head electrical utility line
- Utility Pole
- Manhole
- FDCM Former dry cleaning machine location
- MW-1 Monitoring well (By Others)
- GP-1 Soil boring (By Others)
- HA-1 Hand Auger (By Others)
- Proposed excavation areas A and B

- Note:
1. Bold values exceed laboratory detection levels
 2. Units in milligrams per kilogram (mg/kg)
 3. CVOCs = Chlorinated Volatile Organic Compounds
 4. Constituent concentrations obtained from the supplemental Site Investigation Report
 5. Nd = Not detected
 6. See figures in Appendix A for additional data



HA-1	1-3 ft	3-5 ft
Total CVOC	4.7	2.8
Naphthalene	Nd	8.1

SGP-19	4-6 ft
Total CVOC	25.7
Naphthalene	43

SGP-18	4-6 ft
Total CVOC	60.8
Naphthalene	21.3

SGP-17	4-6 ft
Total CVOC	7.1
Naphthalene	7.7

HA-3	1-2 ft	3-5 ft
Total CVOC	4.7	4.1
Naphthalene	2.6	5.8

GP-1	2-4 ft
Total CVOC	32.4

SGP-16	2-4 ft
Total CVOC	2.3
Naphthalene	16.2

PROPOSED EXCAVATION AREA LAYOUT

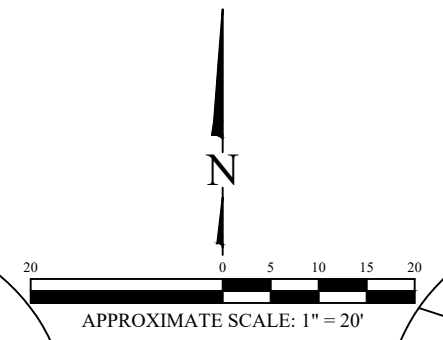
Wagner Property
401 North Wisconsin Street
Elkhorn, Wisconsin

Date:	11/19/19
Designed:	EB
Drawn:	EB
Checked:	BK
DWG file:	6526-0059



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Figure	3
Project	6526



North Wisconsin Street

Residential

Municipal

East First Avenue





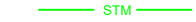








Former 1,000 gallon Heating Oil UST

Former 500 gallon Gasoline USTs

Former Building

Concrete

Legend

-  Property boundary
-  GAS Underground gas utility line
-  WTR Underground water utility line
-  SAN Underground sanitary utility line
-  STM Underground storm utility line
-  OVHD Over head electrical utility line
-  Utility Pole
-  Manhole
-  FDCM Former dry cleaning machine location
-  MW-1 Monitoring well (By Others)
-  GP-1 Soil boring (By Others)
-  HA-1 Hand Auger (By Others)
-  MW-14 Proposed monitoring well locations



APPROXIMATE SCALE: 1" = 20'

PROPOSED MONITORING WELL LOCATIONS

Wagner Property
401 North Wisconsin Street
Elkhorn, Wisconsin

Date:	11/19/19
Designed:	EB
Drawn:	EB
Checked:	BK
DWG file:	6526-0060



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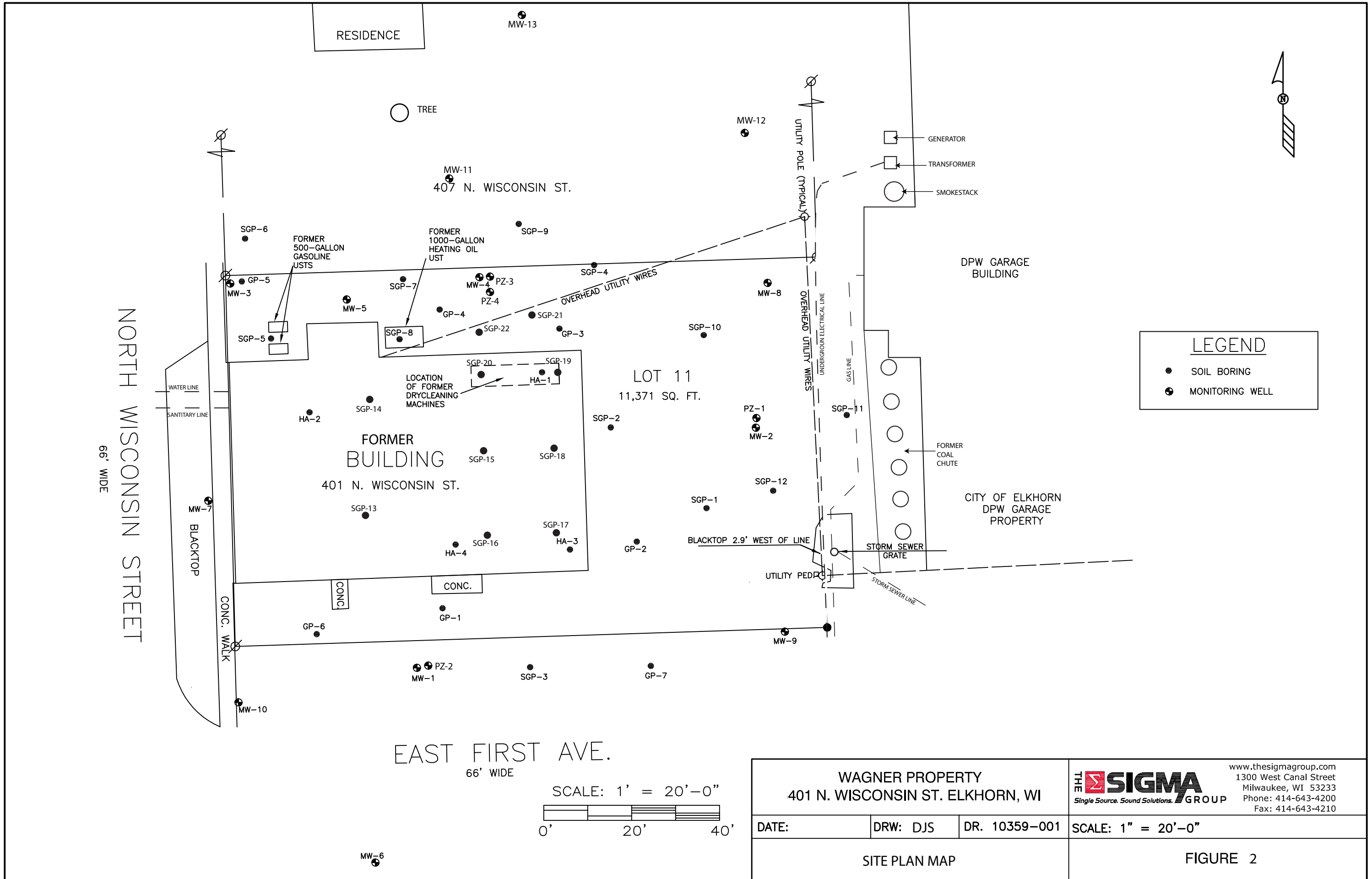
Figure	4
Project	6526



APPENDIX A

FIGURES FROM THE SUPPLEMENTAL SITE INVESTIGATION REPORT

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LEGEND

- SOIL BORING
- ⊕ MONITORING WELL

EAST FIRST AVE.
66' WIDE

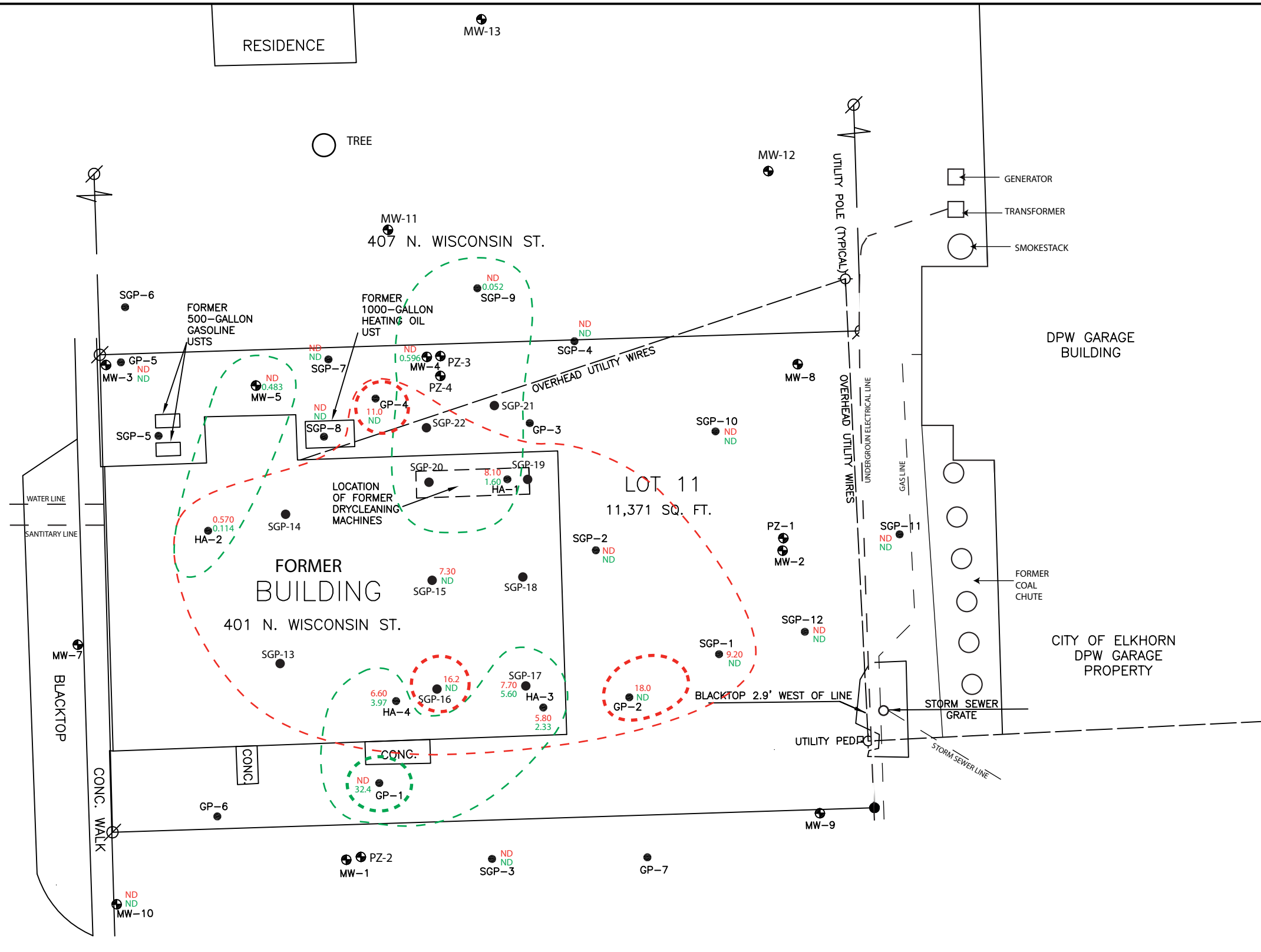
SCALE: 1" = 20'-0"

0' 20' 40'

<p>WAGNER PROPERTY 401 N. WISCONSIN ST. ELKHORN, WI</p>		<p>THE SIGMA GROUP www.thesigmagroup.com 1300 West Canal Street Milwaukee, WI 53233 Phone: 414-643-4200 Fax: 414-643-4210</p>	
DATE:	DRW: DJS	DR. 10359-001	SCALE: 1" = 20'-0"
<p>SITE PLAN MAP</p>			<p>FIGURE 2</p>

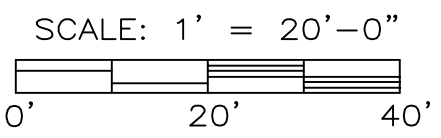
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NORTH WISCONSIN STREET
66' WIDE



LEGEND	
●	SOIL BORING
⊕	MONITORING WELL
- - -	NAPHTHALENE > WDNR RCLs
- - -	NAPHTHALENE > 10 ppm
- - -	CVOCs > WDNR RCLs
- - -	CVOCs > 10 ppm
ND/ND	NOT SAMPLED
9.70	NAPHTHALENE CONCENTRATION (ppm)
15.7	CVOC CONCENTRATION (ppm)

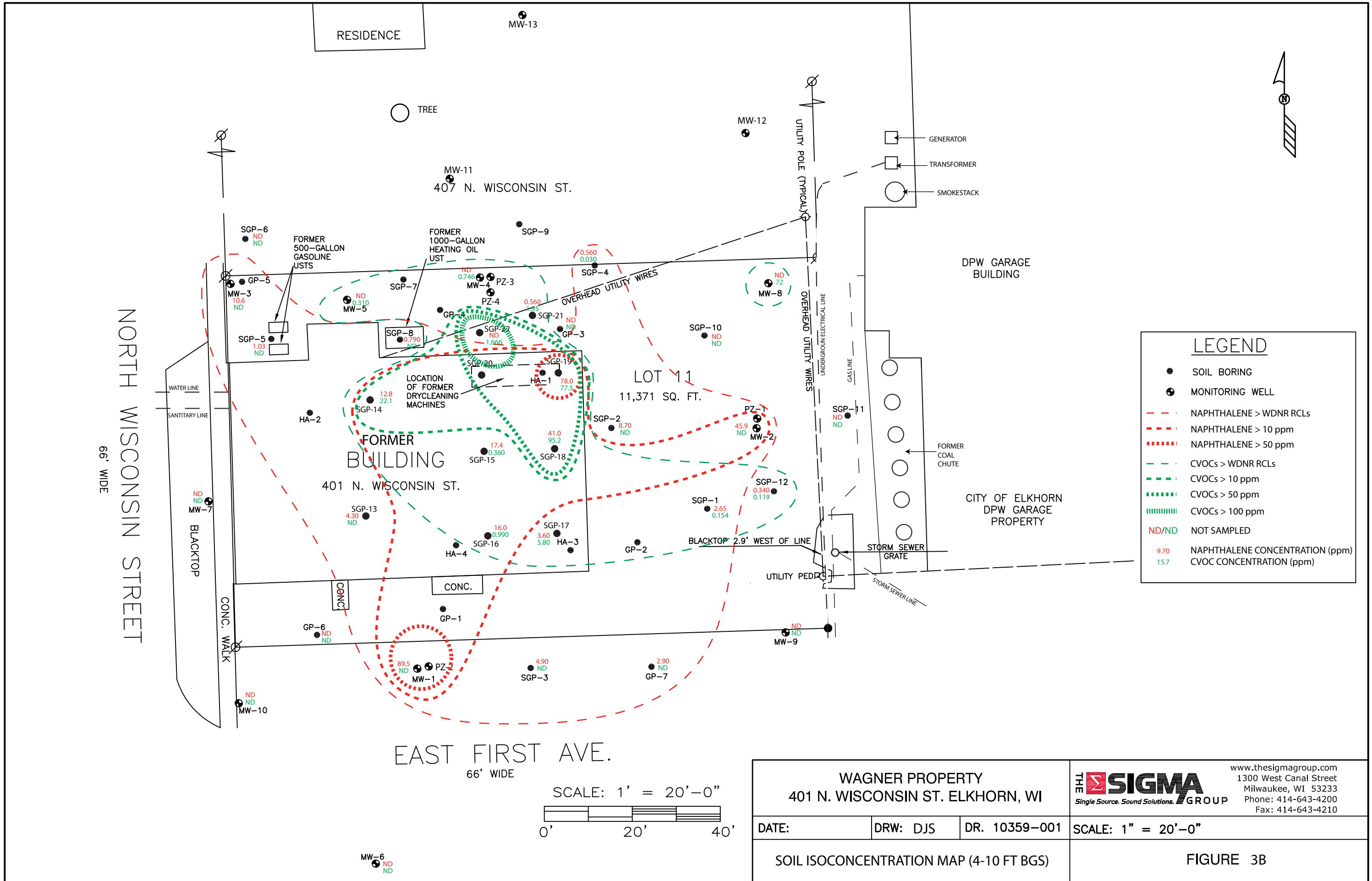
EAST FIRST AVE.
66' WIDE



WAGNER PROPERTY 401 N. WISCONSIN ST. ELKHORN, WI		THE SIGMA GROUP <small>Single Source. Sound Solutions.</small> www.thesigmagroup.com 1300 West Canal Street Milwaukee, WI 53233 Phone: 414-643-4200 Fax: 414-643-4210	
DATE:	DRW: DJS	DR. 10359-001	SCALE: 1" = 20'-0"
SOIL ISOCONCENTRATION MAP (0-4 FT BGS)			FIGURE 3A

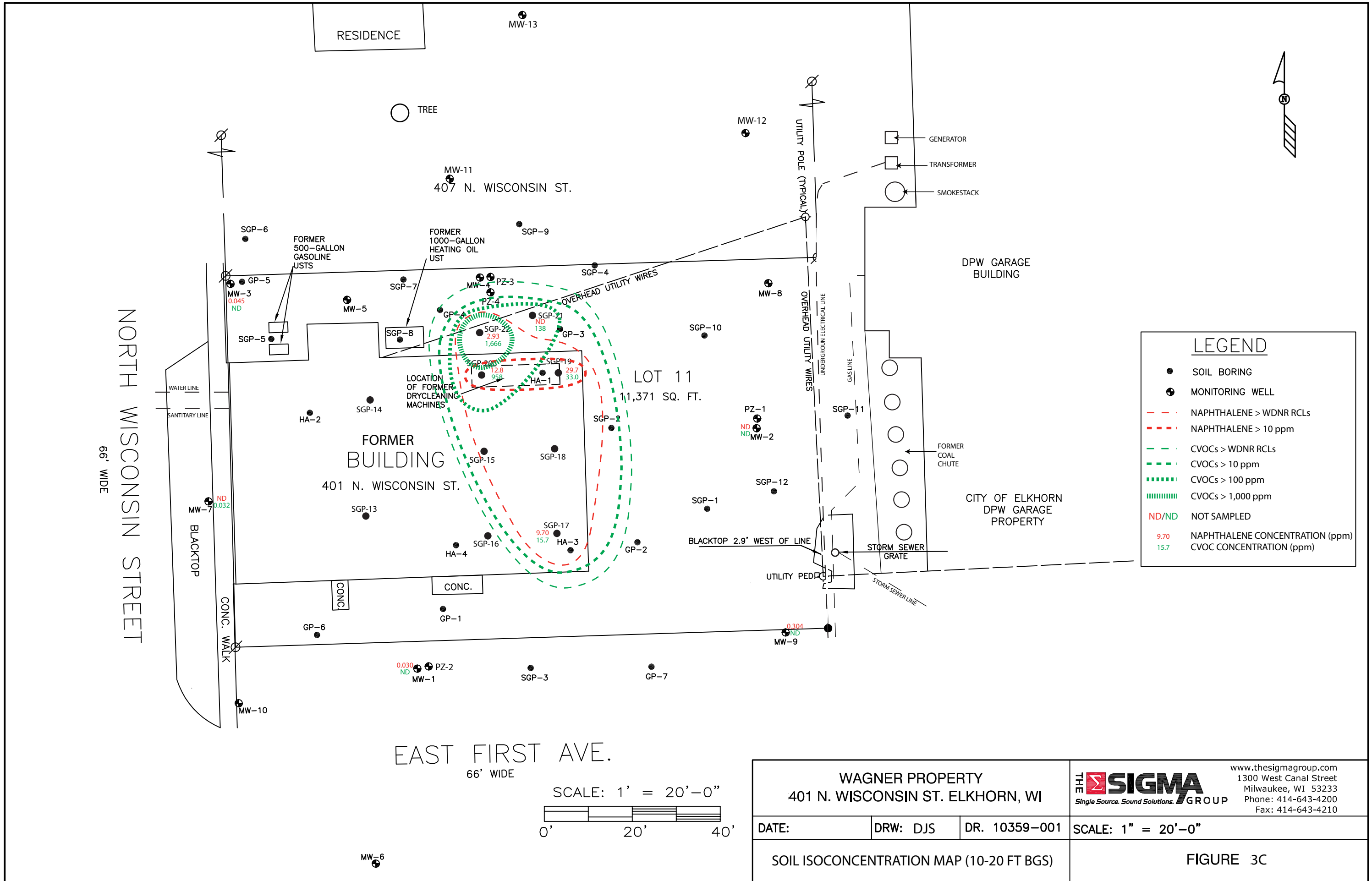
MW-6 ND
ND

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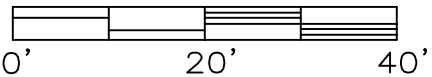


LEGEND	
●	SOIL BORING
⊕	MONITORING WELL
- - -	NAPHTHALENE > WDNR RCLs
- - -	NAPHTHALENE > 10 ppm
- - -	CVOCS > WDNR RCLs
- - -	CVOCS > 10 ppm
- - -	CVOCS > 100 ppm
- - -	CVOCS > 1,000 ppm
ND/ND	NOT SAMPLED
9.70	NAPHTHALENE CONCENTRATION (ppm)
15.7	CVOC CONCENTRATION (ppm)

EAST FIRST AVE.

66' WIDE

SCALE: 1' = 20'-0"



WAGNER PROPERTY
401 N. WISCONSIN ST. ELKHORN, WI

THE SIGMA GROUP
Single Source. Sound Solutions.
www.thesigmagroup.com
1300 West Canal Street
Milwaukee, WI 53233
Phone: 414-643-4200
Fax: 414-643-4210

DATE: DRW: DJS DR. 10359-001

SCALE: 1" = 20'-0"

SOIL ISOCONCENTRATION MAP (10-20 FT BGS)

FIGURE 3C

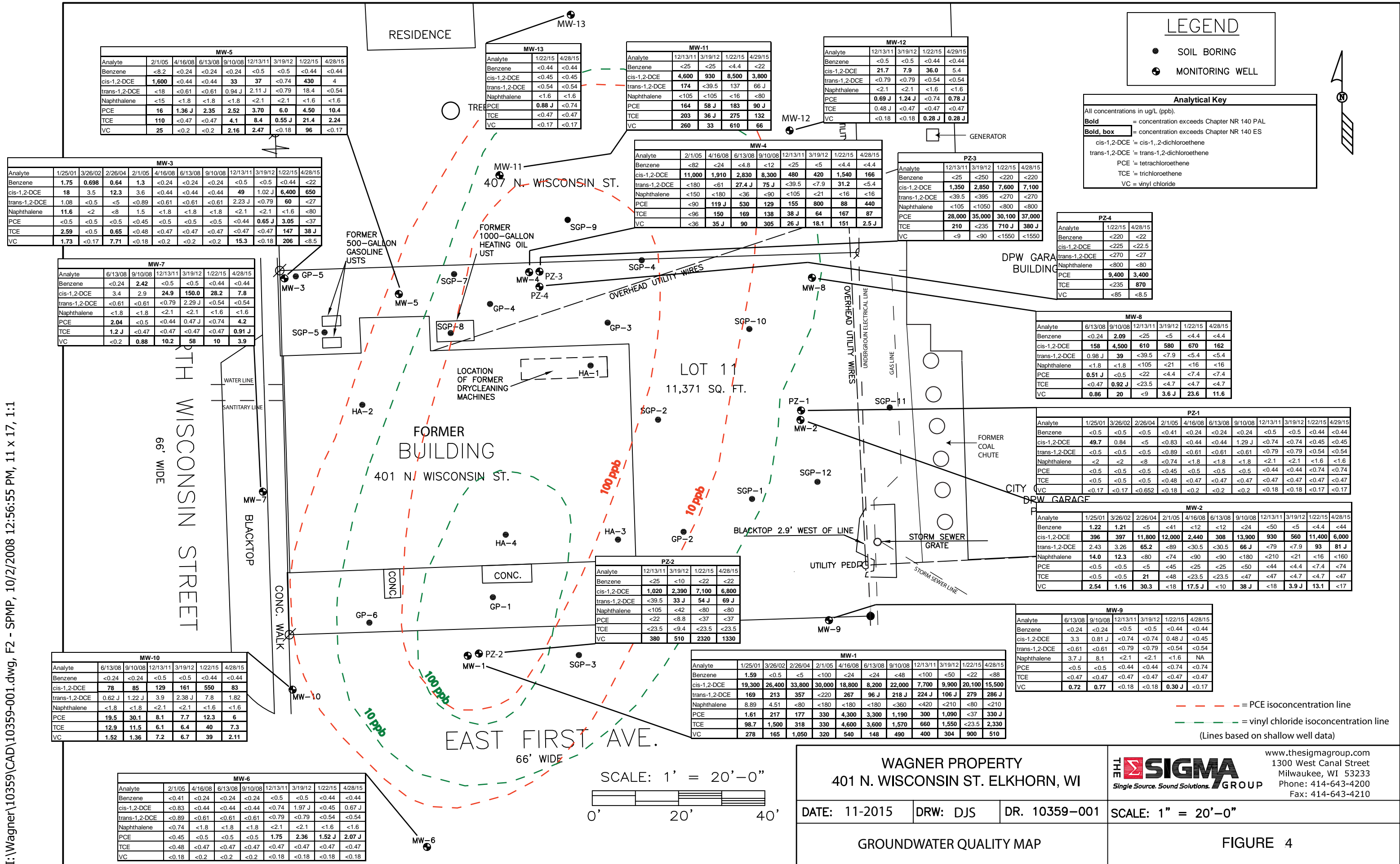
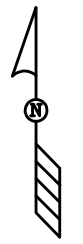
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LEGEND

- SOIL BORING
- MONITORING WELL

Analytical Key

All concentrations in ug/L (ppb).
Bold = concentration exceeds Chapter NR 140 PAL
Bold, box = concentration exceeds Chapter NR 140 ES
 cis-1,2-DCE = cis-1,2-dichloroethene
 trans-1,2-DCE = trans-1,2-dichloroethene
 PCE = tetrachloroethene
 TCE = trichloroethene
 VC = vinyl chloride



Analyte	2/1/05	4/16/08	6/13/08	9/10/08	12/13/11	3/19/12	1/22/15	4/28/15
Benzene	<8.2	<0.24	<0.24	<0.24	<0.5	<0.5	<0.44	<0.44
cis-1,2-DCE	1,600	<0.44	<0.44	33	37	<0.74	430	4
trans-1,2-DCE	<18	<0.61	<0.61	0.94 J	2.11 J	<0.79	18.4	<0.54
Naphthalene	<15	<1.8	<1.8	<1.8	<2.1	<2.1	<1.6	<1.6
PCE	16	1.36 J	2.35	2.52	3.70	6.0	4.50	10.4
TCE	110	<0.47	<0.47	4.1	8.4	0.55 J	21.4	2.24
VC	25	<0.2	<0.2	2.16	2.47	<0.18	96	<0.17

Analyte	1/22/15	4/28/15
Benzene	<0.44	<0.44
cis-1,2-DCE	<0.45	<0.45
trans-1,2-DCE	<0.54	<0.54
Naphthalene	<1.6	<1.6
PCE	0.88 J	<0.74
TCE	<0.47	<0.47
VC	<0.17	<0.17

Analyte	12/13/11	3/19/12	1/22/15	4/29/15
Benzene	<25	<25	<4.4	<22
cis-1,2-DCE	4,600	930	8,500	3,800
trans-1,2-DCE	174	<39.5	137	66 J
Naphthalene	<105	<105	<16	<80
PCE	164	58 J	183	90 J
TCE	203	36 J	275	132
VC	260	33	610	66

Analyte	12/13/11	3/19/12	1/22/15	4/29/15
Benzene	<0.5	<0.5	<0.44	<0.44
cis-1,2-DCE	21.7	7.9	36.0	5.4
trans-1,2-DCE	<0.79	<0.79	<0.54	<0.54
Naphthalene	<2.1	<2.1	<1.6	<1.6
PCE	0.69 J	1.24 J	<0.74	0.78 J
TCE	0.48 J	<0.47	<0.47	<0.47
VC	<0.18	<0.18	0.28 J	0.28 J

Analyte	2/1/05	4/16/08	6/13/08	9/10/08	12/13/11	3/19/12	1/22/15	4/28/15
Benzene	<82	<24	<4.8	<12	<25	<5	<4.4	<4.4
cis-1,2-DCE	11,000	1,910	2,830	8,300	480	420	1,540	166
trans-1,2-DCE	<180	<61	27.4 J	75 J	<39.5	<7.9	31.2	<5.4
Naphthalene	<150	<180	<36	<90	<105	<21	<16	<16
PCE	<90	119 J	530	129	155	800	88	440
TCE	<96	150	169	138	38 J	64	167	87
VC	<36	35 J	90	305	26 J	18.1	151	2.5 J

Analyte	12/13/11	3/19/12	1/22/15	4/28/15
Benzene	<25	<250	<220	<220
cis-1,2-DCE	1,350	2,850	7,600	7,100
trans-1,2-DCE	<39.5	<395	<270	<270
Naphthalene	<105	<1050	<800	<800
PCE	28,000	35,000	30,100	37,000
TCE	210	<235	710 J	380 J
VC	<9	<90	<1550	<1550

Analyte	1/22/15	4/28/15
Benzene	<220	<22
cis-1,2-DCE	<225	<22.5
trans-1,2-DCE	<270	<27
Naphthalene	<800	<80
PCE	9,400	3,400
TCE	<235	870
VC	<85	<8.5

Analyte	6/13/08	9/10/08	12/13/11	3/19/12	1/22/15	4/28/15
Benzene	<0.24	2.09	<25	<5	<4.4	<4.4
cis-1,2-DCE	158	4,500	610	580	670	162
trans-1,2-DCE	0.98 J	39	<39.5	<7.9	<5.4	<5.4
Naphthalene	<1.8	<1.8	<105	<21	<16	<16
PCE	0.51 J	<0.5	<22	<4.4	<7.4	<7.4
TCE	<0.47	0.92 J	<23.5	<4.7	<4.7	<4.7
VC	0.86	20	<9	3.6 J	23.6	11.6

Analyte	1/25/01	3/26/02	2/26/04	2/1/05	4/16/08	6/13/08	9/10/08	12/13/11	3/19/12	1/22/15	4/29/15
Benzene	<0.5	<0.5	<0.5	<0.4	<0.24	<0.24	<0.5	<0.5	<0.5	<0.44	<0.44
cis-1,2-DCE	49.7	0.84	<5	<0.83	<0.44	<0.44	1.29 J	<0.74	<0.74	<0.45	<0.45
trans-1,2-DCE	<0.5	<0.5	<0.5	<0.89	<0.61	<0.61	<0.61	<0.79	<0.79	<0.54	<0.54
Naphthalene	<2	<2	<8	<0.74	<1.8	<1.8	<1.8	<1.8	<2.1	<1.6	<1.6
PCE	<0.5	<0.5	<0.5	<0.45	<0.5	<0.5	<0.5	<0.44	<0.44	<0.74	<0.74
TCE	<0.5	<0.5	<0.5	<0.48	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47
VC	<0.17	<0.17	<0.652	<0.18	<0.2	<0.2	<0.2	<0.18	<0.18	<0.17	<0.17

Analyte	1/25/01	3/26/02	2/26/04	2/1/05	4/16/08	6/13/08	9/10/08	12/13/11	3/19/12	1/22/15	4/28/15
Benzene	1.22	1.21	<5	<41	<12	<12	<24	<50	<5	<4.4	<4.4
cis-1,2-DCE	396	397	11,800	12,000	2,440	308	13,900	930	560	11,400	6,000
trans-1,2-DCE	2.43	3.26	65.2	<89	<30.5	<30.5	66 J	<79	<7.9	93	81 J
Naphthalene	14.0	12.3	<80	<74	<90	<90	<180	<210	<21	<16	<160
PCE	<0.5	<0.5	<5	<45	<25	<25	<50	<44	<4.4	<7.4	<7.4
TCE	<0.5	<0.5	21	<48	<23.5	<23.5	<47	<47	<4.7	<4.7	<4.7
VC	2.54	1.16	30.3	<18	17.5 J	<10	38 J	<18	3.9 J	13.1	<17

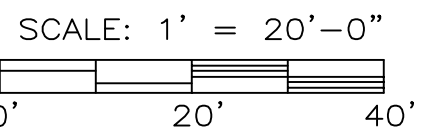
Analyte	6/13/08	9/10/08	12/13/11	3/19/12	1/22/15	4/28/15
Benzene	<0.24	<0.24	<0.5	<0.5	<0.44	<0.44
cis-1,2-DCE	3.3	0.81 J	<0.74	<0.74	0.48 J	<0.45
trans-1,2-DCE	<0.61	<0.61	<0.79	<0.79	<0.54	<0.54
Naphthalene	3.7 J	8.1	<2.1	<2.1	<1.6	NA
PCE	<0.5	<0.5	<0.44	<0.44	<0.74	<0.74
TCE	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47
VC	0.72	0.77	<0.18	<0.18	0.30 J	<0.17

Analyte	6/13/08	9/10/08	12/13/11	3/19/12	1/22/15	4/28/15
Benzene	<0.24	<0.24	<0.5	<0.5	<0.44	<0.44
cis-1,2-DCE	78	85	129	161	550	83
trans-1,2-DCE	0.62 J	1.22 J	3.9	2.38 J	7.8	1.82
Naphthalene	<1.8	<1.8	<2.1	<2.1	<1.6	<1.6
PCE	19.5	30.1	8.1	7.7	12.3	6
TCE	12.9	11.5	6.1	6.4	40	7.3
VC	1.52	1.36	7.2	6.7	39	2.11

Analyte	12/13/11	3/19/12	1/22/15	4/28/15
Benzene	<25	<10	<22	<22
cis-1,2-DCE	1,020	2,390	7,100	6,800
trans-1,2-DCE	<39.5	33 J	54 J	69 J
Naphthalene	<105	<42	<80	<80
PCE	<22	<8.8	<37	<37
TCE	<23.5	<9.4	<23.5	<23.5
VC	380	510	2320	1330

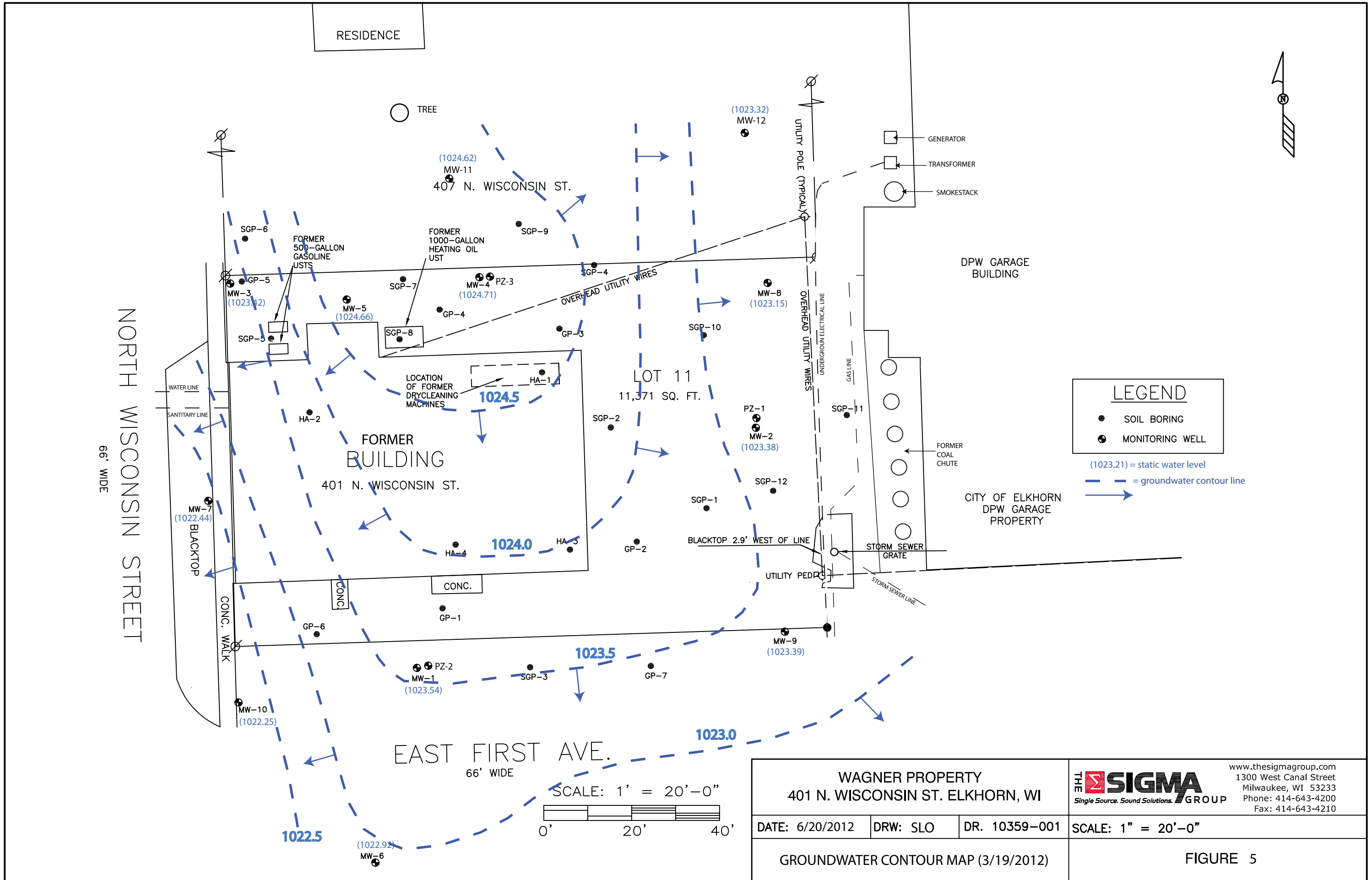
Analyte	1/25/01	3/26/02	2/26/04	2/1/05	4/16/08	6/13/08	9/10/08	12/13/11	3/19/12	1/22/15	4/28/15
Benzene	1.59	<0.5	<5	<100	<24	<48	<100	<50	<22	<88	
cis-1,2-DCE	19,300	26,400	33,800	30,000	18,800	8,200	22,000	7,700	9,900	20,100	15,500
trans-1,2-DCE	169	213	357	<220	267	96 J	218 J	224 J	106 J	279	286 J
Naphthalene	8.89	4.51	<80	<180	<180	<180	<360	<420	<210	<80	<210
PCE	1.61	217	177	330	4,300	3,300	1,190	300	1,090	<37	330 J
TCE	98.7	1,500	318	330	4,600	3,600	1,570	660	1,550	<23.5	2,330
VC	278	165	1,050	320	540	148	490	400	304	900	510

Analyte	2/1/05	4/16/08	6/13/08	9/10/08	12/13/11	3/19/12	1/22/15	4/28/15
Benzene	<0.41	<0.24	<0.24	<0.24	<0.5	<0.5	<0.44	<0.44
cis-1,2-DCE	<0.83	<0.44	<0.44	<0.44	<0.74	1.97 J	<0.45	0.67 J
trans-1,2-DCE	<0.89	<0.61	<0.61	<0.61	<0.79	<0.79	<0.54	<0.54
Naphthalene	<0.74	<1.8	<1.8	<1.8	<2.1	<2.1	<1.6	<1.6
PCE	<0.45	<0.5	<0.5	<0.5	1.75	2.36	1.52 J	2.07 J
TCE	<0.48	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47
VC	<0.18	<0.2	<0.2	<0.2	<0.18	<0.18	<0.18	<0.18



WAGNER PROPERTY 401 N. WISCONSIN ST. ELKHORN, WI		www.thesigmagroup.com 1300 West Canal Street Milwaukee, WI 53233 Phone: 414-643-4200 Fax: 414-643-4210
DATE: 11-2015	DRW: DJS	DR. 10359-001
GROUNDWATER QUALITY MAP		SCALE: 1" = 20'-0" FIGURE 4

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NORTH WISCONSIN STREET
66' WIDE

RESIDENCE

TREE

(1024.62) MW-11
407 N. WISCONSIN ST.

FORMER 500-GALLON GASOLINE USTS

FORMER 1000-GALLON HEATING OIL UST

LOT 11
11,371 SQ. FT.

FORMER BUILDING
401 N. WISCONSIN ST.

LOCATION OF FORMER DRYCLEANING MACHINES

DPW GARAGE BUILDING

FORMER COAL CHUTE

CITY OF ELKHORN DPW GARAGE PROPERTY

WATER LINE
SANTITARY LINE

MW-7 (1022.44)

BLACKTOP

CONC. WALK

MW-10 (1022.25)

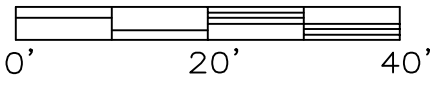
1022.5

(1022.92) MW-6

PZ-2 MW-1 (1023.54)

EAST FIRST AVE.
66' WIDE

SCALE: 1' = 20'-0"



1023.5

1023.0

1024.0

1024.5

(1023.32) MW-12

MW-8 (1023.15)

PZ-1 MW-2 (1023.38)

BLACKTOP 2.9' WEST OF LINE

MW-9 (1023.39)

GENERATOR
TRANSFORMER
SMOKESTACK

SGP-11

GAS LINE

STORM SEWER GRATE

STORM SEWER LINE

UTILITY PED

UTILITY POLE (TYPICAL)

OVERHEAD UTILITY WIRES
OVERHEAD ELECTRICAL LINE

OVERHEAD UTILITY WIRES

GP-3

SGP-2

GP-2

GP-7

MW-4 PZ-3 (1024.71)

SGP-7

MW-5 (1024.66)

SGP-8

HA-2

MW-3 (1023.42)

GP-6

SGP-6

GP-5

SGP-5

SGP-9

GP-4

GP-4

HA-1

HA-4

CONC.

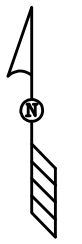
GP-1

SGP-3

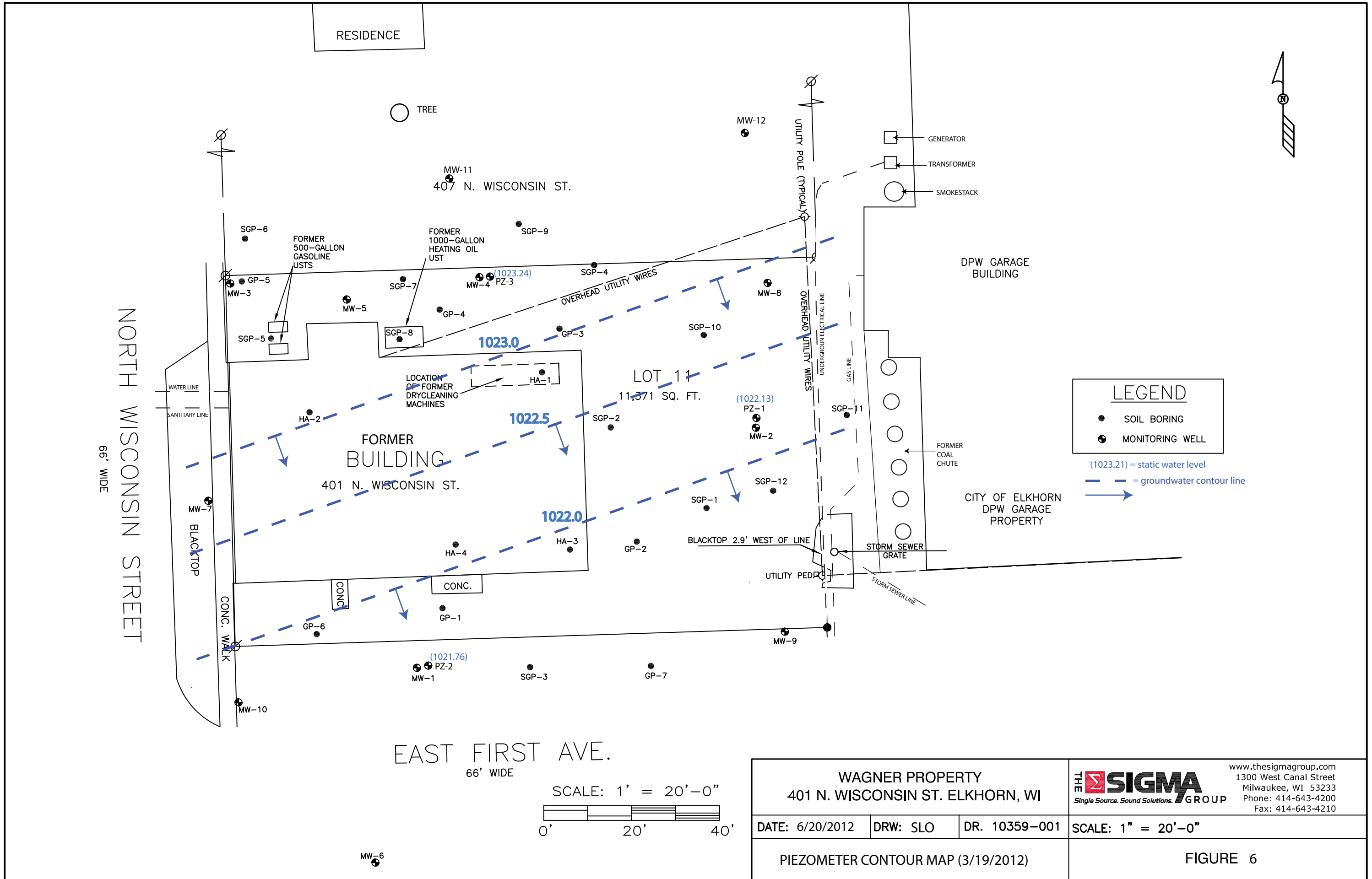
0'

20'

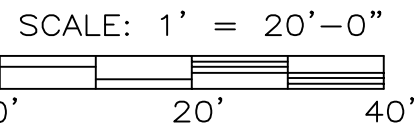
40'



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EAST FIRST AVE.
66' WIDE



<p>WAGNER PROPERTY 401 N. WISCONSIN ST. ELKHORN, WI</p>		<p>THE SIGMA GROUP Single Source. Sound Solutions.</p>	<p>www.thesigmagroup.com 1300 West Canal Street Milwaukee, WI 53233 Phone: 414-643-4200 Fax: 414-643-4210</p>
DATE: 6/20/2012	DRW: SLO	DR. 10359-001	SCALE: 1" = 20'-0"
PIEZOMETER CONTOUR MAP (3/19/2012)			FIGURE 6