MSA
PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL
DEVELOPMENT • ENVIRONMENTAL

December 21, 2011

Mr. Kevin McKnight
Department of Natural Resources
625 East County Road Y, Suite 700
Oshkosh, WI 54901

Re: SVE System Startup and Status Report
Winners Circle Auto, Oxford, Wisconsin

BRRTS # 03-39-168015
PECFA # 53952-0150-15

Dear Kevin:

The soil vapor extraction system at this site was started on November 15, 2011. A table of operation and monitoring data for the system is attached. The VOC discharge rate ranged from 0.67 to 1.1 pounds per hour during the first month of operation. The only problem encountered was accumulation of water in the demister tank, but this has not resulted in shutdown of the system to date. Approximately 266 pounds of VOCs were removed during this period. An estimated one pound of benzene was removed. A map showing the location of the soil vapor extraction wells and system layout is attached. A copy of the Operation and Maintenance Manual for the equipment is also attached.

Groundwater samples were collected prior to startup on November 15, 2011. The results have been compiled with previous results on an attached table. Results are consistent with previous analyses except at monitoring well MW-7A, the furthest downgradient well (and a piezometer well). In this well an increasing trend for MTBE is present, and for the first time the concentration exceeded the Wisconsin Administrative Code NR 140 enforcement standard for MTBE, with a concentration of 95 ug/L. Note that a strong downward vertical gradient is present in the MW-7/MW-7A well nest.

At MW-3, 0.04 feet of free product was detected on November 15, 2011. No free product was detected at MW-2, which had one previous detection of product. Groundwater levels were slightly elevated in November 2011.

The groundwater flow direction on November 15, 2011 was to the southwest towards Neenah Creek, which is consistent with previous measurements.

The next system status report will be submitted in approximately six months, in June 2012. During this period, system operation will continue. Quarterly groundwater samples will be collected in February and May 2012. Free product measurements at MW-2 and MW-3 will be made monthly during the system checks.

Please call if you have any questions.

Sincerely,

MSA Professional Services, Inc.

Jayne A. Englebert

Jayne A. Englebert, P.G.
Senior Hydrogeologist

JAE:bkm
Enc.
cc: Terry Berndt, Owner
Gena Larson, Department of Safety and Professional Services
Kevin Olson, MSA

OPERATION, MAINTENANCE, MONITORING AND OPTIMIZATION REPORTING OF SOIL AND GROUNDWATER REMEDIATION SYSTEMS

PURPOSE AND APPLICABILITY OF THIS FORM: Completion of this form is required under s. NR 724.13(e), Wis. Adm. Code. Use of this form is mandatory. Failure to submit this form as require is a violation of s. NR 724.13, Wis. Adm. Code, and is subject to the penalties in s. 144.99, Wis. Stats. This form must be submitted every six months for active soil and groundwater remediation projects and every twelve months for passive (natural attenuation) remediation projects that are regulated under the NR 700 series of Wis. Adm. Code. Specifically, for sites meeting any of the following criteria:

- Soil or groundwater remediation projects that report progress in accordance with s. NR.700.11(1), Wis. Adm. Code.
- Soil or groundwater remediation projects that report progress in accordance with s. NR.724.13(3), Wis. Adm. Code. (Note: s. NR.724.13(3) requires progress reports for operation and maintenance of active systems to be submitted every three months however the Department considers submittal of this form every six months to satisfy the requirements of the rules, unless otherwise directed by the Department on a site specific basis.)
- Soil or groundwater remediation projects that report progress in accordance with s. NR.724.17(3), Wis. Adm. Code. (Note: s. NR.724.17(3) requires progress reports every time that samples are collected however the Department considers submittal of this form every twelve months to satisfy the requirements of the rules for monitoring natural attenuation, unless otherwise directed by the Department on a site specific basis.)

Submittal of this form is not a substitute for reporting required by Department programs such as Wastewater or Air Management. Personally identifiable information on this form is not intended to be used for any other purpose than tracking progress of the remediation by the Bureau for Remediation and Redevelopment.

Please refer to the instructions that are attached to the back of these forms starting on page INS-1. In all cases, when asked to "explain," those explanations are to be included on separate sheets of paper. Explanations must include a title that refers to the page and item number, for example: Page GI-2, C.1.a.

A. GENERAL INFORMATION:

1. Site name: Winner's Circle Automotive
2. Reporting period from: November 15, 2011 To: December 1, 2011 Days in period: 17
3. Regulatory agency (enter DNR, DCOM, DATCP and/or other): DNR
4. DNR issued site number: 03-39-168015
5. State reimbursement fund claim number and fund name (if not applicable, enter NA): PECFA # 53952-0150-15
6. Site location:
   a. DNR region and county: Northeast - Marquette
   b. Street address and municipality: 115 W. Ormsby Street, Oxford
   c. Township, range, section and quarter quarter section: NE1/4, SW1/4, Section 17, T15N, R8E
7. Responsible party:
   a. Name: Terry Berndt
   b. Mailing address: P.O. Box 6, Oxford, WI 53952
   c. Phone number: _____
8. Consultant:
   a. Company name: MSA Professional Services, Inc.
   b. Mailing address: 1230 South Boulevard, Baraboo, WI 53913
   c. Phone number: 608-356-2771
9. Contaminants: gasoline
10. Soil types (USCS or USDA): silty sand
11. Hydraulic conductivity (cm/sec): _____
12. Average linear velocity of groundwater (ft/yr): _____

GENERAL SITE INFORMATION, CONTINUED

SITE NAME AND REPORTING PERIOD:

Site name: Winner's Circle Automotive

Reporting period from: November 15, 2011 To: December 1, 2011 Days in period: 17

A. GENERAL INFORMATION (CONTINUED):

13. If soil is treated ex situ, is the treatment location off site? (Yes/No) If yes, give location:

    a. DNR region and county: Northeast - Marquette

    b. Township, range, section and quarter quarter section: NE1/4, SW1/4, Section 17, T15N, R8E

B. REMEDIATION METHOD: Only submit pages that apply to an individual site. Check all that apply:

- ☐ Groundwater extraction (submit a completed page GW-1).
- ☐ Free product recovery (submit a completed page GW-1).
- ☐ In situ air sparging (submit a completed page GW-2).
- ☒ Groundwater natural attenuation (submit a completed page GW-3).
- ☐ Other groundwater remediation method (submit a completed page GW-4).
- ☒ Soil venting (including soil vapor extraction and bioventing, submit a completed page IS-1).
- ☐ Soil natural attenuation (submit a completed page IS-2).
- ☐ Other in situ soil remediation method (submit a completed page IS-3).
- ☐ Biopiles (submit a completed page ES-1).
- ☐ Landspreading/thinspreading of petroleum contaminated soil (submit a completed page ES-2).
- ☐ Other ex situ soil remediation method (submit a completed page ES-3).

C. GENERAL EFFECTIVENESS EVALUATION FOR ALL ACTIVE SYSTEMS: If the remediation is active (not natural attenuation), complete this subsection.

1. Is the system operating at design rates and specifications? (Yes ☒ No ☐): _____
   If the answer is no, explain whether or not modifications are necessary to achieve the goal that was previously established in design.
2. Are modifications to the system warranted to improve effectiveness? (Yes ☐ No ☒) If yes, explain: _____
3. Is natural attenuation an effective low cost option at this time? (Yes ☐ No ☒): _____
4. Is closure sampling warranted at this time? (Yes ☐ No ☒): _____
5. Are there any modifications that can be made to the remediation to improve cost effectiveness? (Yes ☐ No ☒) If yes, explain: _____

D. ECONOMIC AND COST DATA TO DATE:

1. Total investigation costs ($): _____
2. Implementation costs (design, capital and installation costs, excluding investigation costs) ($): _____
3. Total costs during the previous reporting period ($): _____
4. Total costs during this reporting period ($): _____
5. Total anticipated costs for the next reporting period ($): _____
6. Are any unusual or one-time costs listed in the reporting periods covered by D.3., D.4. or D.5. above? (Yes ☐ No ☐) If yes explain:
7. If close out is anticipated within 12 months, estimated costs for project closeout ($):_____

GENERAL SITE INFORMATION, CONTINUED

SITE NAME AND REPORTING PERIOD:

Site name: Winner's Circle Automotive

Reporting period from: November 15, 2011 To: December 1, 2011 Days in period: 17

E. NAME(S), SIGNATURE(S) AND DATE OF PERSON(S) SUBMITTING FORM: Legibly print name, date and sign. Only persons qualified to submit reports under ch. NR 712 Wis. Adm. Code are to sign this form.

Registered Professional Engineers:

I (print name) _____ 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.

Signature, title, P.E. number and date: _____ _____ _____

Hydrogeologists:

I (print name) Jayne Englebert, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03(1), 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.

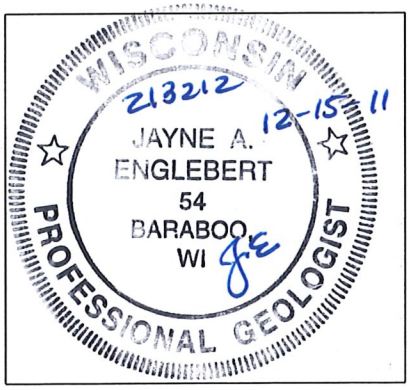
Signature, title and date: Jayne Englebert Senior Hydrogeologist December 15, 2011

Scientists:

I (print name) [Scientist's name], hereby certify that I am a scientist as that term is defined in s. NR 712.03(3), 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.

Signature, title and date: _____ _____ _____

Professional Seal(s), if applicable:



NATURAL ATTENUATION (PASSIVE BIOREMEDIATION) IN GROUNDWATER

SITE NAME AND REPORTING PERIOD:

Site name: Winners Circle Automotive

Reporting period from: November 15, 2011 To: December 1, 2011 Days in period: 17

A. EFFECTIVENESS EVALUATION:

1. If free product is not present, determine the single contaminant that requires the greatest percent reduction to achieve ch. NR 140 ES and PAL. Perform this calculation for all contaminants that were present at the site that have ch. NR 140 standards. Use the highest contaminant concentration measured in any sampling points during reporting period. If free product is present, write "FREE PRODUCT" in A.1.a.

   a. Contaminant: benzene

   b. Percent reduction necessary to reach ch. NR 140 ES and PAL: 99.99, 99.99

   c. Maximum contaminant concentration level in any monitoring well (µg/L): 2700 at MW-3

2. Aquifer parameters:

   a. Hydraulic conductivity (cm/sec): _____

   b. Groundwater average linear velocity (ft/yr): _____

3. Is there a downgradient monitoring well that meets ch. NR 140 standards (Yes ☒ No☐): _____

4. Based on water chemistry results, is the plume expanding, stabilized or contracting: Expanding, increasing trend for MTBE at MW-7A

5. If the answer in 4. (above) is "expanding," is natural attenuation still the best option? (Yes ☒ No ☐) If yes, explain: Operation of the soil vapor extraction system will reduce source concentrations and result in less groundwater contamination at the source.

6. Biodegradation parameters:

   a. Upgradient (or other site specific background) DO level (mg/L): _____

   b. DO levels in the part of the plume that is most heavily contaminated (mg/L): 0.08 at MW-4

7. Is site closure a viable option within 12 months from the date of this form? (Yes ☐ No ☒): _____

8. Are there any modifications that can improve cost effectiveness? (Yes ☐ No ☒) If yes, explain:_____

9. Have groundwater table fluctuations changed the contaminant level trends over time? (Y/N) If yes, explain): Yes, at MW-6 large fluctuations in concentrations can be seen due to small groundwater level changes.

10. Has the direction of ground water flow changed during the reporting period? (Y/N) If yes, approximate change in degrees: No.

B. ADDITIONAL ATTACHMENTS: Attach the following to this form:

- Groundwater contour map.
- Groundwater contaminant distribution map (may be combined with contour map).
- When contaminants are aerobically biodegradable, attach a dissolved oxygen in groundwater map (dissolved oxygen may be combined with the contaminant data on a single map).
- Graph of contaminant concentrations versus time for the contaminant listed in A.1.a. (above) for the monitoring point with the greatest level of contamination.
- Graph of contaminant concentrations versus distance.
- Groundwater contaminant chemistry table.
- Groundwater biological parameters.
- Groundwater elevations table.

SOIL VENTING (INCLUDING BOTH SOIL VAPOR EXTRACTION AND BIOVENTING)

SITE NAME AND REPORTING PERIOD:

Site name: Winner's Circle Automotive

Reporting period from: November 15, 2011 To: December 1, 2011 Days in period: 17

Date that the system was first started up: November 15, 2011

A. SOIL VENTING SYSTEM OPERATION:

1. Number of air extraction wells available and number of wells actually in use during the period: 10 / 10
2. Number of days of operation (only list the number of days the system actually operated, if unknown explain): 17
3. System utilization in percent (days of operation divided by reporting time period multiplied by 100). If less than 80%, explain: 100%
4. Average depth to groundwater: 20 feet

B. EFFECTIVENESS EVALUATION:

1. Average contaminant removal rate for the entire system (pounds per day): 15.6
2. Average contaminant removal rate per well (pounds per day): 1.56
3. If the average contaminant removal rate is less than one pound per day for the entire system, or if the average contaminant removal rate per well is less than one tenth of a pound per day, evaluate the following:

   a. If contaminants are aerobically biodegradable and confirmation borings have not been drilled in the past year:

      i. Oxygen levels in extracted air (percent): _____

      ii. Methane levels in extracted air (ppm_v) If over 10 ppm_v, explain: _____

      iii. If methane is not present above 10 ppm_v and if oxygen is greater than 20 percent in extracted air, you should either:
      - Drill confirmation borings during the next reporting period, if the entire site should be considered for closure.
      - Or, perform an in situ respirometry test in a zone of high contamination. Do not perform the test in an air extraction well, use a gas probe or water table well. If a zero order rate of decay based on oxygen depletion is less than 2 mg/kg per day, then you should drill confirmation borings, if the entire site should be considered for closure. If the rate of decay is between 2 and 10 mg/kg, operate for one more reporting period before evaluating further. If the zero order rate of decay is greater than 10 mg/kg total hydrocarbons, continue operating the system in a manner than maximizes aerobic biodegradation.

   b. If contaminants are not aerobically biodegradable and confirmation borings have not been recently drilled during the past year, you should drill confirmation borings during the next reporting period if the entire site should be considered for closure.

   c. If soil borings were drilled during the past year and soil contamination remains above acceptable levels, explain if the system effectiveness can be increased and/or if other options need to be considered to achieve cleanup criteria.

C. ADDITIONAL ATTACHMENTS: Attach the following to this form:

- Well and soil sample location map indicating all air extraction wells. If forced air injection wells are also in use, identify those wells.
- If water table monitoring wells are present at the site, a map of well locations.
- Time versus vapor phase contaminant concentration graph.
- Time versus cumulative contaminant removal graph.
- Groundwater elevations table, if water table wells are present at the site; also list screen lengths and elevations.
- Table of soil contaminant chemistry data.
- Soil gas data, if gas probes are used to monitor subsurface conditions in locations other than where air is extracted.
- System operational data table.

Soil Vapor Extraction System Operation and Emissions Data
Winners Circle Automotive, Oxford, WI

Date	Hours	Interval Time (hours)	Flow Rate (CFM)	VOC Concen-tration (ppm)	VOC Discharge Rate (lbs/hour)	VOCs Removed (lbs)	Cumulative VOCs Removed (lbs)	Benzene Concen-tration lbs/cuft	Benzene Discharge Rate (lbs/hour)	Benzene Removed (lbs)	Cumulative Benzene Removed (lbs)
15-Nov-11	0	0	180	260	0.680	0.00	**0**	4.00E-06	4.32E-02	0.00	**0.00**
16-Nov-11	24	24	180	419	1.095	21.03	**21**	4.00E-06	4.32E-02	1.02	**1.02**
17-Nov-11	48	24	180	718	0.672	21.47	**42**	<0.244E-06	0.00E+00	0.00	**1.02**
23-Nov-11	189	141	180	571	0.672	94.95	**137**	<0.244E-06	0.00E+00	0.00	**1.02**
1-Dec-11	381	192	180	452	0.672	128.82	**266**	<0.24E-06	0.00E+00	0.00	**1.02**

VOC Concentration is measured with a PID at the system discharge and/or with a charcoal tube laboratory analysis. Higher result is reported in table.
Benzene Concentration is based on a NIOSH 1501 charcoal tube laboratory analysis.

Laboratory Results - Groundwater
Winner's Circle Automotive, Oxford, Wisconsin

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Tri-methyl-benzenes	Methyl-tert-butyl-ether	Naph-thalene	Lead	Total Nitrates	Total Sulfate	Dissolved Oxygen	pH	ORP	Water Level
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L	mg/L		mV	MSL
NR 140 PAL	0.5	160	140	1000	96	12	10	1.5						
NR 140 ES	5	800	700	10000	480	60	100	15						
MW-1						*Top of Casing = 882.24 ft MSL*								
12-Jul-05	<0.40	<0.40	<0.50	<1.0	<0.50	<0.60	<0.60	<2.4						859.80
15-Nov-05	0.84	0.92	<0.40	1.4	<0.40	<0.40	<1.1	<1.5						858.85
6-Apr-07	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<2.8				5.75	7.15	22	859.77
19-Sep-07	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<2.8		8.4	57				860.31
28-Feb-08	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<2.8							859.95
26-Oct-09	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<2.8							860.05
15-Nov-11	<0.25	<0.25	<0.22	<0.39	<0.44	<0.23	<0.50							860.49
MW-2						*Top of Casing = 881.86 ft MSL*								
12-Jul-05	**290**	**1900**	260	1900	413	<30	**120**	<2.4						859.59
15-Nov-05	**290**	**2000**	320	2170	570	29	**150**	<1.5						858.75
6-Apr-07	**0.3 feet of free product, no sample**													859.36
19-Sep-07	**490**	**7700**	**1600**	**10200**	4280	46	**1200**							860.22
28-Feb-08	**560**	**9300**	**1100**	7300	1390	<50	**410**							859.81
26-Oct-09	**920**	**21000**	**3000**	**20800**	6700	<100	**2000**							859.94
15-Nov-11	**380**	**25000**	**3500**	**25000**	5700	<12	**1400**							860.43
MW-3						*Top of Casing = 881.00 ft MSL*								
12-Jul-05	**3600**	**9800**	**1000**	5300	**920**	**1100**	**210**	**32.9**						859.53
15-Nov-05	**8400**	**25000**	**2600**	**14300**	**3510**	**1700**	**870**	**38.2**						858.42
6-Apr-07	**0.61 feet of free product, no sample**													859.03
19-Sep-07	**0.17 feet of free product, no sample**													859.10
28-Feb-08	buried in a snow pile													
26-Oct-09	**0.07 feet of free product, sample results below**													
26-Oct-09	**4600**	**43000**	**4500**	**11400**	**6600**	**<100**	**1600**							859.70
15-Nov-11	**0.04 feet of free product, sample results below**													
15-Nov-11	**2700**	**28000**	**3500**	**30000**	**11600**	<23	**3300**							860.22
MW-4						*Top of Casing = 879.48 ft MSL*								
12-Jul-05	**2200**	**9800**	**1600**	**7100**	**1420**	**1100**	**360**	**26.3**						859.41
15-Nov-05	**260**	**1400**	**400**	**2340**	**1080**	**78**	**270**	**17.9**						858.49
6-Apr-07	**860**	**8700**	**2200**	**11300**	**3240**	<25	**730**				0.08	6.64	-68	859.41
19-Sep-07	<0.50	1.8	13	159	167	<0.50	83		0.43	22				859.85
28-Feb-08	buried in a snow pile													
26-Oct-09	**44**	130	88	470	450	<5.0	**130**							859.66
15-Nov-11	**47**	**2100**	**1500**	**12000**	**3990**	<9.2	**600**							860.05

Laboratory Results - Groundwater
Winner's Circle Automotive, Oxford, Wisconsin

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Tri-methyl-benzenes	Methyl-tert-butyl-ether	Naph-thalene	Lead	Total Nitrates	Total Sulfate	Dissolved Oxygen	pH	ORP	Water Level
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L	mg/L		mV	MSL
NR 140 PAL	0.5	160	140	1000	96	12	10	1.5						
NR 140 ES	5	800	700	10000	480	60	100	15						
MW-5						*Top of Casing = 879.06 ft MSL*								
15-Nov-05	**1800**	640	**730**	2210	**770**	**680**	**210**	<1.5						858.39
6-Apr-07	**240**	6.6	190	131	291	**70**	**140**							859.32
19-Sep-07	**17**	<0.50	12	4.3	16.9	4.8	13		1.8	16				859.73
28-Feb-08	**11**	<0.50	10	<1.0	23.7	3.0	20							859.36
26-Oct-09	4.7	<0.50	16	<1.0	22.9	<0.50	10							859.51
15-Nov-11	0.51	0.97	3.5	7.4	5.26	<0.23	1.7							859.91
MW-6						*Top of Casing = 878.75 ft MSL*								
15-Nov-05	**4800**	**2600**	**980**	2900	470	**750**	**190**	<1.5						858.14
6-Apr-07	<0.50	<0.50	<0.50	<1.0	<0.50	2.2	<2.8							859.22
19-Sep-07	**7.1**	<0.50	<0.50	1.4	0.42	12	<2.8		8.9	13				859.46
28-Feb-08	**4600**	**13000**	**2100**	**11000**	**2150**	<50	**550**							859.03
26-Oct-09	**9.3**	<0.50	2.4	41	75	<0.50	16							859.26
15-Nov-11	**80**	310	58	470	164	<2.3	31							858.70
MW-7						*Top of Casing = 875.44 ft MSL*								
6-Apr-07	<0.50	<0.50	0.73	<1.0	0.89	3.4	<2.8				3.02	7.55	152.73	857.61
19-Sep-07	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<2.8		0.33	9.6				857.67
28-Feb-08	<0.50	<0.50	<0.50	<1.0	<0.50	2.8	<2.8							857.16
26-Oct-09	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<2.8							857.44
15-Nov-11	<0.25	<0.25	<0.22	<0.39	<0.44	0.34	<0.50							857.84
MW-7A						*Top of Casing = 875.46 ft MSL*								
6-Apr-07	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<2.8				2.09	7.72	218	855.21
19-Sep-07	<0.50	<0.50	<0.50	<1.0	<0.50	1.4	<2.8		0.46	23				855.03
28-Feb-08	0.78	<0.50	<0.50	<1.0	<0.50	23	<2.8							854.81
26-Oct-09	0.61	<0.50	<0.50	<1.0	<0.50	46	<2.8							855.63
15-Nov-11	<0.25	<0.25	<0.22	0.46	0.39	**95**	<0.50							854.66
MW-8						*Top of Casing = 877.23 ft MSL*								
6-Apr-07	**1500**	<25	470	840	440	**1000**	**140**				1.61	7.27	19.36	858.82
19-Sep-07	**42**	<0.50	13	4.01	8.3	33	5.8		0.34	7.3				859.01
28-Feb-08	**150**	1.1	46	2.1	63	**160**	48							857.57
26-Oct-09	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<2.8							858.77
15-Nov-11	<0.25	<0.25	<0.22	<0.39	<0.44	0.46	<0.50							859.14

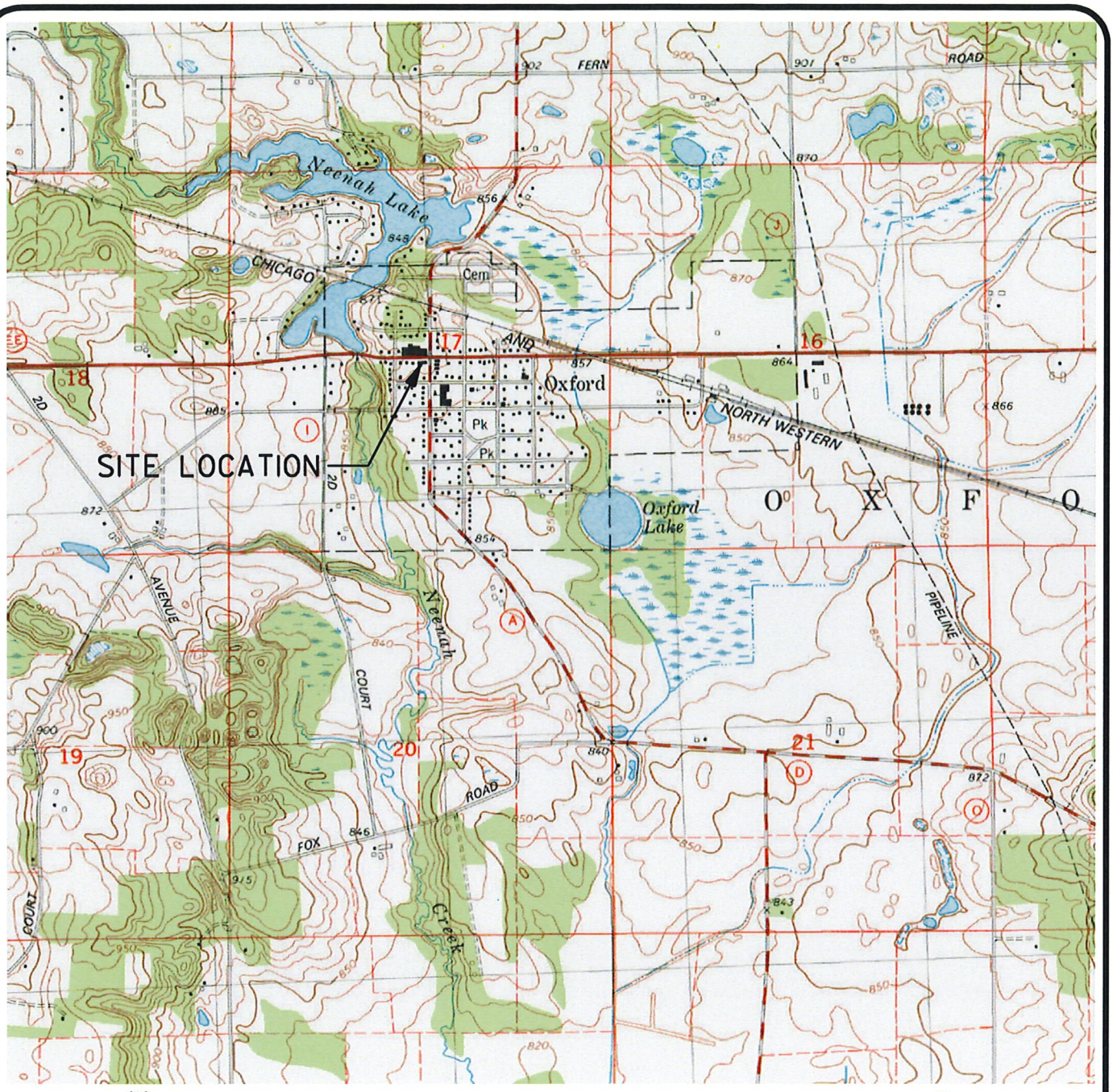
Laboratory Results - Groundwater
Winner's Circle Automotive, Oxford, Wisconsin

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Tri-methyl-benzenes	Methyl-tert-butyl-ether	Naph-thalene	Lead	Total Nitrates	Total Sulfate	Dissolved Oxygen	pH	ORP	Water Level
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L	mg/L		mV	MSL
NR 140 PAL	0.5	160	140	1000	96	12	10	1.5						
NR 140 ES	5	800	700	10000	480	60	100	15						
128 S. Oxford	Roos 2" well used for yard watering and laundry													
26-Oct-09	<0.16	<0.20	<0.28	<0.50	<0.24	<0.23	<0.60							
128 S. Oxford	Roos 6" well used for drinking water													
26-Oct-09	<0.16	<0.20	<0.28	<0.50	<0.24	<0.23	<0.60							
129 S. Oxford														
26-Oct-09	<0.16	<0.20	<0.28	<0.50	<0.24	<0.23	<0.60							
209 S. Oxford														
26-Oct-09	<0.16	<0.20	<0.28	<0.50	<0.24	<0.23	<0.60							
229 S. Oxford														
26-Oct-09	<0.16	<0.20	<0.28	<0.50	<0.24	<0.23	<0.60							
138 Chauncey														
26-Oct-09	<0.16	<0.20	<0.28	<0.50	<0.24	<0.23	<0.60							
120 Chauncey														
26-Oct-09	<0.16	<0.20	<0.28	<0.50	<0.24	<0.23	<0.60							
223 Franklin														
26-Oct-09	<0.16	<0.20	<0.28	<0.50	<0.24	<0.23	<0.60							
229 Franklin														
26-Oct-09	<0.16	<0.20	<0.28	<0.50	<0.24	<0.23	<0.60							
128 Vallette - Lightfoot														
15-Nov-05	<0.21	<0.23	<0.10	<0.22	<0.12	<0.12	<0.15							
26-Oct-09	<0.16	<0.20	<0.28	<0.50	<0.24	<0.23	<0.60							
201 S. Oxford														
19-Sep-07	<0.12	<0.28	<0.25	<0.40	<0.40	<0.13	<0.25							
26-Oct-09	<0.16	<0.20	<0.28	<0.50	<0.24	<0.23	<0.60							
214 S. Oxford - Lloyd														
26-Feb-08	<0.12	<0.28	<0.25	<0.40	<0.40	<0.13	<0.25							
26-Oct-09	<0.16	<0.20	<0.28	<0.50	<0.24	<0.23	<0.60							
209 Franklin - Drinkwater														
26-Feb-08	<0.12	<0.28	<0.25	<0.40	<0.40	<0.13	<0.25							
26-Oct-09	<0.16	<0.20	<0.28	<0.50	<0.24	<0.23	<0.60							

Laboratory Results - Groundwater
Winner's Circle Automotive, Oxford, Wisconsin

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Tri-methyl-benzenes	Methyl-tert-butyl-ether	Naph-thalene	Lead	Total Nitrates	Total Sulfate	Dissolved Oxygen	pH	ORP	Water Level
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L	mg/L		mV	MSL
NR 140 PAL	0.5	160	140	1000	96	12	10	1.5						
NR 140 ES	5	800	700	10000	480	60	100	15						
215 Franklin - Morgan														
26-Feb-08	<0.12	<0.28	<0.25	<0.40	<0.40	<0.13	<0.25							
26-Oct-09	<0.16	<0.20	<0.28	<0.50	<0.24	<0.23	<0.60							
125 Vallette - Siekert														
26-Feb-08	<0.12	<0.28	<0.25	<0.40	<0.40	<0.13	<0.25							
26-Oct-09	<0.16	<0.20	<0.28	<0.50	<0.24	<0.23	<0.60							
133 Vallette - Ellis														
26-Feb-08	<0.12	<0.28	<0.25	<0.40	<0.40	<0.13	<0.25							
26-Oct-09	<0.16	<0.20	<0.28	<0.50	<0.24	<0.23	<0.60							
141 Vallette - Long														
26-Feb-08	<0.12	<0.28	<0.25	<0.40	<0.40	<0.13	<0.25							
26-Oct-09	<0.16	<0.20	<0.28	<0.50	<0.24	<0.23	<0.60							

PAL = Wisconsin Administrative Code NR 140 preventive action limit
ES = Wisconsin Administrative Code NR 140 enforcement standard
MSL = mean sea level
Values in BOLD exceed NR 140 enforcement standard



Oxford Quadrangle
Wisconsin - Marquette County
7.5 Minute Series (Topographic)

Contour Interval 10 Feet
1979
Photo Inspected 1981

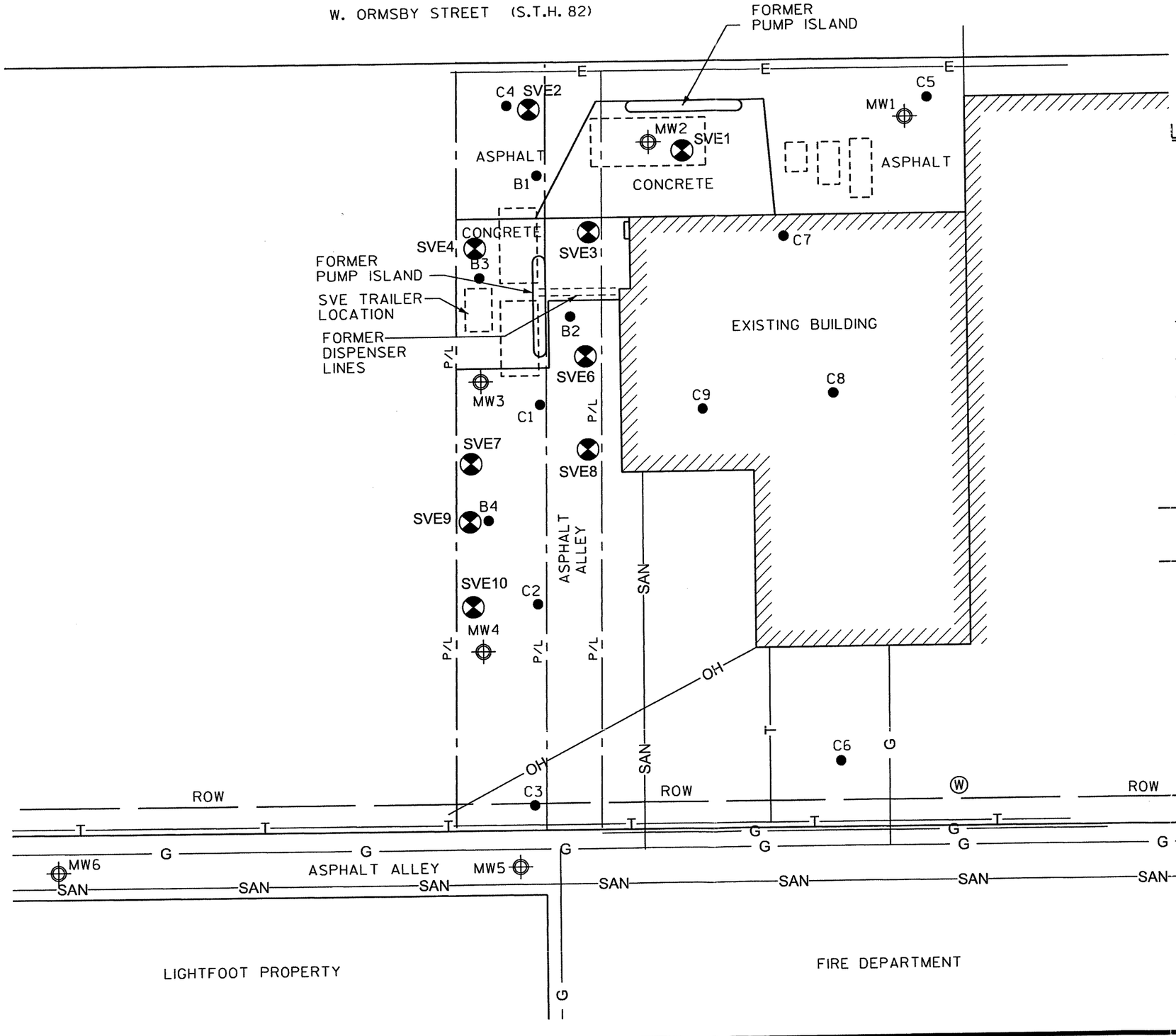
MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL
DEVELOPMENT • ENVIRONMENTAL
301 West First Street, Duluth, MN 55802
218-722-3915 1-800-777-7380 Fax: 218-722-4548

FIGURE 1
SITE LOCATION MAP
WINNER'S CIRCLE AUTOMOTIVE
115 West Ormsby Street
Oxford, WI 53952

213212F1

$FILE$

.\2132\213212\cadd\213212f1.dgn Aug 31, 2009 CRooyakk



LEGEND

- POTABLE WELL (TYP.)
- SOIL BORING LOCATION (TYP.)
- MONITORING WELL LOCATION (TYP.)
- FORMER UST LOCATION
- — G — NATURAL GAS LINE
- —T— UNDERGROUND TELEPHONE
- —E— UNDERGROUND ELECTRIC
- -OH— OVERHEAD ELECTRIC
- —SAN— SANITARY SEWER
- P/L APPROXIMATE PROPERTY LINE
- ROW RIGHT-OF-WAY LINE
- SVE WELL (TYP.)

N W E S

20 0 20

SCALE IN FEET

FIGURE 2

SOIL VAPOR EXTRACTION SYSTEM LAYOUT

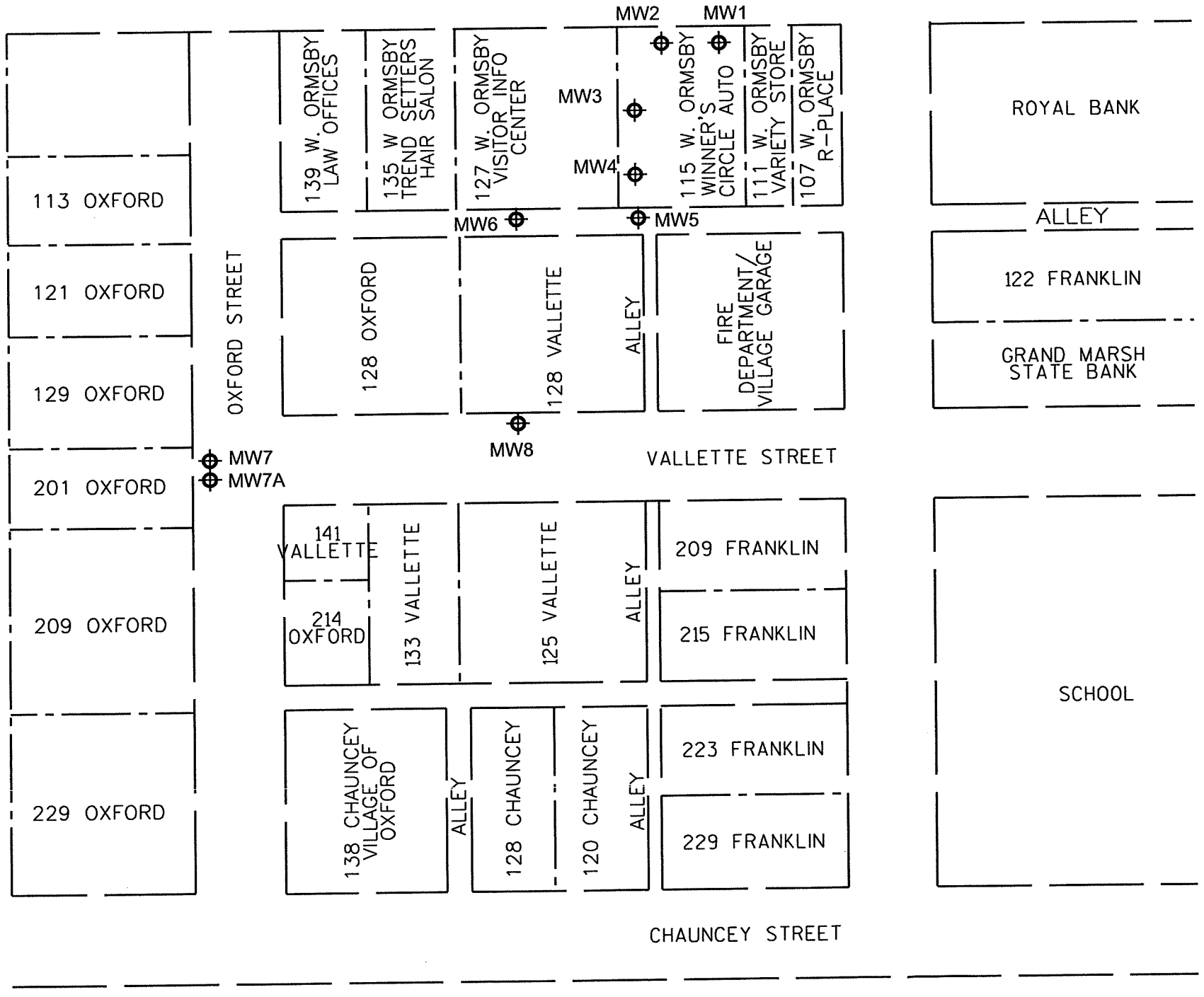
WINNER'S CIRCLE AUTO
OXFORD, WISCONSIN

MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL
DEVELOPMENT • ENVIRONMENTAL
1230 South Boulevard Baraboo, WI 53913
608-356-2771 1-800-362-4505 Fax: 608-356-2770

DRAWN BY	TAP	DATE	9-28-09
CHECKED BY		SCALE	AS NOTED

SHEET ----- of -----
FILE NO. 213212sve_f2

$DATE$
$TIME$



LEGEND

⊕ EXISTING MONITORING WELL

N
W E
S

0 50 100 200

FIGURE 3

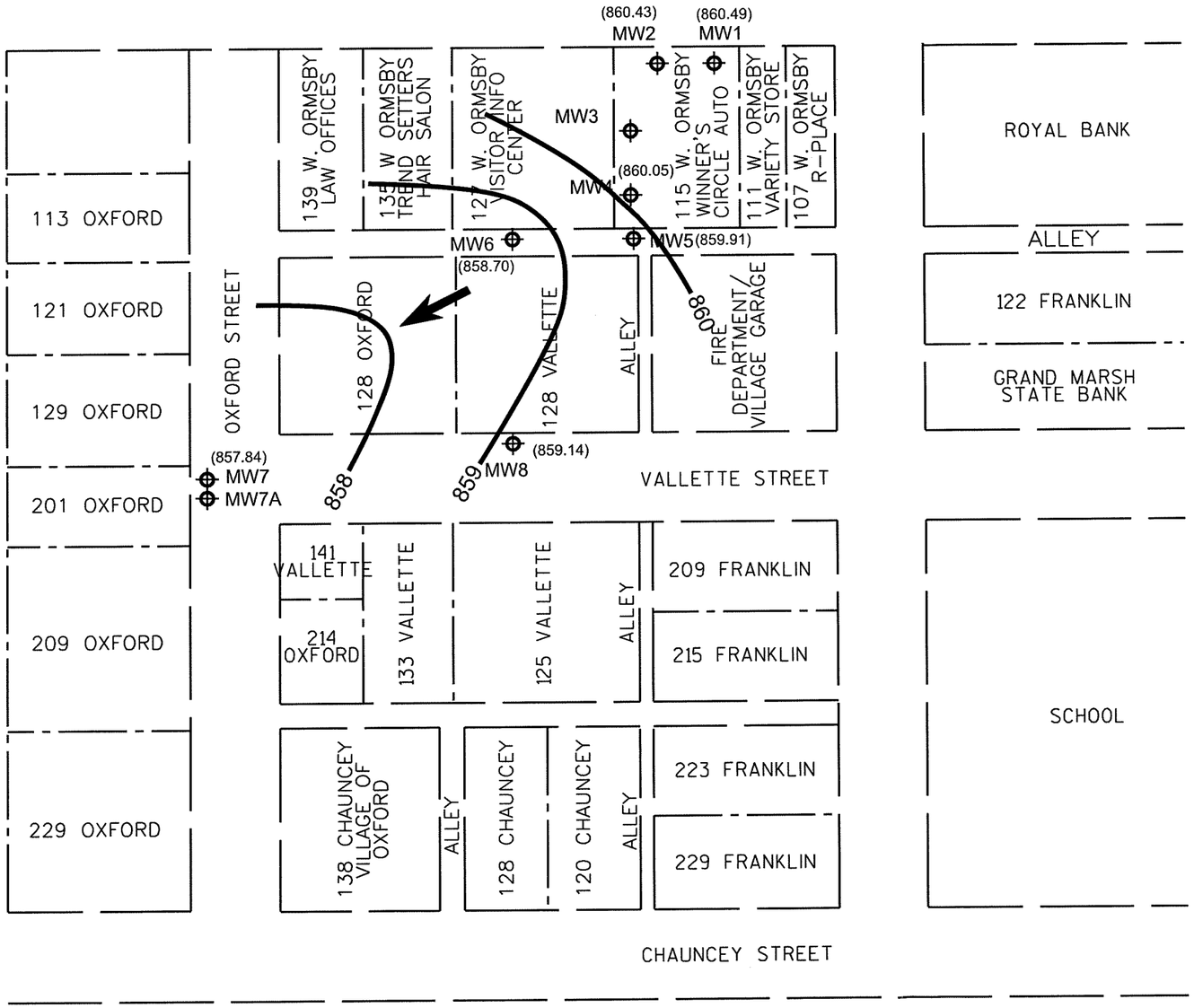
MONITORING WELL LOCATIONS

WINNER'S CIRCLE AUTO
OXFORD, WISCONSIN

MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL
DEVELOPMENT • ENVIRONMENTAL
1230 South Boulevard Baraboo, WI 53913
608-356-2771 1-800-362-4505 Fax: 608-356-2770

DRAWN BY CAR DATE 12/11
CHECKED BY SCALE AS NOTED
SHEET ..... of .....
FILE NO. 213212CE

$DATE$
$TIME$



LEGEND

- ⊕ EXISTING MONITORING WELL
- (860.49) GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL
- → GROUNDWATER FLOW DIRECTION

N
W E
S

0 50 100 200

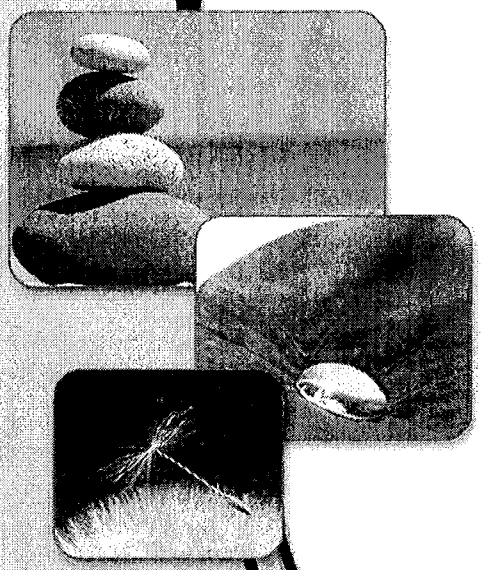
FIGURE 4

GROUNDWATER FLOW DIRECTION
NOVEMBER 15, 2011
WINNER'S CIRCLE AUTO
OXFORD, WISCONSIN

MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL
DEVELOPMENT • ENVIRONMENTAL
1230 South Boulevard Baraboo, WI 53913
608-356-2771 1-800-362-4505 Fax: 608-356-2770

DRAWN BY CAR | DATE 12/11 | SHEET ..... of .....
CHECKED BY | SCALE AS NOTED | FILE NO. 213212GW nov11

$DATE$
$TIME$



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Watertown
1101 Industrial Drive, Suites 9 & 10
Watertown, WI 53094
Tel: 800-833-7036

TestAmerica Job ID: WUK0584
Client Project/Site: 213212
Client Project Description: Winners Circle Automotive

For:
MSA Professional Services Inc.
1230 South Blvd
Baraboo, WI 53913

Attn: Ms. Jayne Englebert

Brian DeJong

Authorized for release by:
11/29/2011 5:53:58 PM
Brian DeJong
Organics Manager
Brian.DeJong@testamericainc.com

Designee for

Sandie Fredrick
Project Manager
Sandie.Fredrick@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Detection Summary 4
Client Sample Results 6
Surrogate Summary 10
QC Sample Results 11
QC Association Summary 14
Lab Chronicle 16
Certification Summary 18
Method Summary 19
Sample Summary 20
Chain of Custody 21

Qualifiers

GC Volatiles

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Detection Summary

Client: MSA Professional Services Inc.
Project/Site: 213212

TestAmerica Job ID: WUK0584

Client Sample ID: MW-1 — Lab Sample ID: WUK0584-01

No Detections

Client Sample ID: MW-2 — Lab Sample ID: WUK0584-02

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	380		100	13	ug/L	50		SW 8021	Total
Ethylbenzene	3500		100	11	ug/L	50		SW 8021	Total
Naphthalene	1400		100	25	ug/L	50		SW 8021	Total
1,2,4-Trimethylbenzene	4500		100	13	ug/L	50		SW 8021	Total
1,3,5-Trimethylbenzene	1200		100	9.5	ug/L	50		SW 8021	Total
Xylenes, total	25000		300	20	ug/L	50		SW 8021	Total
Toluene - RE1	25000		800	100	ug/L	400		SW 8021	Total

Client Sample ID: MW-3 — Lab Sample ID: WUK0584-03

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	2700		200	25	ug/L	100		SW 8021	Total
Ethylbenzene	3500		200	22	ug/L	100		SW 8021	Total
Naphthalene	3300		200	50	ug/L	100		SW 8021	Total
1,2,4-Trimethylbenzene	9000		200	25	ug/L	100		SW 8021	Total
1,3,5-Trimethylbenzene	2600		200	19	ug/L	100		SW 8021	Total
Xylenes, total	30000		600	39	ug/L	100		SW 8021	Total
Toluene - RE1	28000		800	100	ug/L	400		SW 8021	Total

Client Sample ID: MW-4 — Lab Sample ID: WUK0584-04

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	47	J	80	10	ug/L	40		SW 8021	Total
Ethylbenzene	1500		80	8.8	ug/L	40		SW 8021	Total
Naphthalene	600		80	20	ug/L	40		SW 8021	Total
Toluene	2100		80	10	ug/L	40		SW 8021	Total
1,2,4-Trimethylbenzene	3000		80	10	ug/L	40		SW 8021	Total
1,3,5-Trimethylbenzene	990		80	7.6	ug/L	40		SW 8021	Total
Xylenes, total	12000		240	16	ug/L	40		SW 8021	Total

Client Sample ID: MW-5 — Lab Sample ID: WUK0584-05

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.51	J	2.0	0.25	ug/L	1.0		SW 8021	Total
Ethylbenzene	3.5		2.0	0.22	ug/L	1.0		SW 8021	Total
Naphthalene	1.7	J	2.0	0.50	ug/L	1.0		SW 8021	Total
Toluene	0.97	J	2.0	0.25	ug/L	1.0		SW 8021	Total
1,2,4-Trimethylbenzene	4.3		2.0	0.25	ug/L	1.0		SW 8021	Total
1,3,5-Trimethylbenzene	0.96	J	2.0	0.19	ug/L	1.0		SW 8021	Total
Xylenes, total	7.4		6.0	0.39	ug/L	1.0		SW 8021	Total

Client Sample ID: MW-6 — Lab Sample ID: WUK0584-06

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	80		20	2.5	ug/L	10		SW 8021	Total
Ethylbenzene	58		20	2.2	ug/L	10		SW 8021	Total
Naphthalene	31		20	5.0	ug/L	10		SW 8021	Total
Toluene	310		20	2.5	ug/L	10		SW 8021	Total
1,2,4-Trimethylbenzene	130		20	2.5	ug/L	10		SW 8021	Total
1,3,5-Trimethylbenzene	34		20	1.9	ug/L	10		SW 8021	Total

Client Sample ID: MW-6 (Continued)

Lab Sample ID: WUK0584-06

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Xylenes, total	470		60	3.9	ug/L	10		SW 8021	Total

Client Sample ID: MW-7

Lab Sample ID: WUK0584-07

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methyl tert-Butyl Ether	0.34	J	2.0	0.23	ug/L	1.0		SW 8021	Total

Client Sample ID: MW-7A

Lab Sample ID: WUK0584-08

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methyl tert-Butyl Ether	95		2.0	0.23	ug/L	1.0		SW 8021	Total
1,2,4-Trimethylbenzene	0.39	J	2.0	0.25	ug/L	1.0		SW 8021	Total
Xylenes, total	0.46	J	6.0	0.39	ug/L	1.0		SW 8021	Total

Client Sample ID: MW-8

Lab Sample ID: WUK0584-09

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methyl tert-Butyl Ether	0.46	J	2.0	0.23	ug/L	1.0		SW 8021	Total

Client Sample ID: Trip Blank

Lab Sample ID: WUK0584-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.29	J	2.0	0.25	ug/L	1.0		SW 8021	Total

Client Sample ID: MW-1

Lab Sample ID: WUK0584-01

Date Collected: 11/15/11 12:55
Date Received: 11/17/11 13:46

Matrix: Ground Water

Method: SW 8021 - GC VOLATILES

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.25		2.0	0.25	ug/L		11/23/11 06:48	11/23/11 20:42	1.0
Ethylbenzene	<0.22		2.0	0.22	ug/L		11/23/11 06:48	11/23/11 20:42	1.0
Methyl tert-Butyl Ether	<0.23		2.0	0.23	ug/L		11/23/11 06:48	11/23/11 20:42	1.0
Naphthalene	<0.50		2.0	0.50	ug/L		11/23/11 06:48	11/23/11 20:42	1.0
Toluene	<0.25		2.0	0.25	ug/L		11/23/11 06:48	11/23/11 20:42	1.0
1,2,4-Trimethylbenzene	<0.25		2.0	0.25	ug/L		11/23/11 06:48	11/23/11 20:42	1.0
1,3,5-Trimethylbenzene	<0.19		2.0	0.19	ug/L		11/23/11 06:48	11/23/11 20:42	1.0
Xylenes, total	<0.39		6.0	0.39	ug/L		11/23/11 06:48	11/23/11 20:42	1.0

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*86*		*80 - 120*	*11/23/11 06:48*	*11/23/11 20:42*	*1.0*

Client Sample ID: MW-2

Lab Sample ID: WUK0584-02

Date Collected: 11/15/11 13:30
Date Received: 11/17/11 13:46

Matrix: Ground Water

Method: SW 8021 - GC VOLATILES

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**380**		100	13	ug/L		11/23/11 06:48	11/23/11 23:56	50
Ethylbenzene	**3500**		100	11	ug/L		11/23/11 06:48	11/23/11 23:56	50
Methyl tert-Butyl Ether	<12		100	12	ug/L		11/23/11 06:48	11/23/11 23:56	50
Naphthalene	**1400**		100	25	ug/L		11/23/11 06:48	11/23/11 23:56	50
1,2,4-Trimethylbenzene	**4500**		100	13	ug/L		11/23/11 06:48	11/23/11 23:56	50
1,3,5-Trimethylbenzene	**1200**		100	9.5	ug/L		11/23/11 06:48	11/23/11 23:56	50
Xylenes, total	**25000**		300	20	ug/L		11/23/11 06:48	11/23/11 23:56	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*87*		*80 - 120*	*11/23/11 06:48*	*11/23/11 23:56*	*50*

Method: SW 8021 - GC VOLATILES - RE1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	**25000**		800	100	ug/L		11/28/11 02:59	11/28/11 11:09	400

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*87*		*80 - 120*	*11/28/11 02:59*	*11/28/11 11:09*	*400*

Client Sample ID: MW-3

Lab Sample ID: WUK0584-03

Date Collected: 11/15/11 12:35
Date Received: 11/17/11 13:46

Matrix: Ground Water

Method: SW 8021 - GC VOLATILES

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**2700**		200	25	ug/L		11/23/11 06:48	11/24/11 00:35	100
Ethylbenzene	**3500**		200	22	ug/L		11/23/11 06:48	11/24/11 00:35	100
Methyl tert-Butyl Ether	<23		200	23	ug/L		11/23/11 06:48	11/24/11 00:35	100
Naphthalene	**3300**		200	50	ug/L		11/23/11 06:48	11/24/11 00:35	100
1,2,4-Trimethylbenzene	**9000**		200	25	ug/L		11/23/11 06:48	11/24/11 00:35	100
1,3,5-Trimethylbenzene	**2600**		200	19	ug/L		11/23/11 06:48	11/24/11 00:35	100
Xylenes, total	**30000**		600	39	ug/L		11/23/11 06:48	11/24/11 00:35	100

Client Sample ID: MW-3

Date Collected: 11/15/11 12:35
Date Received: 11/17/11 13:46

Lab Sample ID: WUK0584-03
Matrix: Ground Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*88*		*80 - 120*	*11/23/11 06:48*	*11/24/11 00:35*	*100*

Method: SW 8021 - GC VOLATILES - RE1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	28000		800	100	ug/L		11/28/11 02:59	11/28/11 11:48	400

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*88*		*80 - 120*	*11/28/11 02:59*	*11/28/11 11:48*	*400*

Client Sample ID: MW-4

Date Collected: 11/15/11 12:11
Date Received: 11/17/11 13:46

Lab Sample ID: WUK0584-04
Matrix: Ground Water

Method: SW 8021 - GC VOLATILES

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	47	J	80	10	ug/L		11/23/11 06:48	11/23/11 23:17	40
Ethylbenzene	1500		80	8.8	ug/L		11/23/11 06:48	11/23/11 23:17	40
Methyl tert-Butyl Ether	<9.2		80	9.2	ug/L		11/23/11 06:48	11/23/11 23:17	40
Naphthalene	600		80	20	ug/L		11/23/11 06:48	11/23/11 23:17	40
Toluene	2100		80	10	ug/L		11/23/11 06:48	11/23/11 23:17	40
1,2,4-Trimethylbenzene	3000		80	10	ug/L		11/23/11 06:48	11/23/11 23:17	40
1,3,5-Trimethylbenzene	990		80	7.6	ug/L		11/23/11 06:48	11/23/11 23:17	40
Xylenes, total	12000		240	16	ug/L		11/23/11 06:48	11/23/11 23:17	40

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*87*		*80 - 120*	*11/23/11 06:48*	*11/23/11 23:17*	*40*

Client Sample ID: MW-5

Date Collected: 11/15/11 11:35
Date Received: 11/17/11 13:46

Lab Sample ID: WUK0584-05
Matrix: Ground Water

Method: SW 8021 - GC VOLATILES

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.51	J	2.0	0.25	ug/L		11/23/11 06:48	11/23/11 21:21	1.0
Ethylbenzene	3.5		2.0	0.22	ug/L		11/23/11 06:48	11/23/11 21:21	1.0
Methyl tert-Butyl Ether	<0.23		2.0	0.23	ug/L		11/23/11 06:48	11/23/11 21:21	1.0
Naphthalene	1.7	J	2.0	0.50	ug/L		11/23/11 06:48	11/23/11 21:21	1.0
Toluene	0.97	J	2.0	0.25	ug/L		11/23/11 06:48	11/23/11 21:21	1.0
1,2,4-Trimethylbenzene	4.3		2.0	0.25	ug/L		11/23/11 06:48	11/23/11 21:21	1.0
1,3,5-Trimethylbenzene	0.96	J	2.0	0.19	ug/L		11/23/11 06:48	11/23/11 21:21	1.0
Xylenes, total	7.4		6.0	0.39	ug/L		11/23/11 06:48	11/23/11 21:21	1.0

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*86*		*80 - 120*	*11/23/11 06:48*	*11/23/11 21:21*	*1.0*

Client Sample ID: MW-6

Lab Sample ID: WUK0584-06

Date Collected: 11/15/11 11:15
Date Received: 11/17/11 13:46

Matrix: Ground Water

Method: SW 8021 - GC VOLATILES

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**80**		20	2.5	ug/L		11/23/11 06:48	11/23/11 22:38	10
Ethylbenzene	**58**		20	2.2	ug/L		11/23/11 06:48	11/23/11 22:38	10
Methyl tert-Butyl Ether	<2.3		20	2.3	ug/L		11/23/11 06:48	11/23/11 22:38	10
Naphthalene	**31**		20	5.0	ug/L		11/23/11 06:48	11/23/11 22:38	10
Toluene	**310**		20	2.5	ug/L		11/23/11 06:48	11/23/11 22:38	10
1,2,4-Trimethylbenzene	**130**		20	2.5	ug/L		11/23/11 06:48	11/23/11 22:38	10
1,3,5-Trimethylbenzene	**34**		20	1.9	ug/L		11/23/11 06:48	11/23/11 22:38	10
Xylenes, total	**470**		60	3.9	ug/L		11/23/11 06:48	11/23/11 22:38	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*94*		*80 - 120*	*11/23/11 06:48*	*11/23/11 22:38*	*10*

Client Sample ID: MW-7

Lab Sample ID: WUK0584-07

Date Collected: 11/15/11 10:25
Date Received: 11/17/11 13:46

Matrix: Ground Water

Method: SW 8021 - GC VOLATILES

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.25		2.0	0.25	ug/L		11/23/11 06:48	11/23/11 22:00	1.0
Ethylbenzene	<0.22		2.0	0.22	ug/L		11/23/11 06:48	11/23/11 22:00	1.0
Methyl tert-Butyl Ether	**0.34**	**J**	2.0	0.23	ug/L		11/23/11 06:48	11/23/11 22:00	1.0
Naphthalene	<0.50		2.0	0.50	ug/L		11/23/11 06:48	11/23/11 22:00	1.0
Toluene	<0.25		2.0	0.25	ug/L		11/23/11 06:48	11/23/11 22:00	1.0
1,2,4-Trimethylbenzene	<0.25		2.0	0.25	ug/L		11/23/11 06:48	11/23/11 22:00	1.0
1,3,5-Trimethylbenzene	<0.19		2.0	0.19	ug/L		11/23/11 06:48	11/23/11 22:00	1.0
Xylenes, total	<0.39		6.0	0.39	ug/L		11/23/11 06:48	11/23/11 22:00	1.0

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*87*		*80 - 120*	*11/23/11 06:48*	*11/23/11 22:00*	*1.0*

Client Sample ID: MW-7A

Lab Sample ID: WUK0584-08

Date Collected: 11/15/11 10:55
Date Received: 11/17/11 13:46

Matrix: Ground Water

Method: SW 8021 - GC VOLATILES

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.25		2.0	0.25	ug/L		11/23/11 07:19	11/24/11 07:04	1.0
Ethylbenzene	<0.22		2.0	0.22	ug/L		11/23/11 07:19	11/24/11 07:04	1.0
Methyl tert-Butyl Ether	**95**		2.0	0.23	ug/L		11/23/11 07:19	11/24/11 07:04	1.0
Naphthalene	<0.50		2.0	0.50	ug/L		11/23/11 07:19	11/24/11 07:04	1.0
Toluene	<0.25		2.0	0.25	ug/L		11/23/11 07:19	11/24/11 07:04	1.0
1,2,4-Trimethylbenzene	**0.39**	**J**	2.0	0.25	ug/L		11/23/11 07:19	11/24/11 07:04	1.0
1,3,5-Trimethylbenzene	<0.19		2.0	0.19	ug/L		11/23/11 07:19	11/24/11 07:04	1.0
Xylenes, total	**0.46**	**J**	6.0	0.39	ug/L		11/23/11 07:19	11/24/11 07:04	1.0

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*85*		*80 - 120*	*11/23/11 07:19*	*11/24/11 07:04*	*1.0*

Client Sample ID: MW-8
Date Collected: 11/15/11 10:00
Date Received: 11/17/11 13:46

Lab Sample ID: WUK0584-09
Matrix: Ground Water

Method: SW 8021 - GC VOLATILES

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.25		2.0	0.25	ug/L		11/23/11 07:19	11/24/11 07:43	1.0
Ethylbenzene	<0.22		2.0	0.22	ug/L		11/23/11 07:19	11/24/11 07:43	1.0
Methyl tert-Butyl Ether	**0.46**	**J**	2.0	0.23	ug/L		11/23/11 07:19	11/24/11 07:43	1.0
Naphthalene	<0.50		2.0	0.50	ug/L		11/23/11 07:19	11/24/11 07:43	1.0
Toluene	<0.25		2.0	0.25	ug/L		11/23/11 07:19	11/24/11 07:43	1.0
1,2,4-Trimethylbenzene	<0.25		2.0	0.25	ug/L		11/23/11 07:19	11/24/11 07:43	1.0
1,3,5-Trimethylbenzene	<0.19		2.0	0.19	ug/L		11/23/11 07:19	11/24/11 07:43	1.0
Xylenes, total	<0.39		6.0	0.39	ug/L		11/23/11 07:19	11/24/11 07:43	1.0

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*84*		*80 - 120*	*11/23/11 07:19*	*11/24/11 07:43*	*1.0*

Client Sample ID: Trip Blank
Date Collected: 11/15/11 00:00
Date Received: 11/17/11 13:46

Lab Sample ID: WUK0584-10
Matrix: Ground Water

Method: SW 8021 - GC VOLATILES

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.25		2.0	0.25	ug/L		11/23/11 07:19	11/24/11 05:07	1.0
Ethylbenzene	<0.22		2.0	0.22	ug/L		11/23/11 07:19	11/24/11 05:07	1.0
Methyl tert-Butyl Ether	<0.23		2.0	0.23	ug/L		11/23/11 07:19	11/24/11 05:07	1.0
Naphthalene	<0.50		2.0	0.50	ug/L		11/23/11 07:19	11/24/11 05:07	1.0
Toluene	**0.29**	**J**	2.0	0.25	ug/L		11/23/11 07:19	11/24/11 05:07	1.0
1,2,4-Trimethylbenzene	<0.25		2.0	0.25	ug/L		11/23/11 07:19	11/24/11 05:07	1.0
1,3,5-Trimethylbenzene	<0.19		2.0	0.19	ug/L		11/23/11 07:19	11/24/11 05:07	1.0
Xylenes, total	<0.39		6.0	0.39	ug/L		11/23/11 07:19	11/24/11 05:07	1.0

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*83*		*80 - 120*	*11/23/11 07:19*	*11/24/11 05:07*	*1.0*

Surrogate Summary

Client: MSA Professional Services Inc.
Project/Site: 213212

TestAmerica Job ID: WUK0584

Method: SW 8021 - GC VOLATILES

Matrix: Ground Water — **Prep Type: Total**

		Percent Surrogate Recovery (Acceptance Limits)
		BFB
Lab Sample ID	Client Sample ID	(80-120)
WUK0584-01	MW-1	86
WUK0584-02	MW-2	87
WUK0584-02 - RE1	MW-2	87
WUK0584-03	MW-3	88
WUK0584-03 - RE1	MW-3	88
WUK0584-04	MW-4	87
WUK0584-05	MW-5	86
WUK0584-06	MW-6	94
WUK0584-07	MW-7	87
WUK0584-08	MW-7A	85
WUK0584-09	MW-8	84
WUK0584-10	Trip Blank	83

Surrogate Legend

BFB = 4-Bromofluorobenzene

Method: SW 8021 - GC VOLATILES

Matrix: Water - NonPotable — **Prep Type: Total**

		Percent Surrogate Recovery (Acceptance Limits)
		BFB
Lab Sample ID	Client Sample ID	(80-120)
11K0276-BLK1	Method Blank	86
11K0276-BS1	Lab Control Sample	88
11K0276-BSD1	Lab Control Sample Dup	93
11K0277-BLK1	Method Blank	83
11K0277-BS1	Lab Control Sample	88
11K0277-BSD1	Lab Control Sample Dup	87
11K0288-BLK1	Method Blank	92
11K0288-BS1	Lab Control Sample	87
11K0288-BSD1	Lab Control Sample Dup	92

Surrogate Legend

BFB = 4-Bromofluorobenzene

Method: SW 8021 - GC VOLATILES

Lab Sample ID: 11K0276-BLK1
Matrix: Water - NonPotable
Analysis Batch: U001419

Client Sample ID: Method Blank
Prep Type: Total
Prep Batch: 11K0276_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.25		2.0	0.25	ug/L		11/23/11 03:48	11/23/11 11:36	1.00
Ethylbenzene	<0.22		2.0	0.22	ug/L		11/23/11 03:48	11/23/11 11:36	1.00
Methyl tert-Butyl Ether	<0.23		2.0	0.23	ug/L		11/23/11 03:48	11/23/11 11:36	1.00
Naphthalene	<0.50		2.0	0.50	ug/L		11/23/11 03:48	11/23/11 11:36	1.00
Toluene	<0.25		2.0	0.25	ug/L		11/23/11 03:48	11/23/11 11:36	1.00
1,2,4-Trimethylbenzene	<0.25		2.0	0.25	ug/L		11/23/11 03:48	11/23/11 11:36	1.00
1,3,5-Trimethylbenzene	<0.19		2.0	0.19	ug/L		11/23/11 03:48	11/23/11 11:36	1.00
Xylenes, total	<0.39		6.0	0.39	ug/L		11/23/11 03:48	11/23/11 11:36	1.00

Surrogate	*Blank %Recovery*	*Blank Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*86*		*80 - 120*	*11/23/11 03:48*	*11/23/11 11:36*	*1.00*

Lab Sample ID: 11K0276-BS1
Matrix: Water - NonPotable
Analysis Batch: U001419

Client Sample ID: Lab Control Sample
Prep Type: Total
Prep Batch: 11K0276_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.000	20.8		ug/L		104	80 - 120
Ethylbenzene	20.000	20.6		ug/L		103	80 - 120
Methyl tert-Butyl Ether	20.000	20.9		ug/L		105	80 - 120
Naphthalene	20.000	17.0		ug/L		85	80 - 120
Toluene	20.000	20.3		ug/L		102	80 - 120
1,2,4-Trimethylbenzene	20.000	20.4		ug/L		102	80 - 120
1,3,5-Trimethylbenzene	20.000	20.8		ug/L		104	80 - 120
Xylenes, total	60.000	61.3		ug/L		102	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*88*		*80 - 120*

Lab Sample ID: 11K0276-BSD1
Matrix: Water - NonPotable
Analysis Batch: U001419

Client Sample ID: Lab Control Sample Dup
Prep Type: Total
Prep Batch: 11K0276_P

Analyte	Spike Added	LCS Dup Result	LCS Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.000	20.4		ug/L		102	80 - 120	2	20
Ethylbenzene	20.000	20.9		ug/L		104	80 - 120	1	20
Methyl tert-Butyl Ether	20.000	20.1		ug/L		101	80 - 120	4	20
Naphthalene	20.000	17.2		ug/L		86	80 - 120	1	20
Toluene	20.000	20.4		ug/L		102	80 - 120	0.05	20
1,2,4-Trimethylbenzene	20.000	20.6		ug/L		103	80 - 120	0.5	20
1,3,5-Trimethylbenzene	20.000	20.7		ug/L		104	80 - 120	0.6	20
Xylenes, total	60.000	62.9		ug/L		105	80 - 120	3	20

Surrogate	*LCS Dup %Recovery*	*LCS Dup Qualifier*	*Limits*
4-Bromofluorobenzene	*93*		*80 - 120*

Method: SW 8021 - GC VOLATILES (Continued)

Lab Sample ID: 11K0277-BLK1
Matrix: Water - NonPotable
Analysis Batch: U001420

Client Sample ID: Method Blank
Prep Type: Total
Prep Batch: 11K0277_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.25		2.0	0.25	ug/L		11/23/11 07:19	11/24/11 04:29	1.00
Ethylbenzene	<0.22		2.0	0.22	ug/L		11/23/11 07:19	11/24/11 04:29	1.00
Methyl tert-Butyl Ether	<0.23		2.0	0.23	ug/L		11/23/11 07:19	11/24/11 04:29	1.00
Naphthalene	<0.50		2.0	0.50	ug/L		11/23/11 07:19	11/24/11 04:29	1.00
Toluene	<0.25		2.0	0.25	ug/L		11/23/11 07:19	11/24/11 04:29	1.00
1,2,4-Trimethylbenzene	<0.25		2.0	0.25	ug/L		11/23/11 07:19	11/24/11 04:29	1.00
1,3,5-Trimethylbenzene	<0.19		2.0	0.19	ug/L		11/23/11 07:19	11/24/11 04:29	1.00
Xylenes, total	<0.39		6.0	0.39	ug/L		11/23/11 07:19	11/24/11 04:29	1.00

Surrogate	*Blank %Recovery*	*Blank Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*83*		*80 - 120*	*11/23/11 07:19*	*11/24/11 04:29*	*1.00*

Lab Sample ID: 11K0277-BS1
Matrix: Water - NonPotable
Analysis Batch: U001420

Client Sample ID: Lab Control Sample
Prep Type: Total
Prep Batch: 11K0277_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.000	19.5		ug/L		97	80 - 120
Ethylbenzene	20.000	20.0		ug/L		100	80 - 120
Methyl tert-Butyl Ether	20.000	19.8		ug/L		99	80 - 120
Naphthalene	20.000	17.7		ug/L		88	80 - 120
Toluene	20.000	19.2		ug/L		96	80 - 120
1,2,4-Trimethylbenzene	20.000	19.7		ug/L		99	80 - 120
1,3,5-Trimethylbenzene	20.000	19.9		ug/L		99	80 - 120
Xylenes, total	60.000	59.9		ug/L		100	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*88*		*80 - 120*

Lab Sample ID: 11K0277-BSD1
Matrix: Water - NonPotable
Analysis Batch: U001420

Client Sample ID: Lab Control Sample Dup
Prep Type: Total
Prep Batch: 11K0277_P

Analyte	Spike Added	LCS Dup Result	LCS Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.000	20.4		ug/L		102	80 - 120	5	20
Ethylbenzene	20.000	20.8		ug/L		104	80 - 120	4	20
Methyl tert-Butyl Ether	20.000	20.3		ug/L		101	80 - 120	2	20
Naphthalene	20.000	17.4		ug/L		87	80 - 120	2	20
Toluene	20.000	20.3		ug/L		101	80 - 120	5	20
1,2,4-Trimethylbenzene	20.000	20.4		ug/L		102	80 - 120	3	20
1,3,5-Trimethylbenzene	20.000	20.5		ug/L		103	80 - 120	3	20
Xylenes, total	60.000	62.6		ug/L		104	80 - 120	4	20

Surrogate	*LCS Dup %Recovery*	*LCS Dup Qualifier*	*Limits*
4-Bromofluorobenzene	*87*		*80 - 120*

Method: SW 8021 - GC VOLATILES (Continued)

Lab Sample ID: 11K0288-BLK1
Matrix: Water - NonPotable
Analysis Batch: U001425

Client Sample ID: Method Blank
Prep Type: Total
Prep Batch: 11K0288_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.25		2.0	0.25	ug/L		11/28/11 02:59	11/28/11 06:37	1.00
Ethylbenzene	<0.22		2.0	0.22	ug/L		11/28/11 02:59	11/28/11 06:37	1.00
Methyl tert-Butyl Ether	<0.23		2.0	0.23	ug/L		11/28/11 02:59	11/28/11 06:37	1.00
Naphthalene	<0.50		2.0	0.50	ug/L		11/28/11 02:59	11/28/11 06:37	1.00
Toluene	<0.25		2.0	0.25	ug/L		11/28/11 02:59	11/28/11 06:37	1.00
1,2,4-Trimethylbenzene	<0.25		2.0	0.25	ug/L		11/28/11 02:59	11/28/11 06:37	1.00
1,3,5-Trimethylbenzene	<0.19		2.0	0.19	ug/L		11/28/11 02:59	11/28/11 06:37	1.00
Xylenes, total	<0.39		6.0	0.39	ug/L		11/28/11 02:59	11/28/11 06:37	1.00

Surrogate	*Blank %Recovery*	*Blank Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*92*		*80 - 120*	*11/28/11 02:59*	*11/28/11 06:37*	*1.00*

Lab Sample ID: 11K0288-BS1
Matrix: Water - NonPotable
Analysis Batch: U001425

Client Sample ID: Lab Control Sample
Prep Type: Total
Prep Batch: 11K0288_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.000	18.9		ug/L		94	80 - 120
Ethylbenzene	20.000	19.8		ug/L		99	80 - 120
Methyl tert-Butyl Ether	20.000	18.3		ug/L		92	80 - 120
Naphthalene	20.000	17.1		ug/L		86	80 - 120
Toluene	20.000	18.9		ug/L		95	80 - 120
1,2,4-Trimethylbenzene	20.000	20.1		ug/L		100	80 - 120
1,3,5-Trimethylbenzene	20.000	20.1		ug/L		101	80 - 120
Xylenes, total	60.000	59.8		ug/L		100	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*87*		*80 - 120*

Lab Sample ID: 11K0288-BSD1
Matrix: Water - NonPotable
Analysis Batch: U001425

Client Sample ID: Lab Control Sample Dup
Prep Type: Total
Prep Batch: 11K0288_P

Analyte	Spike Added	LCS Dup Result	LCS Dup Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.000	19.7		ug/L		99	80 - 120	5	20
Ethylbenzene	20.000	20.1		ug/L		100	80 - 120	1	20
Methyl tert-Butyl Ether	20.000	20.1		ug/L		101	80 - 120	9	20
Naphthalene	20.000	17.4		ug/L		87	80 - 120	2	20
Toluene	20.000	19.4		ug/L		97	80 - 120	2	20
1,2,4-Trimethylbenzene	20.000	20.0		ug/L		100	80 - 120	0.3	20
1,3,5-Trimethylbenzene	20.000	20.1		ug/L		101	80 - 120	0.1	20
Xylenes, total	60.000	60.0		ug/L		100	80 - 120	0.3	20

Surrogate	*LCS Dup %Recovery*	*LCS Dup Qualifier*	*Limits*
4-Bromofluorobenzene	*92*		*80 - 120*

GC Volatiles

Analysis Batch: U001419

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
11K0276-BLK1	Method Blank	Total	Water - NonPotable	SW 8021	11K0276_P
11K0276-BS1	Lab Control Sample	Total	Water - NonPotable	SW 8021	11K0276_P
11K0276-BSD1	Lab Control Sample Dup	Total	Water - NonPotable	SW 8021	11K0276_P
WUK0584-01	MW-1	Total	Ground Water	SW 8021	11K0276_P
WUK0584-02	MW-2	Total	Ground Water	SW 8021	11K0276_P
WUK0584-03	MW-3	Total	Ground Water	SW 8021	11K0276_P
WUK0584-04	MW-4	Total	Ground Water	SW 8021	11K0276_P
WUK0584-05	MW-5	Total	Ground Water	SW 8021	11K0276_P
WUK0584-06	MW-6	Total	Ground Water	SW 8021	11K0276_P
WUK0584-07	MW-7	Total	Ground Water	SW 8021	11K0276_P

Analysis Batch: U001420

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
11K0277-BLK1	Method Blank	Total	Water - NonPotable	SW 8021	11K0277_P
11K0277-BS1	Lab Control Sample	Total	Water - NonPotable	SW 8021	11K0277_P
11K0277-BSD1	Lab Control Sample Dup	Total	Water - NonPotable	SW 8021	11K0277_P
WUK0584-08	MW-7A	Total	Ground Water	SW 8021	11K0277_P
WUK0584-09	MW-8	Total	Ground Water	SW 8021	11K0277_P
WUK0584-10	Trip Blank	Total	Ground Water	SW 8021	11K0277_P

Analysis Batch: U001425

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
11K0288-BLK1	Method Blank	Total	Water - NonPotable	SW 8021	11K0288_P
11K0288-BS1	Lab Control Sample	Total	Water - NonPotable	SW 8021	11K0288_P
11K0288-BSD1	Lab Control Sample Dup	Total	Water - NonPotable	SW 8021	11K0288_P
WUK0584-02 - RE1	MW-2	Total	Ground Water	SW 8021	11K0288_P
WUK0584-03 - RE1	MW-3	Total	Ground Water	SW 8021	11K0288_P

Prep Batch: 11K0276_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
11K0276-BLK1	Method Blank	Total	Water - NonPotable	*** DEFAULT PREP ***	
11K0276-BS1	Lab Control Sample	Total	Water - NonPotable	*** DEFAULT PREP ***	
11K0276-BSD1	Lab Control Sample Dup	Total	Water - NonPotable	*** DEFAULT PREP ***	
WUK0584-01	MW-1	Total	Ground Water	*** DEFAULT PREP ***	
WUK0584-02	MW-2	Total	Ground Water	*** DEFAULT PREP ***	
WUK0584-03	MW-3	Total	Ground Water	*** DEFAULT PREP ***	
WUK0584-04	MW-4	Total	Ground Water	*** DEFAULT PREP ***	
WUK0584-05	MW-5	Total	Ground Water	*** DEFAULT PREP ***	
WUK0584-06	MW-6	Total	Ground Water	*** DEFAULT PREP ***	

GC Volatiles (Continued)

Prep Batch: 11K0276_P (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
WUK0584-07	MW-7	Total	Ground Water	*** DEFAULT PREP ***	

Prep Batch: 11K0277_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
11K0277-BLK1	Method Blank	Total	Water - NonPotable	*** DEFAULT PREP ***	
11K0277-BS1	Lab Control Sample	Total	Water - NonPotable	*** DEFAULT PREP ***	
11K0277-BSD1	Lab Control Sample Dup	Total	Water - NonPotable	*** DEFAULT PREP ***	
WUK0584-08	MW-7A	Total	Ground Water	*** DEFAULT PREP ***	
WUK0584-09	MW-8	Total	Ground Water	*** DEFAULT PREP ***	
WUK0584-10	Trip Blank	Total	Ground Water	*** DEFAULT PREP ***	

Prep Batch: 11K0288_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
11K0288-BLK1	Method Blank	Total	Water - NonPotable	*** DEFAULT PREP ***	
11K0288-BS1	Lab Control Sample	Total	Water - NonPotable	*** DEFAULT PREP ***	
11K0288-BSD1	Lab Control Sample Dup	Total	Water - NonPotable	*** DEFAULT PREP ***	
WUK0584-02 - RE1	MW-2	Total	Ground Water	*** DEFAULT PREP ***	
WUK0584-03 - RE1	MW-3	Total	Ground Water	*** DEFAULT PREP ***	

Client Sample ID: MW-1

Lab Sample ID: WUK0584-01

Date Collected: 11/15/11 12:55

Matrix: Ground Water

Date Received: 11/17/11 13:46

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	*** DEFAULT PREP ***		1.0	11K0276_P	11/23/11 06:48	MAE	TAL WT
Total	Analysis	SW 8021		1.0	U001419	11/23/11 20:42	MAE	TAL WT

Client Sample ID: MW-2

Lab Sample ID: WUK0584-02

Date Collected: 11/15/11 13:30

Matrix: Ground Water

Date Received: 11/17/11 13:46

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	*** DEFAULT PREP ***		1.0	11K0276_P	11/23/11 06:48	MAE	TAL WT
Total	Analysis	SW 8021		50	U001419	11/23/11 23:56	MAE	TAL WT
Total	Prep	*** DEFAULT PREP ***	RE1	1.0	11K0288_P	11/28/11 02:59	MAE	TAL WT
Total	Analysis	SW 8021	RE1	400	U001425	11/28/11 11:09	MAE	TAL WT

Client Sample ID: MW-3

Lab Sample ID: WUK0584-03

Date Collected: 11/15/11 12:35

Matrix: Ground Water

Date Received: 11/17/11 13:46

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	*** DEFAULT PREP ***		1.0	11K0276_P	11/23/11 06:48	MAE	TAL WT
Total	Analysis	SW 8021		100	U001419	11/24/11 00:35	MAE	TAL WT
Total	Prep	*** DEFAULT PREP ***	RE1	1.0	11K0288_P	11/28/11 02:59	MAE	TAL WT
Total	Analysis	SW 8021	RE1	400	U001425	11/28/11 11:48	MAE	TAL WT

Client Sample ID: MW-4

Lab Sample ID: WUK0584-04

Date Collected: 11/15/11 12:11

Matrix: Ground Water

Date Received: 11/17/11 13:46

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	*** DEFAULT PREP ***		1.0	11K0276_P	11/23/11 06:48	MAE	TAL WT
Total	Analysis	SW 8021		40	U001419	11/23/11 23:17	MAE	TAL WT

Client Sample ID: MW-5

Lab Sample ID: WUK0584-05

Date Collected: 11/15/11 11:35

Matrix: Ground Water

Date Received: 11/17/11 13:46

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	*** DEFAULT PREP ***		1.0	11K0276_P	11/23/11 06:48	MAE	TAL WT
Total	Analysis	SW 8021		1.0	U001419	11/23/11 21:21	MAE	TAL WT

Lab Chronicle

Client: MSA Professional Services Inc.
Project/Site: 213212

TestAmerica Job ID: WUK0584

Client Sample ID: MW-6

Lab Sample ID: WUK0584-06

Date Collected: 11/15/11 11:15
Matrix: Ground Water
Date Received: 11/17/11 13:46

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	*** DEFAULT PREP ***		1.0	11K0276_P	11/23/11 06:48	MAE	TAL WT
Total	Analysis	SW 8021		10	U001419	11/23/11 22:38	MAE	TAL WT

Client Sample ID: MW-7

Lab Sample ID: WUK0584-07

Date Collected: 11/15/11 10:25
Matrix: Ground Water
Date Received: 11/17/11 13:46

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	*** DEFAULT PREP ***		1.0	11K0276_P	11/23/11 06:48	MAE	TAL WT
Total	Analysis	SW 8021		1.0	U001419	11/23/11 22:00	MAE	TAL WT

Client Sample ID: MW-7A

Lab Sample ID: WUK0584-08

Date Collected: 11/15/11 10:55
Matrix: Ground Water
Date Received: 11/17/11 13:46

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	*** DEFAULT PREP ***		1.0	11K0277_P	11/23/11 07:19	MAE	TAL WT
Total	Analysis	SW 8021		1.0	U001420	11/24/11 07:04	MAE	TAL WT

Client Sample ID: MW-8

Lab Sample ID: WUK0584-09

Date Collected: 11/15/11 10:00
Matrix: Ground Water
Date Received: 11/17/11 13:46

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	*** DEFAULT PREP ***		1.0	11K0277_P	11/23/11 07:19	MAE	TAL WT
Total	Analysis	SW 8021		1.0	U001420	11/24/11 07:43	MAE	TAL WT

Client Sample ID: Trip Blank

Lab Sample ID: WUK0584-10

Date Collected: 11/15/11 00:00
Matrix: Ground Water
Date Received: 11/17/11 13:46

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	*** DEFAULT PREP ***		1.0	11K0277_P	11/23/11 07:19	MAE	TAL WT
Total	Analysis	SW 8021		1.0	U001420	11/24/11 05:07	MAE	TAL WT

Laboratory References:

TAL WT = TestAmerica Watertown, 1101 Industrial Drive, Suites 9 & 10, Watertown, WI 53094, TEL 800-833-7036

Certification Summary

Client: MSA Professional Services Inc.
Project/Site: 213212

TestAmerica Job ID: WUK0584

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Watertown		WI Dept of Agriculture (Micro)		105-266
TestAmerica Watertown	Illinois	NELAC	5	100453
TestAmerica Watertown	Minnesota	NELAC	5	055-999-366
TestAmerica Watertown	Wisconsin	State Program	5	128053530

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Method Summary

Client: MSA Professional Services Inc.
Project/Site: 213212

TestAmerica Job ID: WUK0584

Method	Method Description	Protocol	Laboratory
SW 8021	GC VOLATILES		TAL WT

Protocol References:

Laboratory References:

TAL WT = TestAmerica Watertown, 1101 Industrial Drive, Suites 9 & 10, Watertown, WI 53094, TEL 800-833-7036

Sample Summary

Client: MSA Professional Services Inc.
Project/Site: 213212

TestAmerica Job ID: WUK0584

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
WUK0584-01	MW-1	Ground Water	11/15/11 12:55	11/17/11 13:46
WUK0584-02	MW-2	Ground Water	11/15/11 13:30	11/17/11 13:46
WUK0584-03	MW-3	Ground Water	11/15/11 12:35	11/17/11 13:46
WUK0584-04	MW-4	Ground Water	11/15/11 12:11	11/17/11 13:46
WUK0584-05	MW-5	Ground Water	11/15/11 11:35	11/17/11 13:46
WUK0584-06	MW-6	Ground Water	11/15/11 11:15	11/17/11 13:46
WUK0584-07	MW-7	Ground Water	11/15/11 10:25	11/17/11 13:46
WUK0584-08	MW-7A	Ground Water	11/15/11 10:55	11/17/11 13:46
WUK0584-09	MW-8	Ground Water	11/15/11 10:00	11/17/11 13:46
WUK0584-10	Trip Blank	Ground Water	11/15/11 00:00	11/17/11 13:46

WUK0584

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Watertown Division
602 Commerce Drive
Watertown, WI 53094

Phone 920-261-1660 or 800-833-7036
Fax 920-261-8120

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring: ____

Client Name: MSA Client #: ____
Address: 1230 S Blvd
City/State/Zip Code: Baraboo, WI 53913
Project Manager: Kevin Olson
Telephone Number: 608-356-2771 Fax: 608 356-2770
Sampler Name: (Print Name) PAT TOOMEY
Sampler Signature:

Project Name: Wisners Circle Auto
Project #: 213212
Site/Location ID: Oxford State: WI
Report To: Jayne Engebert
Invoice To: Steve K
Quote #: ____ PO#: ____

E-mail address: ____

TAT: X Standard; ___ Rush (surcharges may apply)
Date Needed: ____
Fax Results: Y N
E-mail: Y N

	SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix: SL - Sludge DW - Drinking Water GW - Groundwater S - Soil/Solid WW - Wastewater Specify Other	Preservation & # of Containers: HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	Analyze For: PVOC + Naphth	QC Deliverables	REMARKS
1	mw-1	11-15-11	12:55	G	N	GW		3						✓	None	
2	mw-2		1:30											✓	Level 2 (Batch QC)	
3	mw-3		12:35											✓	Level 3	
4	mw-4		12:51											✓	Level 4	
5	mw-5		11:35											✓	Other: ____	
6	mw-6		11:15											✓		
7	mw-7		10:25											✓		
8	mw-7A		10:55											✓		
9	mw-8	↓	10:00	↓	↓	↓		↓						✓		
10	Trip Blank							1						✓		

Special Instructions:

LABORATORY COMMENTS:
Init Lab Temp: 5.3°C
Rec Lab Temp:
Custody Seals: Y N N/A
Bottles Supplied by TestAmerica: Y N
Method of Shipment: Fed EX

Relinquished By:	11-16-11 Date:	Time:	Received By:	11/17/11 Date:	13:46 Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAL-0020 (1207)

11/29/2011

Cooler Receipt Log

Work Order(s): WUK0584 Client Name/Project: MSA # of Coolers: 1

1. How did samples arrive? ☐ Dunham ☒ Fed-Ex ☐ UPS ☐ TestAmerica ☐ Client ☐ USPS ☐ Speedy ☐ _____

Date/time cooler was opened: 11/17/11 13:40 By: _____ TEMP. 5.3

2. Were custody seals intact, signed and dated correctly?..... ☐ Intact ☐ Broken ☒ NA
3. TAT (Turn Around Time) ..... ☐ SUBCONTRACTED ☐ HOLD ☒ STANDARD ☐ RUSH
4. Were samples on ice?..... ☒ Yes ☐ No ☐ Water ☐ Ice & Water
5. Bottles supplied by Test America? ..... ☒ Yes ☐ No
6. Number of containers are noted on COC (Chain of Custody) ?..... ☒ Yes ☐ No
7. Matrix is identified on COC ? ..... ☒ Yes ☐ No
8. Did all sample containers arrive in good condition?..... ☒ OK ☐ Broken ☐ Frozen ☐ Slushy

☐ BOD ☐ Bacteria ☐ _____

9. Are there any short hold time tests? (48hrs or less)..... ☒ No ☐ Yes

Past Hold?..... ☒ No ☐ Yes

24 hours or less	48 hours	7 days
Coliform Bacteria		Aqueous Organic Prep
Fecal (orange)	BOD CBOD	BNA 8270 DRO (HCL amber)
Total Bacteria (blue)		Herbs PAH (NT amber)
MPN Bacteria (black)	Nitrite NO2 Nitrate NO3	PCBs Pest/PCBs
SPC (Standard Plate Count – yellow)	OrthoPhosphate or	PNA
HPC (Hydrophilic Plate Count - yellow)	OrthoPhosphorus	TS (Total Solids) TDS
T. Residual Chlorine (NT bottle)	Surfactants (MBAS)	TSS (Total Suspended Solids)
CR3 or CR6 (Hex Chromium VI - NT bottle)	Sulfite	Sulfide
Dissolved Oxygen (DO)	Turbidity	Volatile Solids

10. Ops Mgr, PM or Analyst informed of short hold?.....Who_____When_____
11. Other than short hold test , were any samples within 2 days of their hold date ..... ☒ No ☐ Yes

Or past their expiration of hold time ..... ☒ No ☐ Yes

12. Is the date and time of collection recorded on COC? Date ..... ☒ Yes ☐ No on the containers ☒ Yes ☐ No

Time..... ☒ Yes ☐ No on the containers ☐ Yes ☒ No

13. Are dissolved parameters field filtered or being filtered in the lab?..... ☐ Field ☐ Lab ☒ NA
14. Are sample volumes adequate and preservatives correct for test requested? Vol.. ☒ Yes ☐ No

Preservatives.... ☒ Yes ☐ No

15. Were correct containers used for the analysis requested?..... ☒ Yes ☐ No
16. Do VOC samples have air bubbles ?..... ☒ No ☐ Yes ☐ NA
17. Is an aqueous Trip Blank included?..... ☒ Yes ☐ No ☐ NA
18. If received, how were DRO soil samples received?..... ☐ Weighed glass jar ☐ Packed jar
19. Is a Methanol Trip Blank included?..... ☐ Yes ☐ glass jar ☐ vial ..... ☐ No ☐ NA
20. How were VOC soils received? ☐ Methanol ☐ Sodium Bisulfate ☐ Packed Jar ☐ Encore ☐ Other ☐ Water (see options*)

* ☐ Within 48hrs of sampling ☐ Past 48hrs of sampling ☐ Frozen ☐ Not Frozen

21. Were all sample containers received and match the Sample IDs listed on COC?..... ☐ Yes ☐ No

If any changes are made to this Work Order after Login, or if comments must be made regarding this cooler, explain them below:

_____

_____

_____

_____

CT LABORATORIES
delivering more than data from your environmental analyses

1230 Lange Court • Baraboo, WI 53913 • 608-356-2760
www.ctlaboratories.com

ANALYTICAL REPORT

MSA PROFESSIONAL SERVICES
JAYNE ENGLEBERT
1230 SOUTH BLVD
BARABOO, WI 53913

Project Name: WINNER'S CIRCLE
Contract #: 1269
Project #: 213212
Folder #: 88291
Purchase Order #:

Arrival Temperature: See COC
Report Date: 11/30/2011
Date Received: 11/18/2011
Reprint Date: 12/1/2011

CT LAB Sample#: 103988 Sample Description: SVE DISCHARGE Sampled: 11/17/2011 1610

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Organic Results										
Air Monitoring Benzene	<0.244E-6	lbs/cuft	N/A	N/A	1		11/28/2011 13:30	11/28/2011 18:30	JJY	NIOSH 1501

Solid sample results reported on a Dry Weight Basis

Notes: * Indicates Value in between the LOD (limit of detection) and the LOQ (limit of quantitation).
^ Indicates the laboratory is NELAP accredited for this analyte by the indicated matrix and method.

All samples were received intact and properly preserved unless otherwise noted. The results reported relate only to the samples tested. This report shall not be reproduced, except in full, without written approval of this laboratory. The Chain of Custody is attached.
This report has been specifically prepared to satisfy project or program requirements. Although certain analyses may indicate NELAP accreditation, the parameters may not necessarily have been analyzed and/or reported following NELAP conventions or requirements.Level of uncertainty measurements only provided upon pre-approved request.

Submitted by: Eric T. Korthals
Project Manager
608-356-2760

Current CT Laboratories Certifications

Illinois NELAP ID# 200046

Kansas NELAP ID# E-10368

Kentucky ID# 0023

Pennsylvania NELAP ID# 68-04201

New Jersey NELAP ID# WI001

North Carolina ID# 674

Wisconsin (WDNR) Chemistry ID# 157066030

Wisconsin (DATCP) Bacteriology ID# 105-289

DoD-ELAP Accreditation Cert # ADE-1453

Alaska ID # UST-099

Louisiana ID # 115843

GA EPD Stipulation ID 115843, Exp 6-30-12

GA EPD Stipulation

Accreditor:	LA NELAP
Scope:	Hazardous/Solid Waste Non-potable water
Effective:	07/01/2011

Rev. 9/2009

UST CHAIN OF CUSTODY

Page _____ of _____

Company: MSA
Project Contact: Jayne Englebert
Telephone: 356-2771
Project Name: winners circle
Project #: 213212
Location: Oxford
Sampled By: P Toomey

CT LABORATORIES
1230 Lange Court, Baraboo, WI 53913
608-356-2760 Fax 608-356-2766
www.ctlaboratories.com

Folder #: 88291
Company: MSA PROFESSIONAL S
Project: WINNER'S CIRCLE
Logged By: JLS PM: ET

Program: RCRA SDWA NPDES
Waste Other _____
#

Report To: Jayne Englebert
EMAIL:
Company: MSA
Address: 1230 S Blvd Baraboo, WI
Invoice To:*
EMAIL:
Company: Same
Address:

*Party listed is responsible for payment of invoice as per CT Laboratories' terms and conditions

Client Special Instructions
VOC Sampled 2.434 LITERS

Matrix:
GW - groundwater SW - surface water WW - wastewater DW - drinking water
S - soil/sediment SL - sludge A - air M - misc/waste

ANALYSES REQUESTED

Collection Date	Collection Time	Matrix	Grab/ Comp	Sample ID Description	Filtered? Y/N	DRO	GRO	GRO/PVOC	LEAD	CADMIUM	VOC 8260	PAH	%SOL	Benzene					Total # Containers	Designated MS/MSD	CT Lab ID # (Lab use only)
						Fill in Spaces with Bottles per Test															
11-17-11	4:10	A	G	Sve Discharge										V							163988

Turnaround Time
Normal RUSH*
Date Needed: _____
Rush unalysis requires prior CT Laboratories' approval
Surcharges:
24 hr 200%
2-3 days 100%
4-9 days 50%

Relinquished By:	Date/Time	Received By:	Date/Time
	11-18-11		
Received by:	Date/Time	Received for Laboratory by:	Date/Time
			11/18/11 1330

Lab Use Only
Ice Present Yes (No)
Temperature Ambient
Cooler # _____

11/17/11 1325

CT LABORATORIES
delivering more than data from your environmental analyses

1230 Lange Court • Baraboo, WI 53913 • 608-356-2760
www.ctlaboratories.com

ANALYTICAL REPORT

MSA PROFESSIONAL SERVICES
JAYNE ENGLEBERT
1230 SOUTH BLVD
BARABOO, WI 53913

Project Name: WINNERS CIRCLE
Contract #: 1269
Project #: 213212
Folder #: 88417
Purchase Order #:

Arrival Temperature: See COC
Report Date: 12/14/2011
Date Received: 12/2/2011
Reprint Date: 12/15/2011

CT LAB Sample#: 106584 Sample Description: SVE DISCHARGE Sampled: 12/1/2011 1220

Analyte	Result	Units	LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Organic Results										
Air Monitoring Benzene	<0.24E-06	lbs/cuft	N/A	N/A	1		12/9/2011 17:30	12/12/2011 13:42	JJY	NIOSH 1501

Solid sample results reported on a Dry Weight Basis

Notes: * Indicates Value in between the LOD (limit of detection) and the LOQ (limit of quantitation).
^ Indicates the laboratory is NELAP accredited for this analyte by the indicated matrix and method.

All samples were received intact and properly preserved unless otherwise noted. The results reported relate only to the samples tested. This report shall not be reproduced, except in full, without written approval of this laboratory. The Chain of Custody is attached.
This report has been specifically prepared to satisfy project or program requirements. Although certain analyses may indicate NELAP accreditation, the parameters may not necessarily have been analyzed and/or reported following NELAP conventions or requirements.Level of uncertainty measurements only provided upon pre-approved request.

Submitted by: Eric T. Korthals
Project Manager
608-356-2760

Current CT Laboratories Certifications

Illinois NELAP ID# 200046

Kansas NELAP ID# E-10368

Kentucky ID# 0023

Pennsylvania NELAP ID# 68-04201

New Jersey NELAP ID# WI001

North Carolina ID# 674

Wisconsin (WDNR) Chemistry ID# 157066030

Wisconsin (DATCP) Bacteriology ID# 105-289

DoD-ELAP Accreditation Cert # ADE-1453

Alaska ID # UST-099

Louisiana ID # 115843

GA EPD Stipulation ID 115843, Exp 6-30-12

GA EPD Stipulation

Accreditor:	LA NELAP
Scope:	Hazardous/Solid Waste Non-potable water
Effective:	07/01/2011

Rev. 9/2009

UST CHAIN OF CUSTODY

Page _____ of _____

Company: MSA

Project Contact: Jayne Englebert

Telephone: 356-2771

Project Name: WINNERS CIRCLE

Project #: 213213

Location: OXFORD, WI

Sampled By: [signature]

CT LABORATORIES

1230 Lange Court, Baraboo, WI 53913
608-356-2760 Fax 608-356-2766
www.ctlaboratories.com

Folder #: 88417

Company: MSA PROFESSIONAL S

Project: WINNERS CIRCLE

Logged By: TMM PM: ET

am:

RCRA SDWA NPDES

Waste Other _____

Report To: Jayne Englebert
EMAIL:
Company: MSA
Address: 1230 S Blvd
Baraboo, WI

Invoice To:*
EMAIL: Same
Company:
Address:

*Party listed is responsible for payment of invoice as per CT Laboratories' terms and conditions

Client Special Instructions

Volume Sampled 2,452 Liters

Matrix:
GW - groundwater SW - surface water WW - wastewater DW - drinking water
S - soil/sediment SL - sludge A - air M - misc/waste

Collection Date	Collection Time	Matrix	Grab/ Comp	Sample ID Description	Filtered? Y/N	DRO	GRO	GRO/VOC	LEAD	CADMIUM	VOC 8260	PAH	%SOL	Benzene					Total # Containers	Designated MS/MSD
12-1-11	12:20	A	G	SVE Discharge										V						

ANALYSES REQUESTED

Fill in Spaces with Bottles per Test

Turnaround Time
Normal RUSH*
Date Needed:

Rush analysis requires prior CT Laboratories' approval
Surcharges:
24 hr 200%
2-3 days 100%
4-9 days 50%

CT Lab ID #
Lab use only
106582

Relinquished By: [signature] Date/Time 12-2-11

Received by: Date/Time

Received By: Date/Time

Received for Laboratory by: [signature] Date/Time 12-02-11

Lab Use Only
Ice Present Yes No
Temperature [signature]
Cooler # N/A

12/2/11 1050

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: Winner's Circle Auto	Local Grid Location of Well: ____ ft. ☐N. ☐S. ____ ft. ☐E. ☐W.	Well Name: B-1 (SVE-1)
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ° ' " Long. ° ' " or	Wis. Unique Well No. / DNR Well ID No.
Facility ID	St. Plane ____ ft. N, ____ ft. E. S/C/N	Date Well Installed: 6/27/2011 (m m d d y y y y)
Type of Well: Well Code ____/____	Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐E ☐W	Well Installed By: Name (first, last) and Firm: Alex Plummer, Badger State Drilling
Distance from Waste/Source ____ ft. / Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known / Gov. Lot Number	

A. Protective pipe, top elevation _____ ft. MSL
B. Well casing, top elevation _____ ft. MSL
C. Land surface elevation _____ ft. MSL
D. Surface seal, bottom _____ ft. MSL or _____ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☐ No

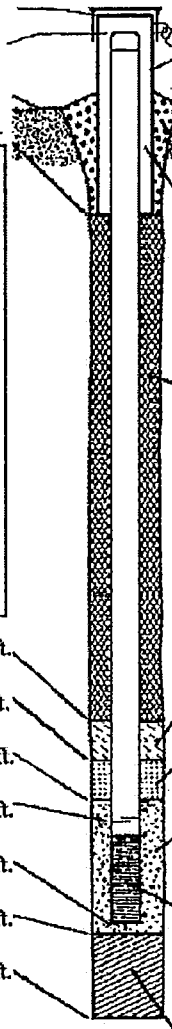
14. Drilling method used: Rotary ☐ 50 / Hollow Stem Auger ☐ 41 / Other ☐ _____

15. Drilling fluid used: Water ☐ 02 / Air ☐ 01 / Drilling Mud ☐ 03 / None ☐ 99

16. Drilling additives used? ☐ Yes ☐ No
Describe _____

17. Source of water (attach analysis, if required):
_____

E. Bentonite seal, top _____ ft. MSL or 4 ft.
F. Fine sand, top _____ ft. MSL or 7 ft.
G. Filter pack, top _____ ft. MSL or 8 ft.
H. Screen joint, top _____ ft. MSL or 10 ft.
I. Well bottom _____ ft. MSL or 25 ft.
J. Filter pack, bottom _____ ft. MSL or 26' ft.
K. Borehole, bottom _____ ft. MSL or 26' ft.
L. Borehole, diameter 10 in.
M. O.D. well casing 4.5 in.
N. I.D. well casing 4.0 in.



1. Cap and lock? ☐ Yes ☒ No
2. Protective cover pipe:
a. Inside diameter: Done by others ___ in.
b. Length: ___ ft.
c. Material: Steel ☐ 04 / Other ☐ _____
d. Additional protection? ☐ Yes ☐ No
If yes, describe: _____
3. Surface seal: Bentonite ☐ 30 / Concrete ☐ 01 / Other ☒ Sand
4. Material between well casing and protective pipe: Bentonite ☐ 30 / Other ☐ _____
5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. _____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 / Tremie pumped ☐ 02 / Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____
7. Fine sand material: Manufacturer, product name & mesh size
a. _____
b. Volume added _____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. 1.0/2.0
b. Volume added _____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☐ 23 / Flush threaded PVC schedule 80 ☒ 24 / Other ☐ _____
10. Screen material: Sch 80
a. Screen type: Factory cut ☒ 11 / Continuous slot ☐ 01 / Other ☐ _____
b. Manufacturer Manoflex
c. Slot size: 0.010 in.
d. Slotted length: 15 ft.
11. Backfill material (below filter pack): None ☐ 14 / Other ☐ _____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: [signature] Firm: Badger STATE Drilling

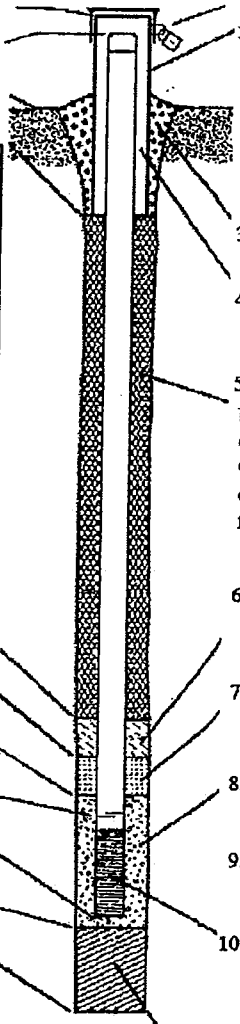
Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: Winnei's Circle Auto	Local Grid Location of Well: _____ ft. ☐N. ☐S. _____ ft. ☐E. ☐W.	Well Name: B-2 (SVE-2)
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ° ' " Long. ° ' " or	Wis. Unique Well No. / DNR Well ID No.
Facility ID	St. Plane _____ ft. N, _____ ft. E. S/C/N	Date Well Installed: 6/27/2011 (m m d d y y y y)
Type of Well: Well Code 1	Section Location of Waste/Source: ____1/4 of ____1/4 of Sec. ____, T. ____ N, R. ____ ☐E ☐W	Well Installed By: Name (first, last) and Firm: Alex Plummer, Badger State Drillin
Distance from Waste/Source _____ ft. / Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known / Gov. Lot Number	



A. Protective pipe, top elevation _____ ft. MSL
B. Well casing, top elevation _____ ft. MSL
C. Land surface elevation _____ ft. MSL
D. Surface seal, bottom _____ ft. MSL or _____ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ 50 / Hollow Stem Auger ☐ 41 / Other ☐ _____

15. Drilling fluid used: Water ☐ 02 / Air ☐ 01 / Drilling Mud ☐ 03 / None ☐ 99

16. Drilling additives used? ☐ Yes ☐ No
Describe _____

17. Source of water (attach analysis, if required):
_____

E. Bentonite seal, top _____ ft. MSL or 4 ft.
F. Fine sand, top _____ ft. MSL or _____ ft.
G. Filter pack, top _____ ft. MSL or 8 ft.
H. Screen joint, top _____ ft. MSL or 10 ft.
I. Well bottom _____ ft. MSL or 25 ft.
J. Filter pack, bottom _____ ft. MSL or 26' ft.
K. Borehole, bottom _____ ft. MSL or 26' ft.
L. Borehole, diameter 10 in.
M. O.D. well casing 4.5 in.
N. I.D. well casing 4.0 in.

1. Cap and lock? ☐ Yes ☒ No
2. Protective cover pipe:
a. Inside diameter: Done by others ___ in.
b. Length: ___ ft.
c. Material: _____ Steel ☐ 04 / Other ☐
d. Additional protection? ☐ Yes ☐ No
If yes, describe: _____
3. Surface seal: Sand — Bentonite ☐ 30 / Concrete ☐ 01 / Other ☑
4. Material between well casing and protective pipe: _____ Bentonite ☐ 30 / Other ☐
5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. _____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 / Tremie pumped ☐ 02 / Gravity ☑ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☑3/8 in. ☐1/2 in. Bentonite chips ☑ 32
c. _____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. _____
b. Volume added _____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. 1.0/2.0
b. Volume added _____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☐ 23 / Flush threaded PVC schedule 80 ☑ 24 / Other ☐ _____
10. Screen material: Sch 40
a. Screen type: Factory cut ☑ 11 / Continuous slot ☐ 01 / Other ☐ _____
b. Manufacturer Monoflex
c. Slot size: 0.010 in.
d. Slotted length: 15 ft.
11. Backfill material (below filter pack): _____ None ☐ 14 / Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Alex [illegible] Firm: Badger STATE Drilling

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: Winnie's Circle Auto
Facility License, Permit or Monitoring No.:
Facility ID:
Type of Well: Well Code ____/____
Distance from Waste/Source ____ ft. | Enf. Stds. Apply ☐

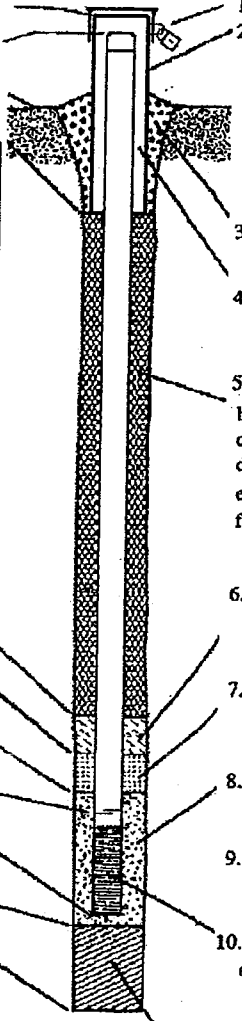
Local Grid Location of Well: ____ ft. ☐N. ☐S. ____ ft. ☐E. ☐W.
Local Grid Origin ☐ (estimated: ☐) or Well Location ☐
Lat. ° ' " Long. ° ' " or
St. Plane ____ ft. N, ____ ft. E. S/C/N
Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐E ☐W
Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known
Gov. Lot Number:

Well Name: B-3 (SVE-3)
Wis. Unique Well No.: ____ DNR Well ID No.: ____
Date Well Installed: 6/28/2011 (m m d d y y y y)
Well Installed By: Name (first, last) and Firm: Alex Plummer, Badger State Drilling

A. Protective pipe, top elevation ____ ft. MSL
B. Well casing, top elevation ____ ft. MSL
C. Land surface elevation ____ ft. MSL
D. Surface seal, bottom ____ ft. MSL or ____ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐
13. Sieve analysis performed? ☐ Yes ☐ No
14. Drilling method used: Rotary ☐ 50 Hollow Stem Auger ☐ 41 Other ☐ ____
15. Drilling fluid used: Water ☐ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☐ 99
16. Drilling additives used? ☐ Yes ☐ No
Describe ____
17. Source of water (attach analysis, if required): ____

E. Bentonite seal, top ____ ft. MSL or 4 ft.
F. Fine sand, top ____ ft. MSL or ____ ft.
G. Filter pack, top ____ ft. MSL or 8 ft.
H. Screen joint, top ____ ft. MSL or 10 ft.
I. Well bottom ____ ft. MSL or 25 ft.
J. Filter pack, bottom ____ ft. MSL or 26' ft.
K. Borehole, bottom ____ ft. MSL or 26' ft.
L. Borehole, diameter 10 in.
M. O.D. well casing 4.5 in.
N. I.D. well casing 4.0 in.



1. Cap and lock? ☐ Yes ☒ No
2. Protective cover pipe:
a. Inside diameter: Done by others ___ in.
b. Length: ___ ft.
c. Material: ____ Steel ☐ 04 Other ☐ ____
d. Additional protection? ☐ Yes ☐ No
If yes, describe: ____
3. Surface seal: Sand Bentonite ☐ 30 Concrete ☐ 01 Other ☑ ____
4. Material between well casing and protective pipe: ____ Bentonite ☐ 30 Other ☐ ____
5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight ... Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight ..... Bentonite slurry ☐ 31
d. ____ % Bentonite ..... Bentonite-cement grout ☐ 50
e. ____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☐ 02 Gravity ☑ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☑ 32
c. ____ Other ☐ ____
7. Fine sand material: Manufacturer, product name & mesh size
a. ____
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. 1.0/2.0
b. Volume added ____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☐ 23 Flush threaded PVC schedule 80 ☑ 24 Other ☐ ____
10. Screen material: Sch 80
a. Screen type: Factory cut ☑ 11 Continuous slot ☐ 01 Other ☐ ____
b. Manufacturer Monoflex
c. Slot size: 0.010 in.
d. Slotted length: 15 ft.
11. Backfill material (below filter pack): ____ None ☐ 14 Other ☐ ____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Alex | Firm: Badger STATE Drilling

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name: Winnei's Circle Auto	Local Grid Location of Well: _____ ft. ☐N. ☐S. _____ ft. ☐E. ☐W.	Well Name: B-4 (SVE-4)
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ° ' " Long. ° ' " or	Wis. Unique Well No. / DNR Well ID No.
Facility ID	St. Plane _____ ft. N, _____ ft. E. S/C/N	Date Well Installed: 6/27/2011 (m m d d y y y y)
Type of Well: Well Code ____/____	Section Location of Waste/Source: ____1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐E ☐W	Well Installed By: Name (first, last) and Firm: Alex Plummer, Badger State Drilling
Distance from Waste/Source _____ ft. / Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known / Gov. Lot Number	

A. Protective pipe, top elevation _____ ft. MSL
B. Well casing, top elevation _____ ft. MSL
C. Land surface elevation _____ ft. MSL
D. Surface seal, bottom _____ ft. MSL or _____ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☐ No

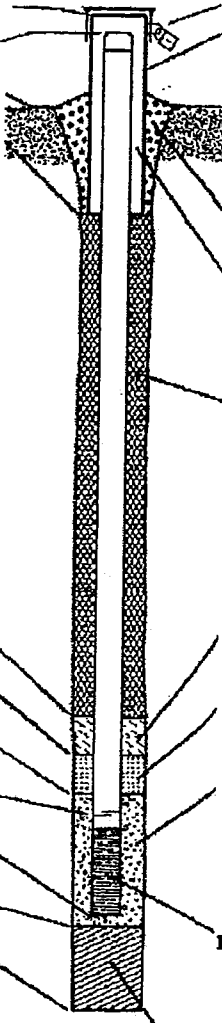
14. Drilling method used: Rotary ☐ 50 Hollow Stem Auger ☐ 41 Other ☐ _____

15. Drilling fluid used: Water ☐ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☐ 99

16. Drilling additives used? ☐ Yes ☐ No
Describe _____

17. Source of water (attach analysis, if required):
_____

E. Bentonite seal, top _____ ft. MSL or 4 ft.
F. Fine sand, top _____ ft. MSL or _____ ft.
G. Filter pack, top _____ ft. MSL or 8 ft.
H. Screen joint, top _____ ft. MSL or 10 ft.
I. Well bottom _____ ft. MSL or 25 ft.
J. Filter pack, bottom _____ ft. MSL or 26' ft.
K. Borehole, bottom _____ ft. MSL or 26' ft.
L. Borehole, diameter 10 in.
M. O.D. well casing 4.5 in.
N. I.D. well casing 4.0 in.



1. Cap and lock? ☐ Yes ☒ No
2. Protective cover pipe:
a. Inside diameter: Done by others ___ in.
b. Length: ___ ft.
c. Material: _____ Steel ☐ 04 Other ☐ ____
d. Additional protection? ☐ Yes ☐ No
If yes, describe: _____
3. Surface seal: Sand — Bentonite ☐ 30 Concrete ☐ 01 Other ☒ ____
4. Material between well casing and protective pipe: _____ Bentonite ☐ 30 Other ☐ ____
5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. _____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☐ 02 Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ ____
7. Fine sand material: Manufacturer, product name & mesh size
a. _____
b. Volume added _____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. 1.0/2.0
b. Volume added _____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☐ 23 Flush threaded PVC schedule 80 ☒ 24 Other ☐ ____
10. Screen material: Sch 40
a. Screen type: Factory cut ☒ 11 Continuous slot ☐ 01 Other ☐ ____
b. Manufacturer Monoflex
c. Slot size: 0.010 in.
d. Slotted length: 15 ft.
11. Backfill material (below filter pack): None ☐ 14 Other ☐ ____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Alex Plummer | Firm: Badger STATE Drilling

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: Winnei's Circle Auto
Facility License, Permit or Monitoring No.:
Facility ID:
Type of Well: Well Code ____/____
Distance from Waste/Source ____ ft. | Enf. Stds. Apply ☐

Local Grid Location of Well: ____ ft. ☐N. ☐S. ____ ft. ☐E. ☐W.
Local Grid Origin ☐ (estimated: ☐) or Well Location ☐
Lat. ____ ° ____ ' ____ " Long. ____ ° ____ ' ____ " or
St. Plane ____ ft. N, ____ ft. E. S/C/N
Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐E ☐W
Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known
Gov. Lot Number:

Well Name: B-5 (SVE-5)
Wis. Unique Well No.: ____ DNR Well ID No.: ____
Date Well Installed: 6/27/2011 (m m d d y y y y)
Well Installed By: Name (first, last) and Firm: Alex Plummer, Badger State Drilling

A. Protective pipe, top elevation ____ ft. MSL
B. Well casing, top elevation ____ ft. MSL
C. Land surface elevation ____ ft. MSL
D. Surface seal, bottom ____ ft. MSL or ____ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☐ No

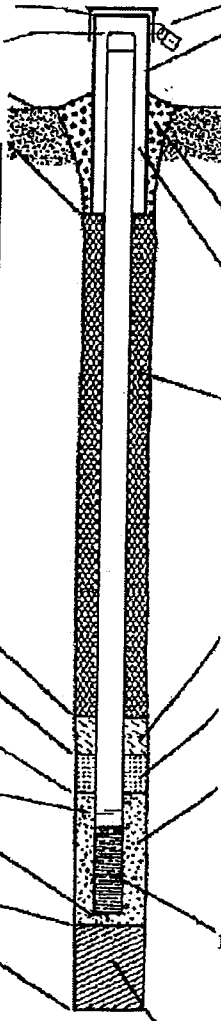
14. Drilling method used: Rotary ☐ 50 Hollow Stem Auger ☐ 41 Other ☐ ____

15. Drilling fluid used: Water ☐ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☐ 99

16. Drilling additives used? ☐ Yes ☐ No
Describe ____

17. Source of water (attach analysis, if required):
____

E. Bentonite seal, top ____ ft. MSL or 4 ft.
F. Fine sand, top ____ ft. MSL or ____ ft.
G. Filter pack, top ____ ft. MSL or 8 ft.
H. Screen joint, top ____ ft. MSL or 10 ft.
I. Well bottom ____ ft. MSL or 25 ft.
J. Filter pack, bottom ____ ft. MSL or 26' ft.
K. Borehole, bottom ____ ft. MSL or 26' ft.
L. Borehole, diameter 10 in.
M. O.D. well casing 4.5 in.
N. I.D. well casing 4.0 in.



1. Cap and lock? ☐ Yes ☒ No
2. Protective cover pipe:
a. Inside diameter: Done by others ___ in.
b. Length: ___ ft.
c. Material: Steel ☐ 04 Other ☐ ____
d. Additional protection? ☐ Yes ☐ No
If yes, describe: ____
3. Surface seal: Bentonite ☐ 30 Concrete ☐ 01 Other ☒ Sand
4. Material between well casing and protective pipe: Bentonite ☐ 30 Other ☐ ____
5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. ____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☐ 02 Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☒ 32
c. ____ Other ☐ ____
7. Fine sand material: Manufacturer, product name & mesh size
a. ____
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. 1.0/2.0
b. Volume added ____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☐ 23 Flush threaded PVC schedule 80 ☒ 24 Other ☐ ____
10. Screen material: Sch 80
a. Screen type: Factory cut ☒ 11 Continuous slot ☐ 01 Other ☐ ____
b. Manufacturer Monoflex
c. Slot size: 0.010 in.
d. Slotted length: 15 ft.
11. Backfill material (below filter pack): None ☐ 14 Other ☐ ____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Alex Plummer Firm: Badger STATE Drilling

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐ Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name: Winnei's Circle Auto	Local Grid Location of Well: _____ ft. ☐N. ☐S. _____ ft. ☐E. ☐W.	Well Name: B-6 (SVE-6)
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ° ' " Long. ° ' " or	Wis. Unique Well No. / DNR Well ID No.
Facility ID	St. Plane _____ ft. N, _____ ft. E. S/C/N	Date Well Installed: 6/28/2011 (m m d d y y y y)
Type of Well: Well Code ____/____	Section Location of Waste/Source: ____1/4 of ____1/4 of Sec. ____, T. ____ N, R. ____ ☐E ☐W	Well Installed By: Name (first, last) and Firm: Alex Plummer, Badger State Drilling
Distance from Waste/Source _____ ft. / Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: _____

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation _____ ft. MSL

C. Land surface elevation _____ ft. MSL

D. Surface seal, bottom _____ ft. MSL or _____ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ 50 / Hollow Stem Auger ☐ 41 / Other ☐ _____

15. Drilling fluid used: Water ☐ 02 / Air ☐ 01 / Drilling Mud ☐ 03 / None ☐ 99

16. Drilling additives used? ☐ Yes ☐ No

Describe _____

17. Source of water (attach analysis, if required):

_____

E. Bentonite seal, top _____ ft. MSL or 4 ft.

F. Fine sand, top _____ ft. MSL or _____ ft.

G. Filter pack, top _____ ft. MSL or 8 ft.

H. Screen joint, top _____ ft. MSL or 10 ft.

I. Well bottom _____ ft. MSL or 25 ft.

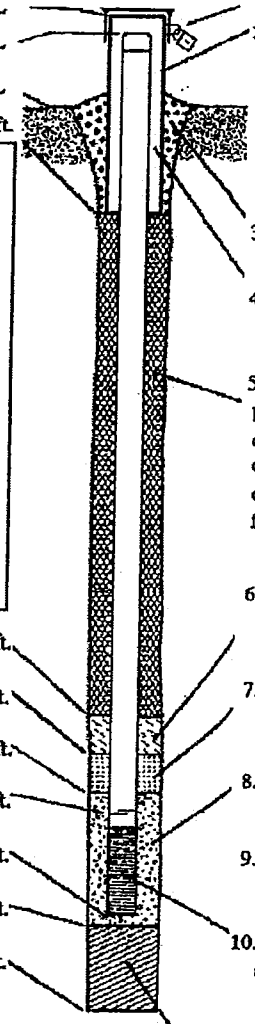
J. Filter pack, bottom _____ ft. MSL or 26' ft.

K. Borehole, bottom _____ ft. MSL or 26' ft.

L. Borehole, diameter 10 in.

M. O.D. well casing 4.5 in.

N. I.D. well casing 4.0 in.



1. Cap and lock? ☐ Yes ☒ No

2. Protective cover pipe:
a. Inside diameter: Done by others ___ in.
b. Length: ___ ft.
c. Material: _____ Steel ☐ 04 / Other ☐ _____
d. Additional protection? ☐ Yes ☐ No
If yes, describe: _____

3. Surface seal: Sand — Bentonite ☐ 30 / Concrete ☐ 01 / Other ☒ _____

4. Material between well casing and protective pipe: _____ Bentonite ☐ 30 / Other ☐ _____

5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. _____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 / Tremie pumped ☐ 02 / Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐ _____

7. Fine sand material: Manufacturer, product name & mesh size
a. _____
b. Volume added _____ ft^3

8. Filter pack material: Manufacturer, product name & mesh size
a. 1.0/2.0
b. Volume added _____ ft^3

9. Well casing: Flush threaded PVC schedule 40 ☐ 23 / Flush threaded PVC schedule 80 ☒ 24 / Other ☐ _____

10. Screen material: Sch 40
a. Screen type: Factory cut ☒ 11 / Continuous slot ☐ 01 / Other ☐ _____
b. Manufacturer Monoflex
c. Slot size: 0.010 in.
d. Slotted length: 15 ft.

11. Backfill material (below filter pack): _____ None ☐ 14 / Other ☐ _____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: [signature] Firm: Badger STATE Drilling

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: Winnei's Circle Auto
Facility License, Permit or Monitoring No.:
Facility ID:
Type of Well — Well Code ____/____
Distance from Waste/Source ____ ft. | Enf. Stds. Apply ☐

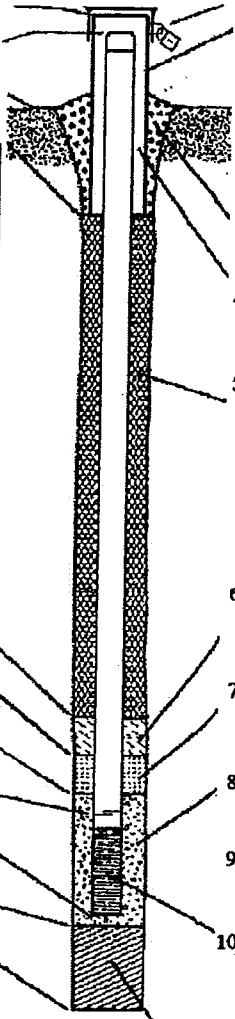
Local Grid Location of Well: ____ ft. ☐N. ☐S. ____ ft. ☐E. ☐W.
Local Grid Origin ☐ (estimated: ☐) or Well Location ☐
Lat. ____ ° ' " Long. ____ ° ' " or
St. Plane ____ ft. N, ____ ft. E. S/C/N
Section Location of Waste/Source: ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐E ☐W
Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known
Gov. Lot Number:

Well Name: B-7 (SVE-7)
Wis. Unique Well No.: ____ DNR Well ID No.: ____
Date Well Installed: 06/27/2011 (m m d d y y y y)
Well Installed By: Name (first, last) and Firm: Alex Plummer, Badger State Drilling

A. Protective pipe, top elevation ____ ft. MSL
B. Well casing, top elevation ____ ft. MSL
C. Land surface elevation ____ ft. MSL
D. Surface seal, bottom ____ ft. MSL or ____ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐
13. Sieve analysis performed? ☐ Yes ☐ No
14. Drilling method used: Rotary ☐ 50 Hollow Stem Auger ☐ 41 Other ☐ ____
15. Drilling fluid used: Water ☐ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☐ 99
16. Drilling additives used? ☐ Yes ☐ No
Describe ____
17. Source of water (attach analysis, if required): ____

E. Bentonite seal, top ____ ft. MSL or 4 ft.
F. Fine sand, top ____ ft. MSL or ____ ft.
G. Filter pack, top ____ ft. MSL or 8 ft.
H. Screen joint, top ____ ft. MSL or 10 ft.
I. Well bottom ____ ft. MSL or 25 ft.
J. Filter pack, bottom ____ ft. MSL or 26' ft.
K. Borehole, bottom ____ ft. MSL or 26' ft.
L. Borehole, diameter 10 in.
M. O.D. well casing 4.5 in.
N. I.D. well casing 4.0 in.



1. Cap and lock? ☐ Yes ☒ No
2. Protective cover pipe:
a. Inside diameter: Done by others ___ in.
b. Length: ___ ft.
c. Material: Steel ☐ 04 Other ☐ ____
d. Additional protection? ☐ Yes ☐ No
If yes, describe: ____
3. Surface seal: Bentonite ☐ 30 Concrete ☐ 01 Other ☒ Sand
4. Material between well casing and protective pipe: Bentonite ☐ 30 Other ☐ ____
5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. ____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☐ 02 Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☒ 32
c. ____ Other ☐ ____
7. Fine sand material: Manufacturer, product name & mesh size
a. ____
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. 1.0/2.0
b. Volume added ____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☐ 23 Flush threaded PVC schedule 80 ☒ 24 Other ☐ ____
10. Screen material: Sch 80
a. Screen type: Factory cut ☒ 11 Continuous slot ☐ 01 Other ☐ ____
b. Manufacturer Mono Flex
c. Slot size: 0.010 in.
d. Slotted length: 15 ft.
11. Backfill material (below filter pack): None ☐ 14 Other ☐ ____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: [signature] Firm: Badger STATE Drilling

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: Winnei's Circle Auto
Facility License, Permit or Monitoring No.:
Facility ID:
Type of Well — Well Code ____/____
Distance from Waste/Source ____ ft. | Enf. Stds. Apply ☐

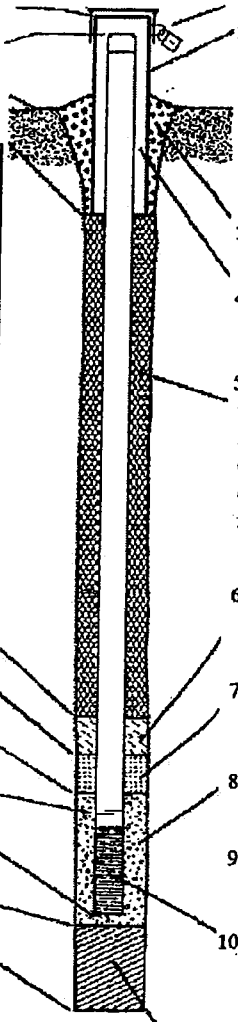
Local Grid Location of Well ____ ft. ☐N. ☐S. ____ ft. ☐E. ☐W.
Local Grid Origin ☐ (estimated: ☐) or Well Location ☐
Lat. ° ' " Long. ° ' " or
St. Plane ____ ft. N, ____ ft. E. S/C/N
Section Location of Waste/Source
____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐E ☐W
Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known
Gov. Lot Number:

Well Name: B-8 (SVE-8)
Wis. Unique Well No.: | DNR Well ID No.:
Date Well Installed: 6/28/2011 (m m d d y y y y)
Well Installed By: Name (first, last) and Firm: Alex Plummer, Badger State Drilling

A. Protective pipe, top elevation ____ ft. MSL
B. Well casing, top elevation ____ ft. MSL
C. Land surface elevation ____ ft. MSL
D. Surface seal, bottom ____ ft. MSL or ____ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐
13. Sieve analysis performed? ☐ Yes ☐ No
14. Drilling method used: Rotary ☐ 50; Hollow Stem Auger ☐ 41; Other ☐
15. Drilling fluid used: Water ☐ 02; Air ☐ 01; Drilling Mud ☐ 03; None ☐ 99
16. Drilling additives used? ☐ Yes ☐ No
Describe:
17. Source of water (attach analysis, if required):

E. Bentonite seal, top ____ ft. MSL or 4 ft.
F. Fine sand, top ____ ft. MSL or ____ ft.
G. Filter pack, top ____ ft. MSL or 8 ft.
H. Screen joint, top ____ ft. MSL or 10 ft.
I. Well bottom ____ ft. MSL or 25 ft.
J. Filter pack, bottom ____ ft. MSL or 26' ft.
K. Borehole, bottom ____ ft. MSL or 26' ft.
L. Borehole, diameter 10 in.
M. O.D. well casing 4.5 in.
N. I.D. well casing 4.0 in.



1. Cap and lock? ☐ Yes ☒ No
2. Protective cover pipe:
a. Inside diameter: Done by others ___ in.
b. Length: ___ ft.
c. Material: Steel ☐ 04; Other ☐
d. Additional protection? ☐ Yes ☐ No
If yes, describe:
3. Surface seal: Sand — Bentonite ☐ 30; Concrete ☐ 01; Other ☒
4. Material between well casing and protective pipe: Bentonite ☐ 30; Other ☐
5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight ... Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight ..... Bentonite slurry ☐ 31
d. ____ % Bentonite ..... Bentonite-cement grout ☐ 50
e. ____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☐3/8 in. ☐1/2 in. Bentonite chips ☒ 32
c. ____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. ____
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. 1.0/2.0
b. Volume added ____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☐ 23; Flush threaded PVC schedule 80 ☒ 24; Other ☐
10. Screen material: Sch 80
a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐
b. Manufacturer: Monoflex
c. Slot size: 0.010 in.
d. Slotted length: 15 ft.
11. Backfill material (below filter pack): None ☐ 14; Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge.
Signature: [signature] Firm: Badger STATE Drilling

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: Winnei's Circle Auto
Facility License, Permit or Monitoring No.:
Facility ID:
Type of Well: Well Code 1
Distance from Waste/Source _____ ft. | Enf. Stds. Apply ☐

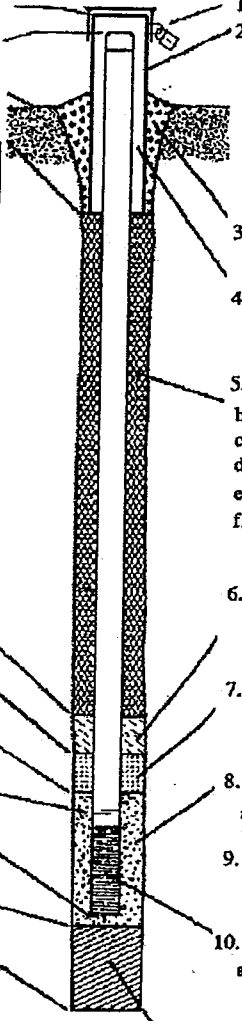
Local Grid Location of Well: _____ ft. ☐N. ☐S. _____ ft. ☐E. ☐W.
Local Grid Origin ☐ (estimated: ☐) or Well Location ☐
Lat. _____ ° _____ ' _____ " Long. _____ ° _____ ' _____ " or
St. Plane _____ ft. N, _____ ft. E. S/C/N
Section Location of Waste/Source: _____ 1/4 of _____ 1/4 of Sec. _____, T. _____ N, R. _____ ☐E ☐W
Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known
Gov. Lot Number:

Well Name: B-9 (SVE-9)
Wis. Unique Well No.:
DNR Well ID No.:
Date Well Installed: 6/27/2011 (m m d d y y y y)
Well Installed By: Name (first, last) and Firm: Alex Plummer, Badger State Drilling

A. Protective pipe, top elevation _____ ft. MSL
B. Well casing, top elevation _____ ft. MSL
C. Land surface elevation _____ ft. MSL
D. Surface seal, bottom _____ ft. MSL or _____ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐
13. Sieve analysis performed? ☐ Yes ☐ No
14. Drilling method used: Rotary ☐ 50 Hollow Stem Auger ☐ 41 Other ☐ _____
15. Drilling fluid used: Water ☐ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☐ 99
16. Drilling additives used? ☐ Yes ☐ No
Describe _____
17. Source of water (attach analysis, if required): _____

E. Bentonite seal, top _____ ft. MSL or 4 ft.
F. Fine sand, top _____ ft. MSL or _____ ft.
G. Filter pack, top _____ ft. MSL or 8 ft.
H. Screen joint, top _____ ft. MSL or 10 ft.
I. Well bottom _____ ft. MSL or 25 ft.
J. Filter pack, bottom _____ ft. MSL or 26' ft.
K. Borehole, bottom _____ ft. MSL or 26' ft.
L. Borehole, diameter 10 in.
M. O.D. well casing 4.5 in.
N. I.D. well casing 4.0 in.



1. Cap and lock? ☐ Yes ☒ No
2. Protective cover pipe:
a. Inside diameter: Done by others ___ in.
b. Length: ___ ft.
c. Material: _____ Steel ☐ 04 Other ☐ _____
d. Additional protection? ☐ Yes ☐ No
If yes, describe: _____
3. Surface seal: Sand Bentonite ☐ 30 Concrete ☐ 01 Other ☑ _____
4. Material between well casing and protective pipe: _____ Bentonite ☐ 30 Other ☐ _____
5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. _____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☐ 02 Gravity ☑ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☑ 32
c. _____ Other ☐ _____
7. Fine sand material: Manufacturer, product name & mesh size
a. _____
b. Volume added _____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. 1.0/2.0
b. Volume added _____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☐ 23 Flush threaded PVC schedule 80 ☑ 24 Other ☐ _____
10. Screen material: Sch 80
a. Screen type: Factory cut ☑ 11 Continuous slot ☐ 01 Other ☐ _____
b. Manufacturer Mono Flex
c. Slot size: 0.010 in.
d. Slotted length: 15 ft.
11. Backfill material (below filter pack): _____ None ☐ 14 Other ☐ _____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: [signature] Firm: Badger STATE Drilling

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐ _____

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: Winnei's Circle Auto
Facility License, Permit or Monitoring No.:
Facility ID:
Type of Well — Well Code ____/____
Distance from Waste/Source ____ ft. | Enf. Stds. Apply ☐

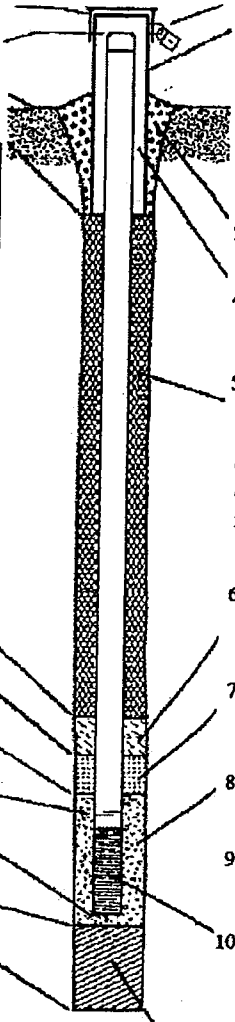
Local Grid Location of Well ____ ft. ☐N. ☐S. ____ ft. ☐E. ☐W.
Local Grid Origin ☐ (estimated: ☐) or Well Location ☐
Lat. ° ' " Long. ° ' " or
St. Plane ____ ft. N, ____ ft. E. S/C/N
Section Location of Waste/Source
____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐E ☐W
Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known
Gov. Lot Number:

Well Name: B-10 (SVE-10)
Wis. Unique Well No.: ____ DNR Well ID No.: ____
Date Well Installed: 06/28/2011 (m m d d y y y y)
Well Installed By: Name (first, last) and Firm
Alex Plummer
Badger State Drilling

A. Protective pipe, top elevation ____ ft. MSL
B. Well casing, top elevation ____ ft. MSL
C. Land surface elevation ____ ft. MSL
D. Surface seal, bottom ____ ft. MSL or ____ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐
13. Sieve analysis performed? ☐ Yes ☐ No
14. Drilling method used: Rotary ☐ 50 Hollow Stem Auger ☐ 41 Other ☐ ____
15. Drilling fluid used: Water ☐ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☐ 99
16. Drilling additives used? ☐ Yes ☐ No
Describe ____
17. Source of water (attach analysis, if required):
____

E. Bentonite seal, top ____ ft. MSL or 4 ft.
F. Fine sand, top ____ ft. MSL or ____ ft.
G. Filter pack, top ____ ft. MSL or 8 ft.
H. Screen joint, top ____ ft. MSL or 10 ft.
I. Well bottom ____ ft. MSL or 25 ft.
J. Filter pack, bottom ____ ft. MSL or 26' ft.
K. Borehole, bottom ____ ft. MSL or 26' ft.
L. Borehole, diameter 10 in.
M. O.D. well casing 4.5 in.
N. I.D. well casing 4.0 in.



1. Cap and lock? ☐ Yes ☒ No
2. Protective cover pipe:
a. Inside diameter: Done by others ___ in.
b. Length: ___ ft.
c. Material: Steel ☐ 04 Other ☐ ____
d. Additional protection? ☐ Yes ☐ No
If yes, describe: ____
3. Surface seal: Bentonite ☐ 30 Concrete ☐ 01 Other ☒ ____
Sand
4. Material between well casing and protective pipe: Bentonite ☐ 30 Other ☐ ____
5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. ____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☐ 02 Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☒ 32
c. ____ Other ☐ ____
7. Fine sand material: Manufacturer, product name & mesh size
a. ____
b. Volume added ____ ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. 1.0/2.0
b. Volume added ____ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☐ 23 Flush threaded PVC schedule 80 ☒ 24 Other ☐ ____
10. Screen material: Sch 40
a. Screen type: Factory cut ☒ 11 Continuous slot ☐ 01 Other ☐ ____
b. Manufacturer Mono Flex
c. Slot size: 0.010 in.
d. Slotted length: 15 ft.
11. Backfill material (below filter pack): None ☐ 14 Other ☐ ____

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Alex Plummer Firm: Badger State Drilling

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

H2K Technologies, Inc.

9851 13th Avenue North
Plymouth, MN 55441
Office: 763-746-9900
Fax: 763-746-9903

OPERATION & MAINTENANCE MANUAL

For

SGS Environmental Contracting, LLC

Project Name

Winners Circle Automotive

Oxford, WI

H2K Technologies Inc., Project Number #3023

Supplied By

H2K Technologies Inc.
9851 13th Avenue North
Plymouth, MN 55441
(763) 746-9900

TABLE OF CONTENTS

Section 1. SYSTEM / EQUIPMENT DESCRIPTION

Section 2. MECHANICAL DRAWINGS

Section 3. CONTROL PANEL SCHEMATIC & DESCRIPTION

Section 4. INSTALLATION, START UP & SHUT DOWN PROCEDURES

Section 5. MAINTENANCE SCHEDULE

Section 6. TROUBLE SHOOTING GUIDE

APPENDICES
The appendix contains detail information relating to specific equipment or sections of the system.

H2K Technologies, Inc.

Warranty Terms & Conditions

WARRANTIES: We warrant performance against defects in workmanship for a period of twelve (12) months from date of shipment. We also agree to pass on to the Purchaser any extended warranties by the manufacturer for material supplied. Remedies are limited to the repair and/or replacement of the defective part at H2K Technologies Plant in Plymouth, MN, and do not included freight to and from the point of operation or onsite labor to install or remove the product for service. It is agreed that any action for breach of express or implied warranty shall be initiated within fifteen (15) months of the date of shipment and only those defects that are documented to have occurred within twelve (12) months of shipment will be covered by the warranty. In no event shall H2K Technologies be liable for unintended or consequential damages, including, but not limited to, loss of profits or use damages arising out of the manufacture sale or supplying of the product. The provisions of the warranty are in lieu of any other warranty, whether expressed or implied, written or oral, and H2K Technologies liability arising out of the manufacture, sale or supplying of the product and its use, whether based on warranty, contract, negligence, product liability or otherwise shall not exceed the original cost of the defective product.

Section 1. System / Equipment Description

This manual contains important information about the equipment H2K Technologies, Inc has supplied for this project. Specific operation and maintenance information for individual components or systems can be found in the numbered sections. If additional information is required, please call.

The appendices contain the original equipment manufacturers' operation and maintenance manuals, specification sheets, modeling, etc.

Equipment Description:

The below is a list of equipment supplied by H2K Technologies Inc. for this project, more specific information on most of these items can be found in numbered sections of the manual.

SVE

(1) SGRU inlet header with 4" manifold and (10) 1" takeoffs
- Schedule 80 piping and fittings
- (10) 1" PVC ball valves
- (10) Vacuum gages
- (10) sample ports

(1) Moisture separator tank, Rotron model MS 350BS
- Tangential inlet for 95%+ moisture removal
- 55 gallon total capacity, 40 gallon holding capacity
- 55 gallon steel drum construction with epoxy finish inside & out
- 1" Drain valve
- Integral Vacuum relief valve
- High/high level switch
- Sample port on separator inlet

(1) 2" inline filter, Solberg model CSL-849-200HC with 10 micron replaceable element
- DP gage across filter, Dwyer Magnehelic

(1) Regenerative blower, Rotron EN656
- 3 HP, 220 VAC, 1Ø, EXP motor
- Aluminum casing and impeller
- Integral inlet & outlet silencers
- Sample ports on blower discharge
- 1" Air bleed valve with silencer on blower inlet (before air filter)
- Silencer on blower discharge
- 2" Flow meter, ERDCO 3200 on blower discharge, scfm
- Stack, 2" CPVC 12' above grade

Controls

(1) Control System
For operation on 220 VAC, 1Ø, 3 wire incoming electrical service. To control 3HP DPE blower. Furnished mounted and wired on the trailer exterior wall. To include:

QTY	DESCRIPTION
1	Enclosure, NEMA 4, 24"h, 24"w, 12"d with inner door for switches and indicators
1	Power distribution terminal block (65-335A) 3 pole; L1, L2, L3
1	Power distribution terminal block, 1 pole; Neutral
1	Motor starter: Contactor 23A FLA/Overload relay 18-23A, 1Ø; SVE blower
1	Panel board 120/220VAC 1phase in NEMA 3R enclosure mounted next to control panel, includes:

1 Circuit breaker 110V 1P10A 10K; control power
2 Circuit breaker 120V 1P15A 10K; vent fan, lighting
1 Circuit breaker 230V 2P20A 10K; heater
1 Circuit breaker 110V 1P20A 10K; receptacle(s)
1 Circuit breaker 230V 2P30A 10K; SVE
1 Switch; three position; Hand-Off-Auto with integral Run (green/LED) indication
2 Light (red/LED); alarms
1 Pushbutton (red/NO); alarm Reset
1 Intrinsically safe barriers, discrete , 2 channel
1 Motor run time meters
Relay logic and timers as required
Engraved laminated legends for all door mounted devices
Terminal blocks for external connections and fusing as required
Color-coded wiring with wire markers at all terminations
Fully documented, assembled, wired, programmed and pre-shipment test
1 UL 698A serialized label
1 Panel heater, 120VAC, 250Watt with thermostat
1 GFIC 20A outlet with and weatherproof cover; mounted adjacent to control panel

Trailer

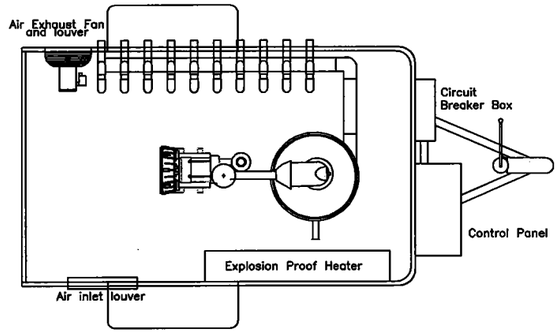
(1) Trailer enclosure system, 5' wide x 8' long x 5.5' high inside dimension

Includes equipment installation and wiring
4" steel I beam frame
Plywood floor decking, aluminum & fiberglass exterior
R-5 fiberglass wall and ceiling insulation with plywood interior
Single 3,500 lb axle, 3,500lb GVWR, radial tires
Double rear doors with cam lock
2 " coupler
rear stabilizer jacks, jack on front hitch
Electric brakes, ICC lighting
(1) Wall mounted explosion proof electric convection heater with thermostat
(1) Ceiling mounted light with vapor globe and wall switch
(1) Explosion proof vent fan with inlet & outlet louvers and thermostat

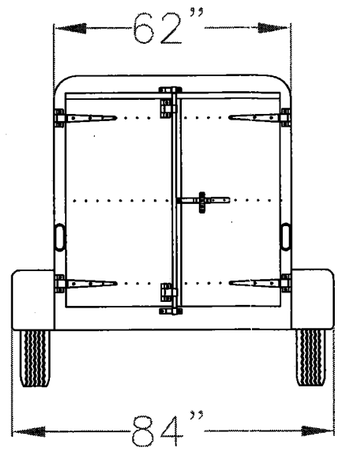
SVE system is installed, piped and wired in trailer, control panel is mounted and wired on outside of trailer. Piping is schedule 40 galvanized for SVE discharge, Schedule 80 PVC of SVE inlet. Wiring per NEC for Class I, Div 2 Group D hazardous environment for any electrical components mounted inside the trailer and shall be considered non-classified outside the trailer beyond 3' from any opening.

Section 2. Mechanical Drawings:

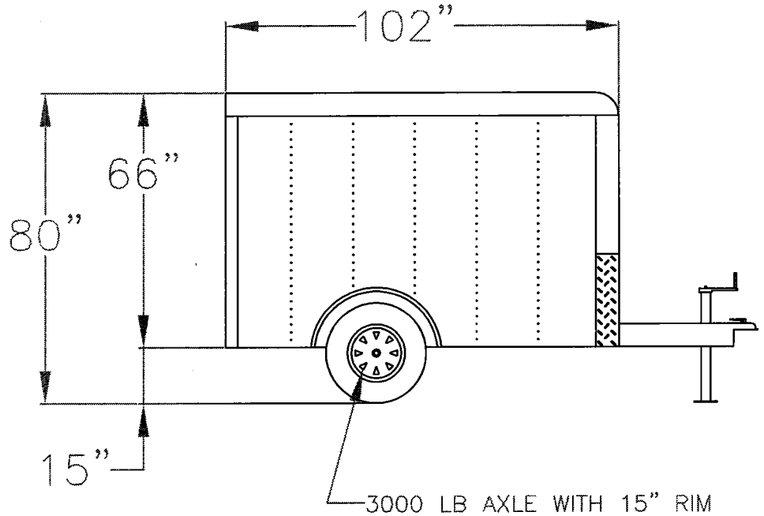
Contains any H2K Technologies Inc. generated drawings



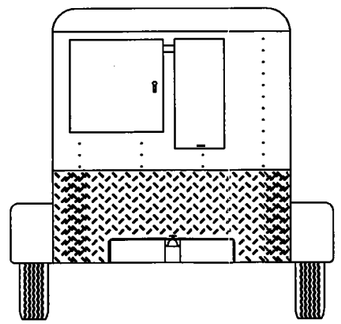
SECTION TOP VIEW



REAR VIEW



SIDE VIEW



FRONT VIEW

REVISIONS			
REV	DESCRIPTION	DATE	DWN

UNLESS SPECIFIED OTHERWISE
* DIMENSIONS ARE IN INCHES
* DO NOT SCALE DRAWING

DRAWN BY: MK
DESIGNED BY: MK
PROJECT MGR.: MK
DATE: 3/18/10
PROJECT NO.: 3023

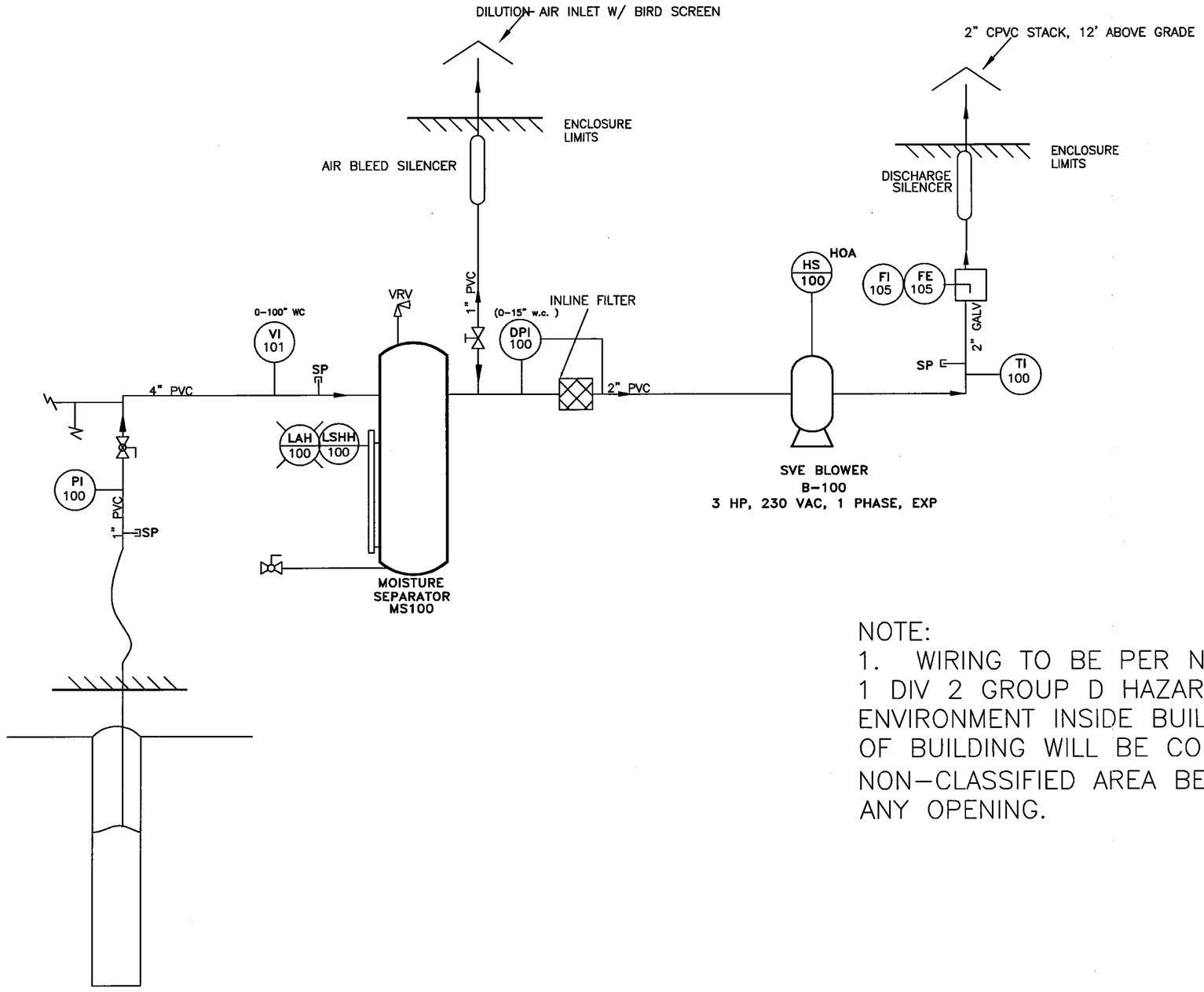
H2K Technologies, Inc.
9851 13th Ave N., Plymouth, MN 55441, Tel: 763-746-9900 ©2003

PROJECT TITLE:
SGS ENVIRONMENTAL
WINNERS CIRCLE
AUTOMOTIVE
OXFORD, WI

DRAWING TITLE:
5x8 SVE TRAILER
PLOT AND ELEVATION DRAWING

SHEET 1 OF 2

DRAWING NO.:
3023-01



NOTE:

1. WIRING TO BE PER NEC FOR CLASS 1 DIV 2 GROUP D HAZARDOUS ENVIRONMENT INSIDE BUILDING, OUTSIDE OF BUILDING WILL BE CONSIDERED A NON-CLASSIFIED AREA BEYOND 3' FROM ANY OPENING.

REVISIONS			
REV	DESCRIPTION	DATE	DWN

UNLESS SPECIFIED OTHERWISE
* DIMENSIONS ARE IN INCHES
* DO NOT SCALE DRAWING

DRAWN BY: MK
DESIGNED BY: MK
PROJECT MGR.: MH
DATE: 3/18/10
PROJECT NO.: 3023

H2K Technologies, Inc.
9851 13th Ave N., Plymouth, MN 55441, Tel: 763-746-9900 ©2003

PROJECT TITLE:
SGS ENVIRONMENTAL
WINNERS CIRCLE
AUTOMOTIVE
OXFORD, WI

DRAWING TITLE:
SVE
P&ID

SHEET 1 OF 1

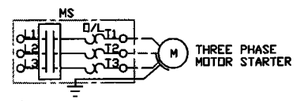
DRAWING NO.:
3023-02

Section 3. Control Panel Schematic & Description:

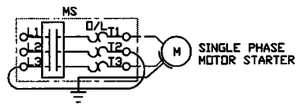
Contains the Control Panel Schematic, Operation Description of the control system and Alarm Schedule.

SGS ENV-OXFORD, WI/#3023
STANDARD CONTROL PANEL SYMBOLS AND NOTES

- ▲ TERMINAL IN PANEL
- (CK) MOTOR CONTACTOR
- (G) GREEN PILOT LIGHT
- (R) RED PILOT LIGHT
- (W) WHITE PILOT LIGHT
- (A) AMBER PILOT LIGHT
- (TDR) CONTROL TIMER
- (CR) CONTROL RELAY
- (RTM) ELAPSED RUN TIMER METER
- FLOAT SWITCH CLOSES ON RISING LEVEL
- FLOAT SWITCH OPENS ON RISING LEVEL
- PRESSURE SWITCH CLOSES ON RISING PRESSURE
- PRESSURE SWITCH OPENS ON RISING PRESSURE
- TEMPERATURE SWITCH OPENS ON RISING TEMPERATURE
- TEMPERATURE SWITCH CLOSES ON RISING TEMPERATURE
- TIMER CONTACT CLOSES AFTER TIME SET
- TIMER CONTACT OPENS AFTER TIME SET
- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- ----- FIELD WIRING
- MULTI-POSITION GROUNDING BLOCK



THREE PHASE MOTOR STARTER



SINGLE PHASE MOTOR STARTER

- NORMALLY OPEN MOMENTARY PUSHBUTTON
- NORMALLY CLOSED MOMENTARY PUSHBUTTON
- THREE POSITION H.O.A. SELECTOR SWITCH
- SELECTOR SWITCH ADDITIONAL CONTACTS MAY BE ADDED
- 1 POLE CIRCUIT BREAKER
- 2 POLE CIRCUIT BREAKER
- 3 POLE CIRCUIT BREAKER
- WIRE CONTINUATION
- DISTRIBUTION BLOCK
- FUSE WITH HOLDER (TYPE & SIZE INDICATED)
- DISCONNECT SWITCH

WIRING COLORING & NOTES:
1) 120VAC CONTROL - RED (16AWG OR 18AWG)
2) 120NEUTRAL - WHITE (16AWG OR 18AWG)
3) 24VDC POSITIVE - BLUE (16AWG)
4) 24VDC COMMON - WHITE W/ BLUE STRIPE (16AWG)
5) GROUND - GREEN (16AWG)
6) ALL OTHER WIRING AS INDICATED
6) ALL OTHER WIRING AS INDICATED

TORQUE SPECIFICATIONS
1) FIELD WIRING TERMINALS - 7LB-IN
2) 23 AMP CONTACTORS - 16LB-IN
3) OVERLOADS - 16LB-IN
4) PDB1 PRIMARY - 120LB-IN

SYSTEM LOAD ANALYSIS

120/240VAC, 1Ø, 3 WIRE		L1	L2		N
SVE BLOWER	3HP	17A	17A		
BUILDING EXHAUST FAN	1/3HP		6.6A		6.6A
BUILDING HEATER	1800W	7.5A	7.5A		
BUILDING LIGHTING	150W		1A		1A
GFCI RECEPTACLE		6A			6A
CONTROL POWER		3A			3A
125% OF LARGEST MOTOR		4A	4A		
SYSTEM FLA		37A	36A		16A

REVISIONS

REV	DESCRIPTION	DATE	DWN
A	RELEASE FOR SUBMITTAL	03/23/10	RC
B	RELEASE FOR PRODUCTION	07/11/11	RC
C	AS BUILT	09/02/11	RC

UNLESS SPECIFIED OTHERWISE
* DIMENSIONS ARE IN INCHES
* DO NOT SCALE DRAWING

DRAWN BY: RC
DESIGNED BY: RC
PROJECT MANAGER: MH
DATE: 03/22/10
PROJECT NO.: 3023

H2K Technologies, Inc.
7550 COMMERCE ST, CORCORAN MN 55340, Tel: 763-746-9900©2011

PROJECT TITLE:
SGS ENV-
OXFORD, WI

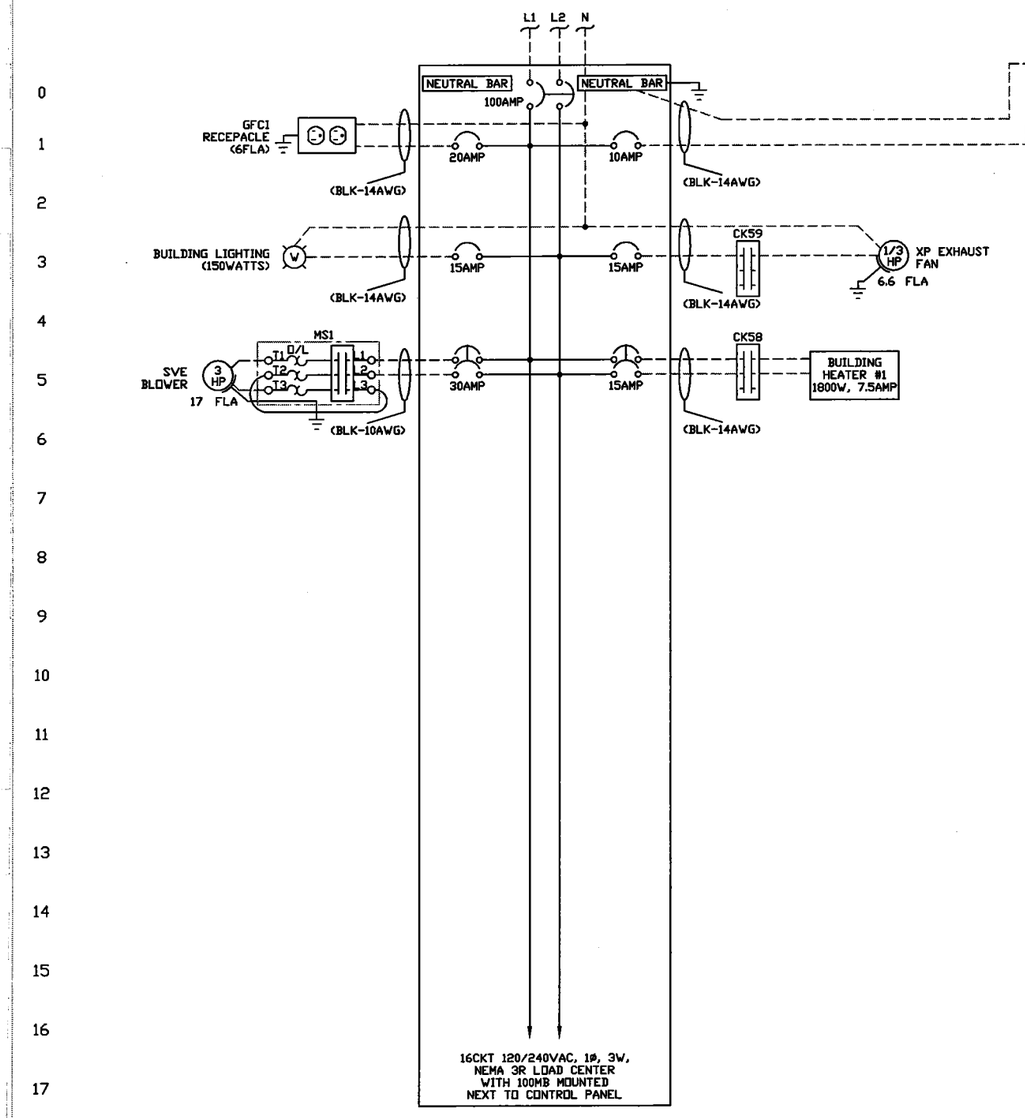
DRAWING TITLE:
SCHEMATIC CONTROL PANEL

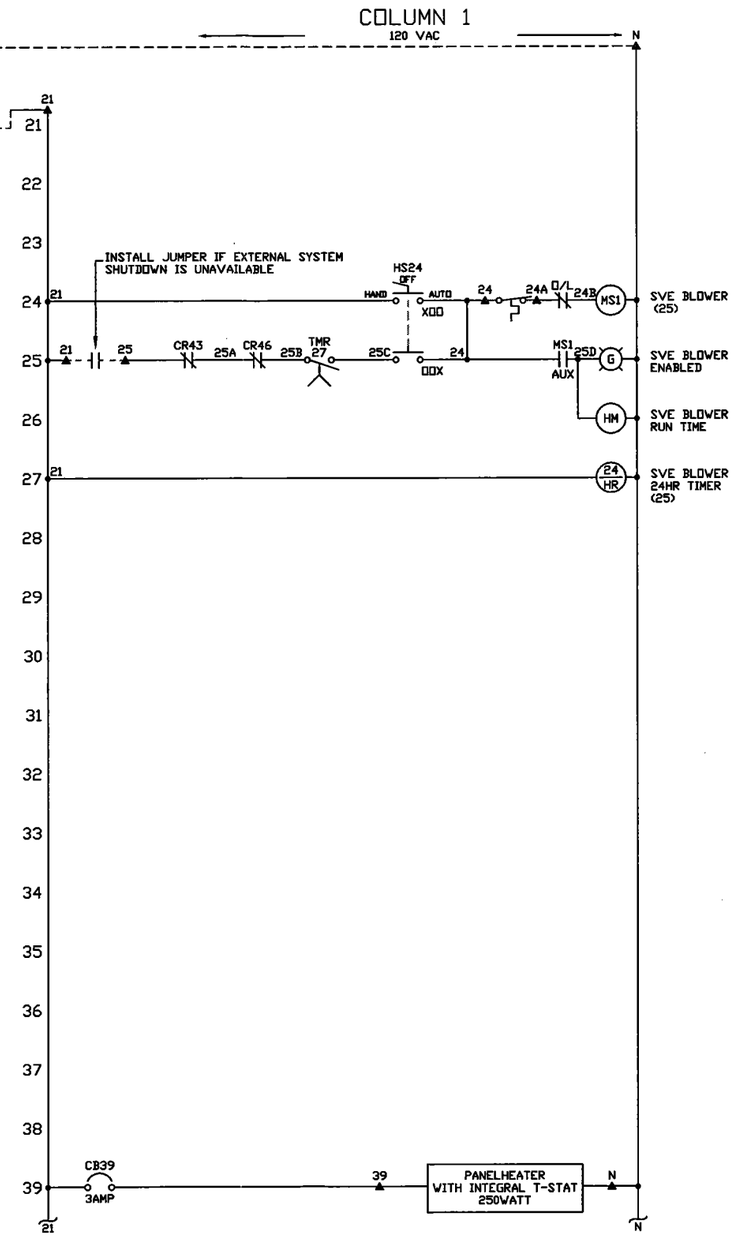
SHEET 1 OF 3

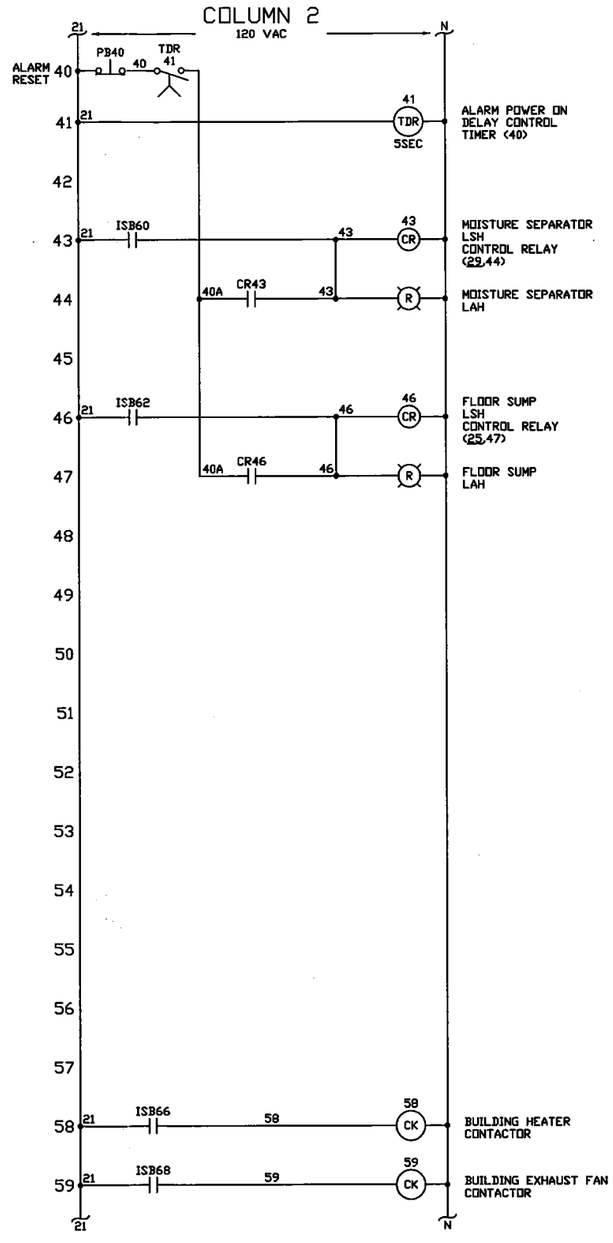
DRAWING NO.:
3023-21

INCOMING POWER SUPPLY

120/240VAC, 1PHASE, 3WIRE
SYSTEM FLA-37 AMPS







REVISIONS			
REV	DESCRIPTION	DATE	DWN
A	RELEASE FOR SUBMITTAL	03/23/10	RC
B	RELEASE FOR PRODUCTION	07/11/11	RC
C	AS BUILT	09/02/11	RC

UNLESS SPECIFIED OTHERWISE
* DIMENSIONS ARE IN INCHES
* DO NOT SCALE DRAWING

DRAWN BY: RC
DESIGNED BY: RC
PROJECT MANAGER: MH
DATE: 03/22/10
PROJECT NO.: 3023

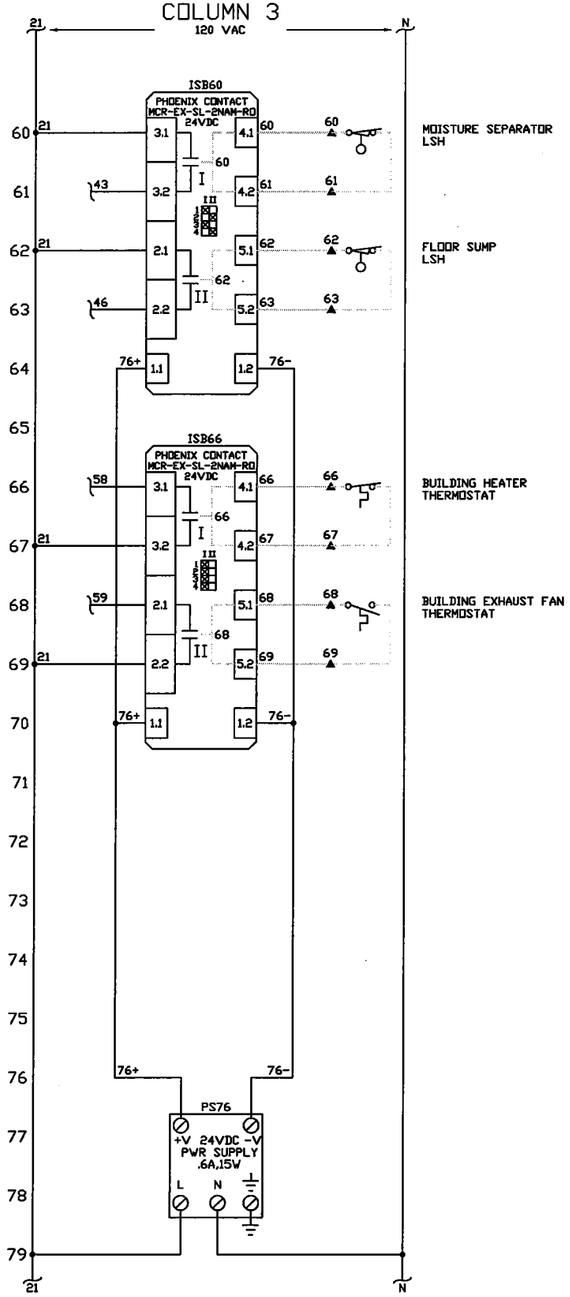
H2K Technologies, Inc.
7550 COMMERCE ST, CORCORAN MN 55340, Tel: 763-746-9900©2011

PROJECT TITLE:
SGS ENV-
OXFORD, WI

DRAWING TITLE:
SCHEMATIC CONTROL PANEL

SHEET 2 OF 3

DRAWING NO.:
3023-22



INTRINSICALLY SAFE WIRING TERMINALS

INSTALL IN ACCORDANCE WITH ARTICLE 504 OF THE NEC
I/S EQUIPMENT INSTALLED IN CLASS 1, GROUPS C, D, E, F, OR G AREAS
MAXIMUM FIELD WIRE LENGTH IS 2400FT
FOR CONNECTING PURELY RESISTIVE NON-ENERGY STORING DEVICES

FIELD WIRING TERMINAL BLOCKS TB1

- 21 — 21: INSTALL JUMPER IF EXTERNAL SYSTEM SHUTDOWN IS UNAVAILABLE
- 25
- N
- N
- N
- 24 — 24A: SVE BLOWER MOTOR TEMP SWITCH REPLACE WITH JUMPER IF MOTOR TEMP SWITCH IS UNAVAILABLE

INTRINSICALLY SAFE WIRING

FIELD WIRING TERMINAL BLOCKS TB3

- 60 — MOISTURE SEPARATOR LSH
- 61
- 62 — FLOOR SUMP LSH
- 63
- 66 — BUILDING HEATER THERMOSTAT
- 67
- 68 — BUILDING EXHAUST FAN THERMOSTAT
- 69

REVISIONS				UNLESS SPECIFIED OTHERWISE
REV	DESCRIPTION	DATE	DWN	* DIMENSIONS ARE IN INCHES
A	RELEASE FOR SUBMITTAL	03/23/10	RC	* DO NOT SCALE DRAWING
B	RELEASE FOR PRODUCTION	07/11/11	RC	DRAWN BY: RC
C	AS BUILT	09/02/11	RC	DESIGNED BY: RC
				PROJECT MANAGER: MH
				DATE: 03/22/10
				PROJECT NO.: 3023

H2K Technologies, Inc.
7550 COMMERCE ST, CORCORAN MN 55340, Tel: 763-746-9900©2011

PROJECT TITLE:
SGS ENV-
OXFORD, WI

DRAWING TITLE:
SCHEMATIC CONTROL PANEL

SHEET 3 OF 3
DRAWING NO.:
3023-23

Section 4. Installation, Start–up & Shut-down Procedures

Contains general installation instructions, start up and shut down procedures.

Before starting any system, thoroughly inspect the system for signs of damage. Use the provided P&ID to verify that the system has been connected correctly. Then, read the start up procedure before proceeding.

Start-Up Procedure:

- Verify the system is properly secure.
- Verify that all influent and effluent connection have been made, and open all valves to ensure that there are no restrictions on the blower.
- Turn on power to the control panel. If any lights come on press the reset button and the alarms should clear. If not, check the switches and controls to determine the problem.
- Verify the power leads are properly wired to the motor. **Incorrect voltage or improper wiring will ruin the motor**

Control Panel 1ϕ, 120/240V

WARNING! – Do not power the panel until this procedure is complete. Damage to the panel may result.

- Switch the disconnect to the "OFF" position and open the inner door. Verify that the inner door disconnect is in the off position.
- Switch on the main incoming power to the panel. CAUTION! - The disconnect now has power!
- Confirm that incoming power is 120/240 V single phases.
- It is best to record the initial readings of the system for trouble shooting purposes later. Record the following operating conditions:

  L1 to ground _____ V
  L2 to ground _____ V
  L1 to L2 _____ V
- Be sure that all circuit protectors are reset.
- Close the inner door. Make sure that all of the green HOA's (Hand-Off-Auto) are in the "OFF" position. Turn the inner disconnect to the "ON" position. The panel should have power. All of the alarm lights may be lit depending on the panel. If so, press the "RESET" button. If the alarms will not reset, an alarm may be tripped. (See section "B" for details.)
- Rotation needs to be verified on all motors. To do so, bump any motor holding the HOA in the "HAND" position for no more than a second. Rotation arrows are located most pieces of equipment.

RGN – Regenerative Vacuum System (SVE)

- Verify that all influent and effluent connection have been made, and open all inlet, outlet, and bleed valves to ensure that there are no restrictions on the blower. Close all sample taps.
- Verify the power leads are properly wired to the blower motor. **Incorrect voltage or improper wiring will ruin the motor.**
- Bump the blower to verify rotation by holding the SVE blower HOA in the "HAND" position. Rotation arrows are located on the blower to signify proper rotation. It is pertinent to physically verify the proper flow. This can be achieved by testing to see if there is suction on the SVE bleed line.
- If rotation is backwards, have an electrician exchange two of the power leads. **Be sure to lock out and tag the main incoming power. Verify that there is not power at the motor with a multimeter.**
- Once rotation has been confirmed to be correct, put the SVE blower HOA in the "AUTO" position to start the blower. Let the blower run with no load for a few minutes.
- Throttle the inlet bleed valve until operating conditions are reached. Depending on the actual well restriction, the operating vacuum may not be reached. The desired flow conditions at the well header can now be adjusted.
- It is best to record the initial readings of the system for trouble shooting purposes later. Record the following operating conditions:

SVE inlet vacuum _____
SVE motor amp draw _____
Pressure drop across the knock out filter _____
SVE exhaust temperature _____
SVE exhaust pressure _____
SVE flow rate _____

Notes: Depending on the interlock schedule, the blower may not run until all of the appropriate alarms have been cleared and the correct pieces of equipment enabled.

SHUT DOWN PROCEDURES:

CAUTION! – When disabling any motor or piece of equipment be certain that all source of power and fluid have been locked out and tagged.

RGN - Regenerative Vacuum System (SVE)

Remove all water from the moisture separator.
Run the blower with the bleed valve fully open for 5 minutes to dry out the blower.

Section 5. Maintenance Schedule

These forms should be used as a guide for general maintenance items. The recommended maintenance intervals are based upon past experience with the equipment and equipment manufactures' literature. It is important to use discretion when implementing the maintenance schedule. Unforeseen operating condition may require additional maintenance.

Maintenance Schedule

Recommend frequency	Task	Comment

VLS – Vapor / Liquid Separator (Moisture Separator)

As Needed	Clean/replace inlet filter and demister	When differential pressure across the filter exceeds 15"H_20.
	Clean sump, site glass, pump down switch	As need, depending on water quality. Recommend initial inspection after six month.

RGN - Regenerative SVE

As needed.	Clean or replace filter element	As needed, depending on air quality conditions.
Yearly	Grease motor with NLGI #2, if applicable.	

Section 6Trouble Shooting Guide:

Any time the system will not run and there is not an alarm condition present, verify the following:

1. All alarm lights are functioning. To test the lights, press the alarm light to verify if the bulb is functional.
2. All circuit protectors are reset. Open the inner door and reset any circuit protectors that may have been tripped. A tripped circuit protect may indicate a problem with the system. Inspect the system for abnormal conditions.
3. All of the inter locks have been properly installed.
    - On the control panel terminal strip, verify that the 201-202 interlock is a closed circuit.
    - Verify that all motor temperature switches are wired. Some motors have internal temperature switches that do not require external connection. If a motor has internal temperature switches, the provided space in the panel for external temperature switches must be wired to close the circuit.
    - If the provided panel requires an upstream or a downstream enable, verify that the enable is present and wired correctly.

For all other troubleshooting refer to the following table:

System Problem	Possible cause	Solution
RGN - Regenerative Vacuum Blower		
Blower will run in "HAND" but not in "AUTO"	Alarm condition	Clear any alarm condition and reset the control panel, see "Section 3" for alarm interlocks.
Blower will not run in the "HAND" position	Tripped circuit protector	Open the inner door and reset the circuit protector. A tripped circuit protect can be an indication of a problem. Inspect the system thoroughly and check the operating conditions.
	Motor temperature switch is inoperative	Check to see that the motor temperature switch has been wired, or that there is a jumper, if a switch is not present.
	Faulty Blower	Refer to Appendix or contact H2K Tech for help in diagnosing faulty blower.
Blower runs at a reduced performance	Incorrect blower rotation	Verify and change rotation
	Inlet filter fouled	Clean or replace inlet filter
	Excessive effluent pressure	Verify operating condition. Ensure that there is not excessive backpressure on the unit, (i.e. reduced pipe sizes, fouled Carbon bed, or fouled CATOX.)
	Moisture separator relief valve set to low	Adjust pressure relief valve, be careful not to overload blower motor

Filtration Accessories

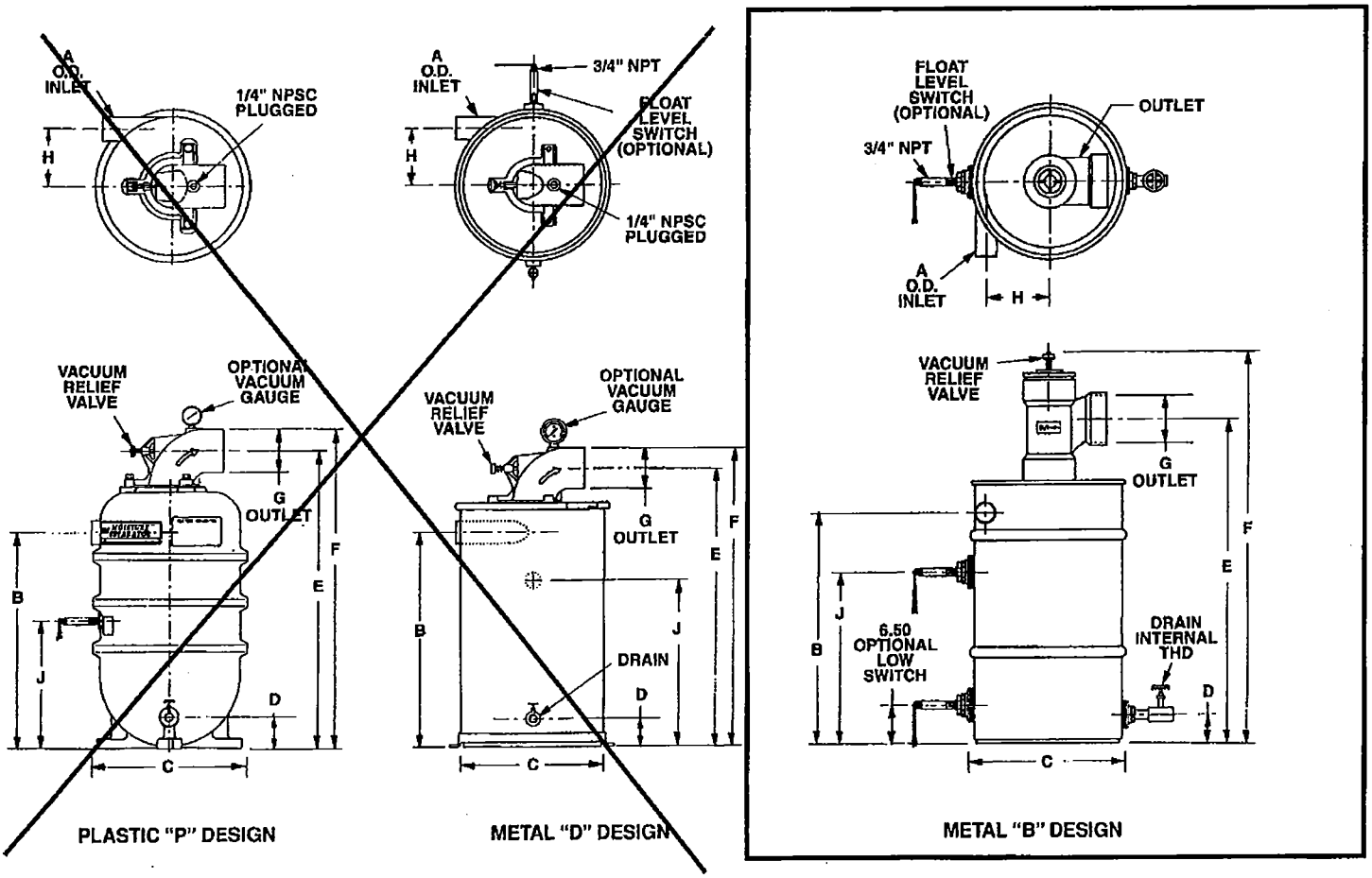
Blower Connection Key
NPT – American National Standard Taper Pipe Thread (Male)
NPSC – American National Standard Straight Pipe Thread for Coupling (Female)
SO – Slip On (Smooth – No Threads)

Moisture Separator™

By separating and containing entrained liquids, Rotron's moisture separator helps protect our regenerative blowers and the end treatment system from corrosion and mineralization damage. Recommended for all soil vacuum extraction applications.

SPECIFICATIONS:

SEPARATION METHOD – High Efficiency Cyclonic
RELIEF VALVE MATERIAL – Brass & Stainless Steel
FLOAT MATERIAL – Copper
FLOAT SWITCH – SPDT, Explosion-proof
NEMA 7&9, 5 Amp max.



Model	Part No.	CFM Max.	A Dia.	B	C Dia.	D	E	F	G Dia.	H	J Switch	Drain Internal THD	Shipping Weight
MS200PS	038519	200	2.38	22.46	16.00	3.25	31.05	33.30	4.50 OD	6.00	13.25	3/4" NPT	42 lb.
MS300PS	038520	300	2.88										
MS200DS	080086	200	2.00	22.12	16.75	2.75	27.92	30.17		6.56	12.62		
~~MS300DS~~	~~080087~~	~~300~~	~~3.50~~							~~6.81~~			
MS350BS	038357	350	3.25	28.00	23.00	4.00	37.25	39.50	6.63 ID	9.75	17.50	1" NPT	82 lb.
~~MS500BS~~	~~080660~~	~~500~~					37.37	54.50		9.25			~~95 lb.~~
MS600BS	080659	600	4.00	27.00									96 lb.
MS1000BS	038914	1000	6.00	31.00	27.00		47.32	51.70	8.62 OD	10.00	19.88		150 lb.

Models without float switch available. Metal MS200/300DS models are not the standard stocked, but are available.

Rev. 2/04

Blower Model Reference Key	
A = SPIRAL	E = DR/EN/CP 656, 6, 623, S7
B = DR/EN/CP 068, 083, 101, 202	F = DR/EN/CP 707, 808, 858, S9, P9 (Inlet Only)
C = DR/EN/CP 303, 312, 313, 353	G = DR/EN/CP 823, S13, P13 (Inlet Only)
D = DR/EN/CP 404, 454, 513, 505, 555, 523	H = DR/EN/CP 909, 979, 1223, 14, S15, P15 (Inlet Only)

2.0 Moisture Separator™ Specifications

2.1 DUTY

The moisture separator shall be designed for use in a soil vapor extraction system capable of continuous operation with a pressure drop of less than six inches of water at the rated flow of _____ SCFM. The separator shall be capable of operation under various inlet conditions ranging from a fine mist to slugs of water with high efficiency.

2.2 PRINCIPLE OF OPERATION

The moisture separator shall incorporate cyclonic separation to remove entrained water. The separator must protect against an overflow by fail safe mechanical means. An electrical switch or contact(s) alone is not an acceptable means of protection against overflow, but is a good backup.

2.3 CONSTRUCTION

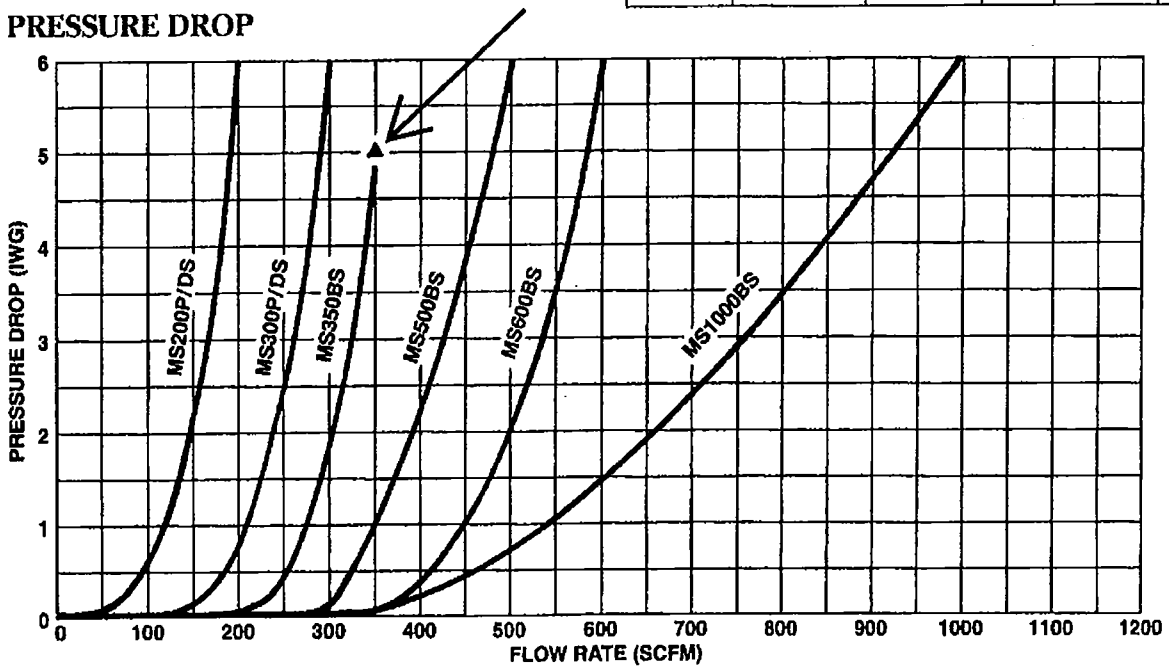
The body of the moisture separator shall be constructed of heavy wall plastic or heavy gauge cold rolled steel. The steel interior and exterior shall be epoxy (powder) coated to resist abrasion, corrosion, and chipping that might expose the surface. The inlet shall be tangentially located and welded to the body. The outlet port shall be constructed of PVC or cast aluminum alloy, flanged and sealed to the center of the top of the separator. The separator shall incorporate a non-sparking copper float ball and an adjustable relief valve to protect against overflow and overheating the blower.

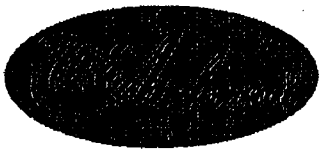
2.4 CAPACITY AND DIMENSIONS

The moisture separator must have a liquid capacity of _____ gallons. The inlet shall be _____ inch OD slip-on type. The outlet shall be _____ inch OD slip-on type.

For DR/EN/CP Blower Model	Selector Moisture Separator Model	Liquid-holding Capacity (gallons)	Inlet (OD)	Outlet	Max Vacuum Allowed (IHg)
404 454 505 513	MS200PS	7	2.38	4.5" OD	12
523 555 623 823	MS200DS	10	2.0		22
656	MS300PS	7	2.88		12
6 707	MS300DS	10	2.5		22
808	MS350BS	40	3.25	6.63" ID	
858 1223	MS500BS				
909	MS600BS		4.0"		
979 14	MS1000BS	65	6.0"	8.62" OD	

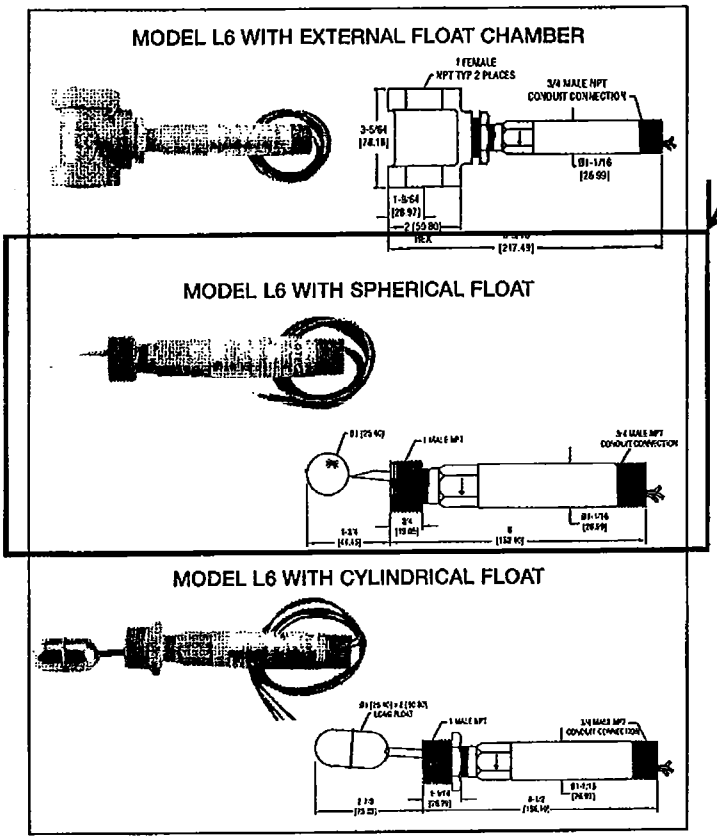
2.5 PRESSURE DROP





Series L6 FLOTECT® Liquid Level Switch

Easy In-wall or External Installation, Up to 2000 psig (138 bar)



SPECIFICATIONS

Service: Liquids compatible with wetted materials.
Wetted Materials:
Float: Solid polypropylene or 304 SS.
Lower Body: Brass or 303 SS.
Magnet: Ceramic.
External Float Chamber (Tee): Matches lower body choice of brass or 303 SS.
Other: Lever Arm, Spring, Pin, etc.: 301 SS.
Temperature Limit: -4 to 220°F (-20 to 105°C) Standard, MT high temperature option 400°F (205°C)(MT not UL, CSA or ATEX). ATEX compliant AT option ambient temperature: -4 to 167°F (-20 to 75°C) process temperature: -4 to 220°F (-20 to 105°C).
Pressure Limits: See chart below.
Enclosure Rating: Weatherproof and Explosion-proof. Listed with UL and CSA for Class I, Groups A, B, C and D; Class II, Groups E, F, and G. (Group A on stainless steel body models only).ATEX CE0344 II 2 G EEx d IIC T6 Process Temp≤75°C. EC-Type Certificate No.: KEMA 04ATEX2128
Switch Type: SPDT snap switch standard, DPDT snap switch optional.
Electrical Rating: UL models: 5A @ 125/250 VAC (V~). CSA and ATEX models: 5A @ 125/250 VAC (V~); 5A res., 3A ind. @ 30 VDC (V=). MV option: .1A @ 125 VAC (V~). MT option: 5A @125/250 VAC (V~). [MT option not UL, CSA or ATEX].
Electrical Connections: UL models: 18 AWG, 18"(460 mm) long. CSA and ATEX models: terminal block.
Upper Body: Brass or 303 SS.
Conduit Connection: 3/4" male NPT standard, 3/4" female NPT on junction box models.
Process Connection: 1" male NPT on models without external float chamber, 1" female NPT on models with external float chamber.
Mounting Orientation: Horizontal with index arrow pointing down.
Weight: Approximately 1 lb (.5 kg) without external float chamber, 1.75 lb (.8 kg) with external float chamber.
Specific Gravity: See chart below.
Agency Approvals: UL, CSA, CE and ATEX.

Level

MODELS

Model No.	Body	Installation	Float Material	Max. Pressure psig (bar)	Min. Sp. Gr.
L6EPB-B-S-3-O	Brass	Side Wall Mounting	Polypropylene Spherical	1000 (69)	0.9
L6EPB-B-S-3-A	Brass	Side Wall Mounting	304 SS Cylindrical	200 (13.8)	0.5
L6EPB-B-S-3-C	Brass	Side Wall Mounting	304 SS Spherical	350 (24.1)	0.7
L6EPB-B-S-3-B	Brass	Brass External Float Chamber (Tee)	Polypropylene Spherical	250 (17.2)	0.9
L6EPB-B-S-3-H	Brass	Brass External Float Chamber (Tee)	304 SS Spherical	250 (17.2)	0.7
L6EPB-S-S-3-O	303 SS	Side Wall Mounting	Polypropylene Spherical	2000 (138)	0.9
L6EPB-S-S-3-A	303 SS				0.5
L6EPB-S-S-3-C	303 SS				0.7
L6EPB-S-S-3-S	303 SS				0.9
L6EPB-S-S-3-L	303 SS				0.7

Moisture separator high level switch

Surprisingly compact, the Flotect® L6 is designed and built for years of trouble-free service in a wide variety of process liquid level applications. Operation is simple and dependable with no mechanical linkage as the level switch is magnetically actuated. The float lever pivoted within the body moves when the process liquid displaces the float. A magnet on the opposite end of the float lever controls a second magnet on the switch actuating lever located in the switch housing.

FEATURES

- Leak proof lower body machined from bar stock
- Choice of models for direct side wall mounting or mounted in a tee to act as an external float chamber
- Weatherproof
- Explosion-proof (listings included in specifications)
- Electrical assembly can be easily replaced without removing the unit from the installation so that the process does not have to be shut down
- Sensitive to level changes of less than 1/2" (12 mm)

Options:

Gold Plated Contacts option for dry circuits,add suffix **-MV** (see electrical rating in specifications)
High Temperature option rated 400°F (204°C), add suffix **-MT** (see electrical rating in specifications, no listings or approvals, only available on models with stainless steel floats)
CSA and UL approved construction, includes weatherproof and explosion-proof junction box, add suffix **-CSA**
ATEX approved construction includes, weatherproof and explosion-proof, junction box add suffix **-AT**
DPDT contacts, change seventh character in model number to "D". Example: L6EPB-B-D-3-O
303 Stainless Steel Upper Body, change fifth character in model number to "S". Example: L6EPS-S-S-3-S

Options Not Shown: 1-1/2" and 2" male NPT process connection, 2" female NPT connection tee, and top mount.

Small Compact Inlet Vacuum Filters

"CSL" Series 3/8" - 3" FPT

APPLICATIONS & EQUIPMENT

- Vacuum Pumps & Systems – P.D., Side Channel, Rotary Vane, Screw, Piston
- Vacuum Packaging Equipment
- Vacuum Lifters
- Blowers - Side Channel & P.D.
- Intake Suction Filters
- Pneumatic Conveying Systems
- Soil Venting/Remediation
- Remote Installations for Piston & Screw Compressors
- Printing Industry
- Factory Automation Equip
- Leak Detection Systems
- Woodworking
- Medical Industry

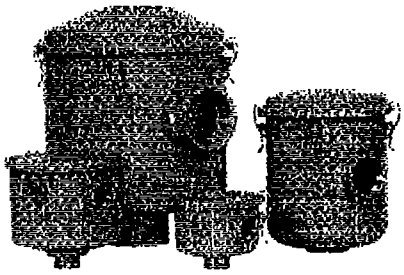
FEATURES & SPECIFICATIONS

- **Vacuum level**: Typically $1x10^{-3}$ mmHg ($1.3x10^{-3}$ mbar)
- Polyester: 99%+ removal efficiency standard to 5 micron
- Paper: 99%+ removal efficiency standard to 2 micron
- Brazed fittings for **High** vacuum duty
- Stainless steel torsion clips for durability
- Low pressure drop
- Positive engagement O-ring seal system
- Seamless drawn housings
- **Large** dirt holding capacity and **Easy** field cleaning, especially when mounted horizontally or inverted
- Rugged all steel construction w/baked enamel finish
- Various media
- Temp (continuous): min -15°F (-26°C) max 220°F (104°C)
- Filter change out differential: 10" - 15" H_2O over initial delta P
- Pressure drop graphs available upon request

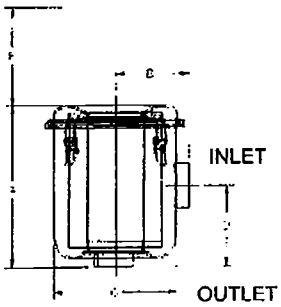
OPTIONS (Inquiries Encouraged)

- Vacuum gauge available
- Dome hood for high holding capacity
- Available in ***Stainless Steel***
- Epoxy coated housings
- Activated carbon prefilter for odor
- Support brackets
- Alternate top-to-canister fastening system for low pressure or pulsating systems

CONFIGURATION



DRAWING



Dimension tolerance ± 1/4"

SVE blower inlet air filter

I = Industrial Duty S = Severe Duty

	with Polyester Element	with Paper Element	FPT Inlet & Outlet	DIMENSIONS - inches A	B	C	D	E	Rated Flow SCFM Nominal Rating	Element Rating	Approx. Wt. lbs
I	CSL-825-038HC	CSL-824-038HC	3/8"	3 5/8	2 1/4	3 3/4	1 7/8	3	18	25	0.88
I	CSL-825-050HC	CSL-824-050HC	1/2"	3 5/8	2 1/4	3 3/4	1 7/8	3	18	25	0.88
I	CSL-843-050HC	CSL-842-050HC	1/2"	4 3/8	3	5 7/8	2 1/2	3 1/4	20	55	3
I	CSL-825-075HC	CSL-824-075HC	3/4"	3 5/8	2 1/4	3 3/4	1 7/8	3	24	25	0.88
S	CSL-845-075HC	CSL-842-075HC	3/4"	4 3/8	3	5 7/8	2 1/2	3 1/4	25	55	3
I	CSL-843-100HC	CSL-842-100HC	1"	4 3/8	3 1/4	5 7/8	2 5/8	3 1/4	35	55	3
S	CSL-849-100HC	CSL-848-100HC	1"	6 3/4	4 1/8	7 5/16	4 1/2	5 1/4	40	115	5
I	CSL-843-125HC	CSL-842-125HC	1 1/4"	4 3/8	3 1/4	5 7/8	2 5/8	3 1/4	55	55	3
S	CSL-849-125HC	CSL-848-125HC	1 1/4"	6 3/4	4 1/8	7 5/16	4 1/2	5 1/4	60	115	5
I	CSL-849-150HC	CSL-848-150HC	1 1/2"	6 3/4	4 1/8	7 5/16	4 1/2	5 1/4	80	115	5
I	CSL-851-200HC	CSL-850-200HC	2"	10 1/4	4 5/16	6 3/4	5	8 1/4	175	290	15
S	CSL-851-250HC	CSL-850-250HC	2 1/2"	10 1/2	5 7/8	6 3/4	6 1/2	9 1/4	210	290	15
I	CSL-289-300C*	CSL-288-300C*	3"	15 3/4	8 7/8	13 1/4	9 3/4	11	300	570	35

*1/4" taps standard on inlet and outlet

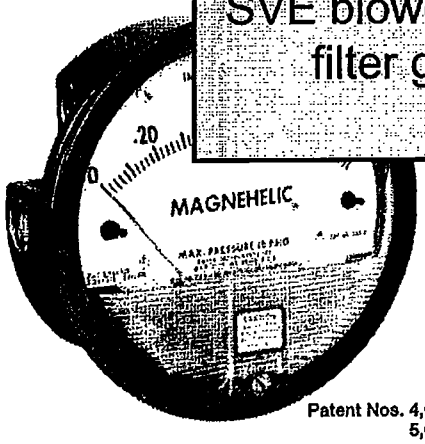
Note: Model offerings and design parameters may change without notice.

1151 Ardmore Ave. • Itasca, IL 60143 USA
Sales/Service: 630.773.1363 • Fax: 630.773.0727
E-mail: sales@solbergmfg.com • Web Site: www.solbergmfg.com

Series 2000 Magnehelic® Differential Pressure Gages

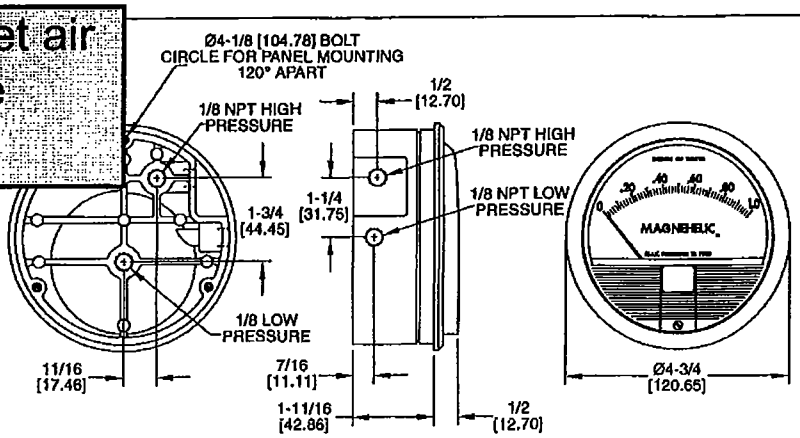
Indicate Positive, Negative or Differential, Accurate within 2%

SVE blower inlet air filter gauge



Patent Nos. 4,030,365
5,012,678

Standard Magnehelic® Pressure Gage has a large, easy-to-read 4" dial.



Dimensions, Standard Series 2000 Magnehelic® Pressure Gages. (Slightly different on medium and high pressure models)

Select the Dwyer Magnehelic® gage for high accuracy – guaranteed within 2% of full scale – and for the wide choice of 81 models available to suit your needs precisely. Using Dwyer's simple, frictionless Magnehelic® movement, it quickly indicates low air or non-corrosive gas pressures – either positive, negative (vacuum) or differential. The design resists shock, vibration and over-pressures. No manometer fluid to evaporate, freeze or cause toxic or leveling problems. It's inexpensive, too.

The Magnehelic® is the industry standard to measure fan and blower pressures, filter resistance, air velocity, furnace draft, pressure drop across orifice plates, liquid levels with bubbler systems and pressures in fluid amplifier or fluidic systems. It also checks gas-air ratio controls and automatic valves, and monitors blood and respiratory pressures in medical care equipment.

Note: May be used with Hydrogen where pressures are less than 35 psi.

MOUNTING. A single case size is used for most models of Magnehelic® gages. They can be flush or surface mounted with standard hardware supplied. With the optional A-610 Pipe Mounting Kit they may be conveniently installed on horizontal or vertical 1¼" - 2" pipe. Although calibrated for vertical position, many ranges above 1" may be used at any angle by simply re-zeroing. However, for maximum accuracy, they must be calibrated in the same position in which they are used. These characteristics make Magnehelic® gages ideal for both stationary and portable applications. A 4⅝" hole is required for flush panel mounting. Complete mounting and connection fittings plus instructions are furnished with each instrument.

Flush ...Surface...or Pipe Mounted

VENT VALVES

In applications where pressure is continuous and the Magnehelic® gage is connected by metal or plastic tubing which cannot be easily removed, we suggest using Dwyer A-310A vent valves to connect gage. Pressure can then be removed to check or re-zero the gage.

HIGH AND MEDIUM PRESSURE MODELS

Installation is similar to standard gages except that a 4 13/16" hole is needed for flush mounting. The medium pressure construction is rated for internal pressures up to 35 psig and the high pressure up to 80 psig. Available for all models. Because of larger case, the medium pressure and high pressure models will not fit in a portable case size. Installation of the A-321 safety relief valve on standard Magnehelic® gages often provides adequate protection against infrequent overpressure.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases. (Natural Gas option available.)
Wetted Materials: Consult factory.
Housing: Die cast aluminum case and bezel, with acrylic cover. Exterior finish is coated gray to withstand 168 hour salt spray corrosion test.
Accuracy: ±2% of full scale (±3% on - 0, -100 Pa, -125 Pa, 10MM and ±4% on - 00, -60 Pa, -6MM ranges), throughout range at 70°F (21.1°C).
Pressure Limits: -20" Hg, to 15 psig.† (-0.677 bar to 1.034 bar); MP option: 35 psig (2.41 bar), HP option: 80 psig (5.52 bar).
Overpressure: Relief plug opens at approximately 25 psig (1.72 bar), standard gages only.
Temperature Limits: 20 to 140°F.* (-6.67 to 60°C).
Size: 4" (101.6 mm) Diameter dial face.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Process Connections: 1/8" female NPT duplicate high and low pressure taps - one pair side and one pair back.
Weight: 1 lb 2 oz (510 g), MP & HP 2 lb 2 oz (963 g).
Standard Accessories: Two 1/8" NPT plugs for duplicate pressure taps, two 1/8" pipe thread to rubber tubing adapter and three flush mounting adapters with screws. (Mounting and snap ring retainer substituted for 3 adapters in MP & HP gage accessories.)
*Low temperature models available as special option.
†For applications with high cycle rate within gage total pressure rating, next higher rating is recommended. See Medium and High pressure options at lower left.

OPTIONS AND ACCESSORIES

Transparent Overlays

Furnished in red and green to highlight and emphasize critical pressures.

Adjustable Signal Flag

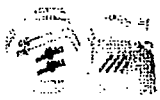
Integral with plastic gage cover. Available for most models except those with medium or high pressure construction. Can be ordered with gage or separate.

LED Setpoint Indicator

Bright red LED on right of scale shows when setpoint is reached. Field adjustable from gage face, unit operates on 12-24 VDC. Requires MP or HP style cover and bezel.

Portable Units

Combine carrying case with any Magnehelic® gage of standard range, except high pressure connection. Includes 9 ft. (2.7 m) of ⅜" I.D. rubber tubing, standhang bracket and terminal tube with holder.



Air Filter Gage Accessory Package

Adapts any standard Magnehelic® for use as an air filter gage. Includes aluminum surface mounting bracket with screws, two 5 ft. (1.5 m) lengths of ¼" aluminum tubing two static pressure tips and two molded plastic vent valves, integral compression fittings on both tips and valves.

Quality design and construction features

Bezel provides flange for flush mounting in panel.

Clear plastic face is highly resistant to breakage. Provides undistorted viewing of pointer and scale.

Precision litho-printed scale is accurate and easy to read.

Red tipped pointer of heat treated aluminum tubing is easy to see. It is rigidly mounted on the helix shaft.

Pointer stops of molded rubber prevent pointer over-travel without damage.

"Wishbone" assembly provides mounting for helix, helix bearings and pointer shaft.

Jeweled bearings are shock-resistant mounted; provide virtually friction-free motion for helix. Motion damped with high viscosity silicone fluid.

Zero adjustment screw is conveniently located in the plastic cover, and is accessible without removing cover. O-ring seal provides pressure tightness.

O-ring seal for cover assures pressure integrity of case.

Blowout plug of silicone rubber protects against overpressure on 15 psig rated models. Opens at approximately 25 psig.

Die cast aluminum case is precision made and iridite-dipped to withstand 168 hour salt spray corrosion test. Exterior finished in baked dark gray hammerloid. One case size is used for all standard pressure options, and for both surface and flush mounting.

Silicone rubber diaphragm with integrally molded O-ring is supported by front and rear plates. It is locked and sealed in position with a sealing plate and retaining ring. Diaphragm motion is restricted to prevent damage due to overpressures.

Calibrated range spring is flat spring steel. Small amplitude of motion assures consistency and long life. It reacts to pressure on diaphragm. Live length adjustable for calibration.

Samarium Cobalt magnet mounted at one end of range spring rotates helix without mechanical linkages.

Helix is precision made from an alloy of high magnetic permeability. Mounted in jeweled bearings, it turns freely, following the magnetic field to move the pointer across the scale.

MODELS

Dual Scale English/Metric Models		
Model Number	Range, In. W.C.	Range, Pa or kPa
2000-0D	0-0.5	0-125 Pa
2001D	0-1.0	0-250 Pa
2002D	0-2.0	0-500 Pa
2003D	0-3.0	0-750 Pa
2004D	0-4.0	0-1.0 kPa
2006D	0-6.0	0-1.5 kPa
2008D	0-8.0	0-2.0 kPa
2010D	0-10	0-2.5 kPa

SERIES 2000 MAGNEHELIC®— MODELS AND RANGES

The models below will fulfill most requirements. Page 11 also shows examples of special models built for OEM customers. For special scales furnished in ounces per square inch, inches of mercury, metric units, etc., contact the factory.

Model Number	Range Inches of Water
2000-00†••	0-.25
2000-0†•	0-.50
2001	0-1.0
2002	0-2.0
2003	0-3.0
2004	0-4.0
2005	0-5.0
2006	0-6.0
2008	0-8.0
2010	0-10
2015	0-15
2020	0-20
2025	0-25
2030	0-30
2040	0-40
2050	0-50
2060	0-60
2080	0-80
2100	0-100
2150	0-150

Model Number	Range Zero Center Inches of Water
2300-0†•	.25-0-.25
2301	.5-0-.5
2302	1-0-1
2304	2-0-2
2310	5-0-5
2320	10-0-10
2330	15-0-15

Model Number	Range PSI
2201	0-1
2202	0-2
2203	0-3
2204	0-4
2205	0-5
2210*	0-10
2215*	0-15
2220*	0-20
2230**	0-30

*MP option standard
**HP option standard

Dual Scale Air Velocity Units	
Model Number	Range in W.C. Velocity, F.P.M.
2000-00AV†••	0-.25/300-2000
2000-0AV†•	0-.50/500-2800
2001AV	0-1.0/500-4000
2002AV	0-2.0/1000-5600
2010AV	0-10/2000-12500
For use with pitot tube.	

Model Number	Range MM of Water
2000-6MM†••	0-6
2000-10MM†•	0-10
2000-25MM	0-25
2000-50MM	0-50
2000-80MM	0-80
2000-100MM	0-100
Zero Center Ranges	
2300-20MM†	10-0-10

Model Number	Range, CM of Water
2000-15CM	0-15
2000-20CM	0-20
2000-25CM	0-25
2000-50CM	0-50
2000-80CM	0-80
2000-100CM	0-100
2000-150CM	0-150
2000-200CM	0-200
2000-250CM	0-250
2000-300CM	0-300
Zero Center Ranges	
2300-4CM	2-0-2
2300-10CM	5-0-5
2300-30CM	15-0-15

Model Number	Range, Pascals
2000-60PA†••	0-60
2000-100PA†•	0-100
2000-125PA†•	0-125
2000-250PA	0-250
2000-300PA	0-300
2000-500PA	0-500
2000-750PA	0-750
Zero Center Ranges	
2300-250PA	125-0-125
2300-500PA	250-0-250

Model Number	Range, Kilopascals
2000-1KPA	0-1
2000-1.5KPA	0-1.5
2000-2KPA	0-2
2000-3KPA	0-3
2000-4KPA	0-4
2000-5KPA	0-5
2000-8KPA	0-8
2000-10KPA	0-10
2000-15KPA	0-15
2000-20KPA	0-20
2000-25KPA	0-25
2000-30KPA	0-30
Zero Center Ranges	
2300-1KPA	.5-0-.5
2300-3KPA	1.5-0-1.5

Accessories

A-299, Surface Mounting Bracket
A-300, Flat Flush Mounting Bracket.....
A-310A, 3-Way Vent Valve.....
A-321, Safety Relief Valve.....
A-432, Portable Kit.....
A-605, Air Filter Kit.....
A-610, Pipe Mount Kit.....

Options — To order, add suffix: I.E. 2001-ASF
ASF (Adjustable Signal Flag)
HP (High Pressure Option)
LT (Low Temperatures to -20°F)
MP (Med. Pressure Option)
SP (Setpoint Indicator)

Scale Overlays — Red, Green, Mirrored or Combination, Specify Locations

Special Purpose Ranges

Scale No. 2401	Scale No. 2402
Square Root	Blank Scale
Specify Range	Specify Range

Model 2000-00N. range -.05 to +.20" W.C. For room pressure monitoring

†These ranges calibrated for vertical scale position.
• Accuracy +/-3%. •• Accuracy +/-4%

1011R01-0298P

EN 656 & CP 656
Sealed Regenerative Blower w/Explosion-Proof Motor

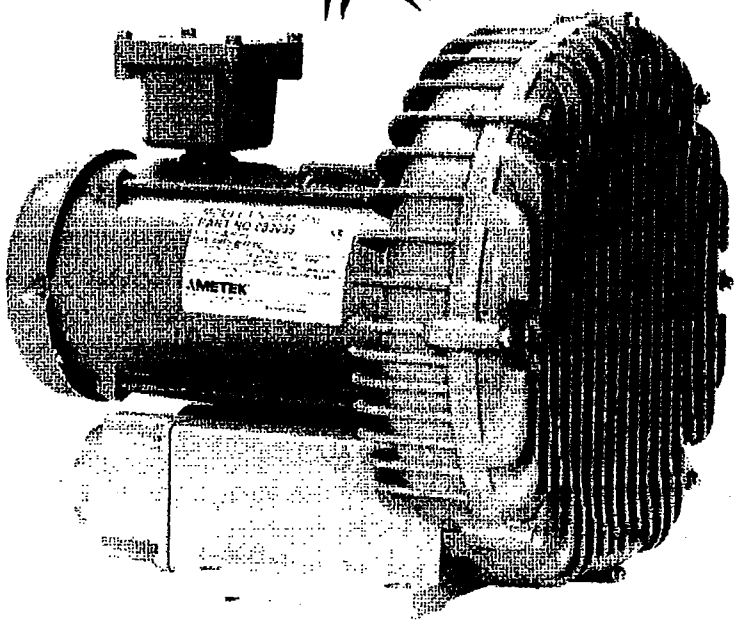
FEATURES
- Manufactured in the USA – ISO 9001 compliant
- Maximum flow: 212 SCFM
- Maximum pressure: 70 IWG
- Maximum vacuum: 70 IWG
- Standard motor: 3.0 HP, explosion-proof
- Cast aluminum blower housing, cover, impeller & manifold; cast iron flanges (threaded); teflon lip seal
- UL & CSA approved motor with permanently sealed ball bearings for explosive gas atmospheres Class I Group D minimum
- Sealed blower assembly
- Quiet operation within OSHA standards

MOTOR OPTIONS
- International voltage & frequency (Hz)
- Chemical duty, high efficiency, inverter duty or industry-specific designs
- Various horsepowers for application-specific needs

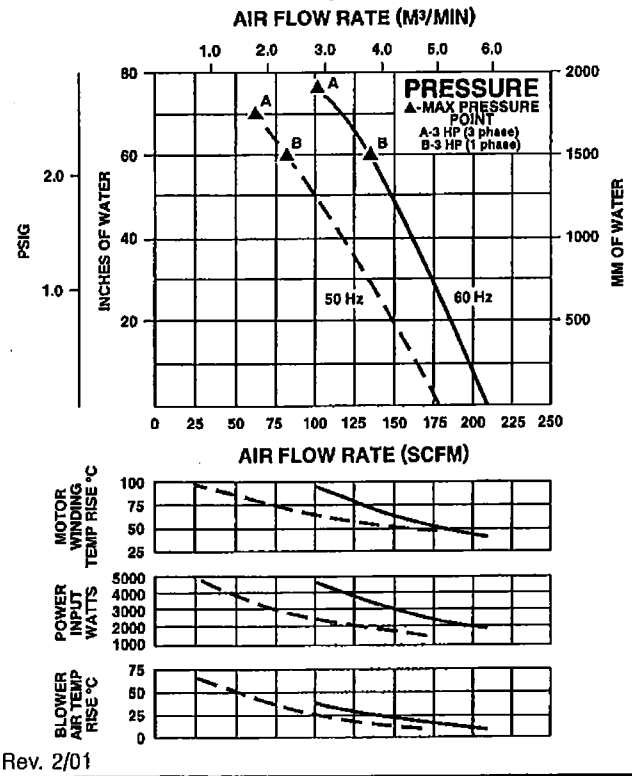
BLOWER OPTIONS
- Corrosion resistant surface treatments & sealing options
- Remote drive (motorless) models
- Slip-on or face flanges for application-specific needs

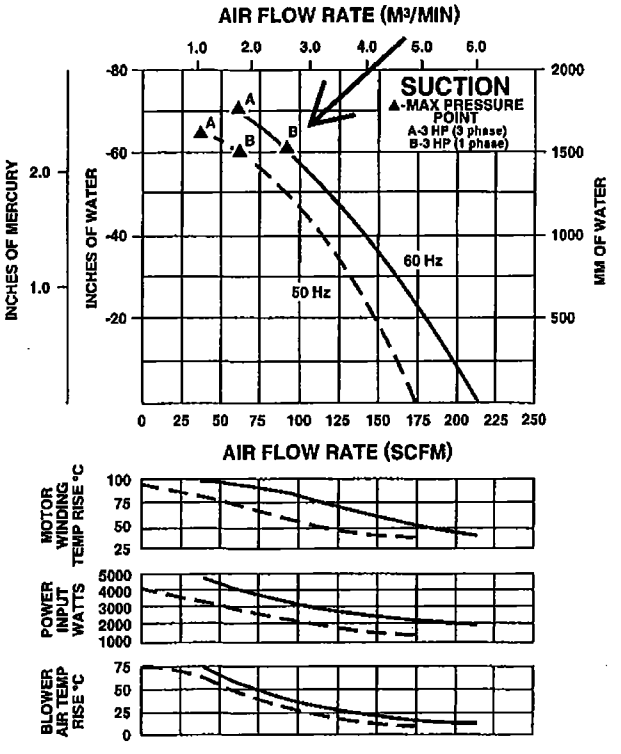
ACCESSORIES (See Catalog Accessory Section)
- Flowmeters reading in SCFM
- Filters & moisture separators
- Pressure gauges, vacuum gauges & relief valves
- Switches – air flow, pressure, vacuum or temperature
- External mufflers for additional silencing
- Air knives (used on blow-off applications)
- Variable frequency drive package

NEW IN 2000



BLOWER PERFORMANCE AT STANDARD CONDITIONS



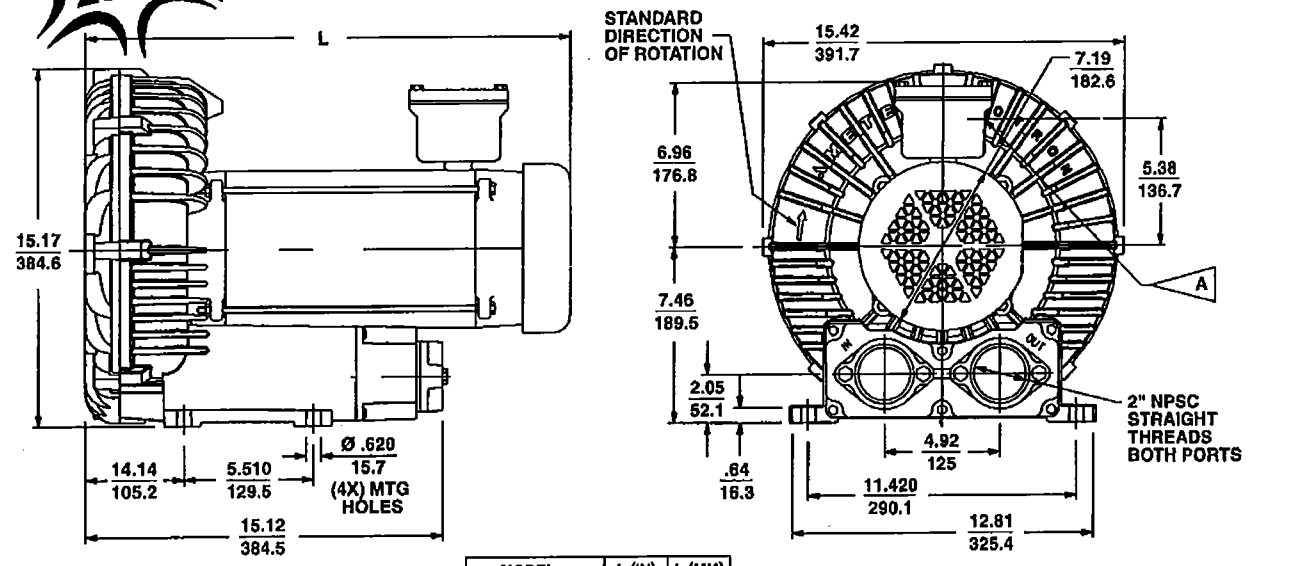


Rev. 2/01

EN 656 & CP 656
Sealed Regenerative Blower w/Explosion-Proof Motor

NEW IN 2000

Scale CAD drawing available upon request.



MODEL	L (IN)	L (MM)
EN656M5XL	20.50	520.7
EN656M86XL	17.89	454.4
EN656M72XL	17.89	454.4
CP656M72XLR	17.89	454.4
CP656FU72XLR	17.89	454.4

DIMENSIONS: IN / MM
TOLERANCES: .XX ± .08/2
(UNLESS OTHERWISE NOTED)

A TERMINAL BOX CONNECTOR HOLE 3/4" NPT FEMALE THREAD

SPECIFICATIONS

MODEL	EN656M5XL	EN656M72XL		EN656M86XL	CP656FU72XLR
Part No.	080060	080059		080058	080142
Motor Enclosure – Shaft Material	Explosion-proof–**CS**	Explosion-proof–**CS**		Explosion-proof–**CS**	Chem XP – **SS**
Horsepower	3	3		3	Same as EN656M72XL 080059 except add Chemical Processing (CP) features from catalog inside front cover
Phase – Frequency [1]	Single - 60 Hz	Three - 60 Hz		Three - 60 Hz	
Voltage [1]	208-230	208-230	460	575	
Motor Nameplate Amps [3]	15.5-14.5	7.4	3.7	3.0	
Max. Blower Amps [3]	16.3-16.8	8.2	4.1	4.1	
Inrush Amps	95-86	54	27	21.6	
Starter Size	1	0	0	0	
Service Factor	1.0	1.0		1.0	
Thermal Protection [2]	Class B - Pilot Duty	Class B - Pilot Duty		Class B - Pilot Duty	
XP Motor Class – Group	I-D, II-F&G	I-D, II-F&G		I-D, II-F&G	
Shipping Weight	135 lb (64 kg)	110 lb (50 kg)		110 lb (50 kg)	

[1] Rotron motors are designed to handle a broad range of world voltages and power supply variations. Our dual voltage 3 phase motors are factory tested and certified to operate on both: **208-230/415-460 VAC-3 ph-60 Hz** and **190-208/380-415 VAC-3 ph-50 Hz.** Our dual voltage 1 phase motors are factory tested and certified to operate on both: **104-115/208-230 VAC-1 ph-60 Hz** and **100-110/200-220 VAC-1 ph-50 Hz.** All voltages above can handle a ±10% voltage fluctuation. Special wound motors can be ordered for voltages outside our certified range.

[2] Maximum operating temperature: Motor winding temperature (winding rise plus ambient) should not exceed 140°C for Class F rated motors or 120°C for Class B rated motors. Blower outlet air temperature should not exceed 140°C (air temperature rise plus inlet temperature). Performance curve maximum pressure and suction points are based on a 40°C inlet and ambient temperature. Consult factory for inlet or ambient temperatures above 40°C.

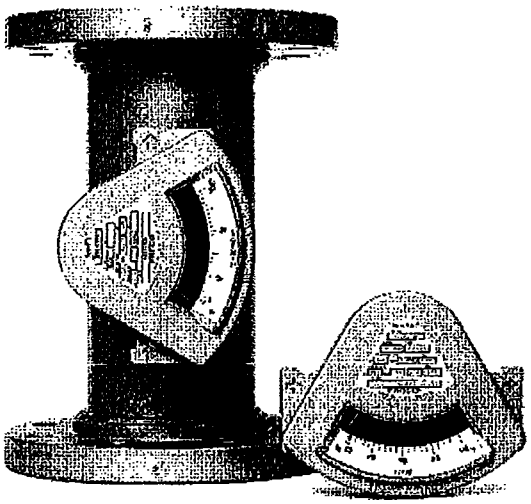
[3] Maximum blower amps corresponds to the performance point at which the motor or blower temperature rise with a 40°C inlet and/or ambient temperature reaches the maximum operating temperature.

Specifications subject to change without notice. Please consult your Local Field Sales Engineer for specification updates. Rev. 2/01

See-Flo®
Meters

SVE blower outlet air flow meter

3200
VA1.3200



See-Flo® Meters indicate flow rate and permit visual inspection of water, air or other transparent fluids. For general purpose industrial service, See-Flo® meters handle a wide range of process fluids in vertical or horizontal piping runs.

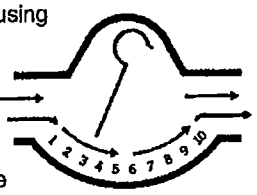
The wedge shape of the meter housing makes See-Flo® practically self-cleaning. Where periodic maintenance might be necessary, the tempered glass window is easily removed and replaced.

Features

- Instantaneous flow rate measurement.
- Observe fluid conditions for color, clarity and flow.
- Use in horizontal or vertical piping systems.
- Individually calibrated for fluid and operating conditions.
- User selectable 10:1 turndown flow ranges. (See Meter Rangeability Sizing Tables)
- User selectable units of measure including dual units of measure.
- No floats to get stuck, tubes to break or dynamic seals to leak.
- Low pressure loss.
- Simple design with few parts for long service life.

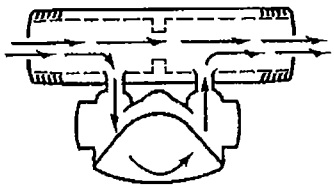
Principle of Operation

See-Flo® meters are variable area flow rate meters. The internal volume of the housing enlarges from the inlet to the outlet. The primary element is a tempered alloy vane with one end affixed to the apex of the meter housing. As the flow rate changes, the vane is flexed indirect proportion.



The ½", ¾", and 1" connections typically have female threaded ends. Sizes 1¼" through 6" utilize a shunt design.

This integral by-pass housing enables larger connection sizes in the format of a spool with a constant 12" end to end dimension. In addition, it permits a wide variety of connection types which include threaded, flanged, grooved ends and tri-clamp.



Applications

- Water
- Air
- Nitrogen
- Vacuum service
- Other transparent liquids or gases.

Specifications

Accuracy:	± 2% full scale
Repeatability:	±1% full scale
Scales:	Direct reading
Resolution:	Maximum - 30 divisions
	Minimum - 15 divisions
Materials of Construction: (wetted parts)	
Housing:	aluminum, brass or 316 stainless steel
Shunt:	housing material or carbon steel
Window:	tempered glass
Vane:	17-7 ph stainless steel
"O" Rings:	Buna-n, ethylene propylene, Viton® or Kalrez®

ERDCO®

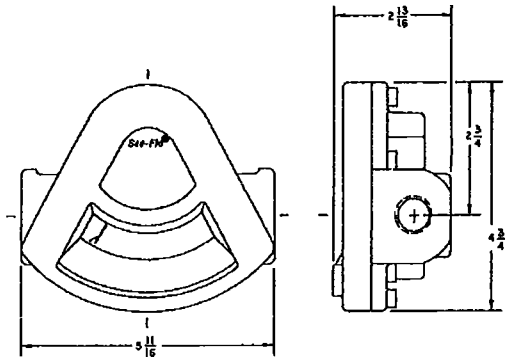
See-Flo®

3200

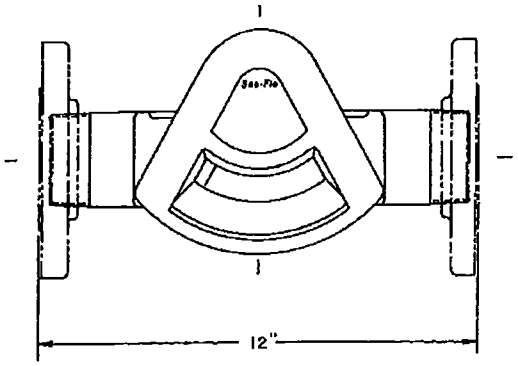
VA1.3200

Meters

½", ¾", & 1" connections



1¼" to 6" connections



Piping Connections:

½" to 1" NPT Female
1¼" to 4" NPT Male
½" to 3" Tri-clamp
1¼" to 6" Grooved
1¼" to 6" Beveled
½" to 6" 150#/300# RF/FF ANSI Flanges (carbon stl)
½" to 6" 150# RF ANSI Flanges (stainless steel)
½" to 6" 150#/300# RF ANSI Flanges (aluminum)
½" to 6" 150# FF ANSI Flanges (brass)
15 to 25 mm DIN 2999/BS21/ISO R7 Female threaded
15 to 150 mm DIN PN 10 Flanges (316 stainless stl & carbon stl)

Pressure Limits: 200 psig (13.8 bar)

Temperature Limits:

-23 to 85°C (-10 to 185°F) with Teflon® o-ring at constant temperature conditions.
-23 to 85°C (-10 to 185°F) with polycarbonate window.
-23 to 121°C (-10 to 250°F) with buna-n o-ring.
-23 to 204°C (-10 to 400°F) with Viton® or ethylene propylene o-ring.

Not intended for use with opaque liquids or steam. ERDCO reserves the right to alter design and/or specifications without notice. Viton® and Kalrez® are registered trademarks of E.I. duPont de Nemours and Co.

Model Number System

The example 3221-12F5 describes a 3200 Series See-Flo® meter with a brass body/carbon steel shunt for left to right flow. Connections are 3" 150# raised carbon steel flanges.

32 Series	2 Housing Material	1 Flow Direction	12 Size	F Type	5 Shunt Material
32-3200	1-Aluminum	1-L to R	02-½" (15mm)	T-NPT End	0-None
	2-Brass	2-R to L	03-¾" (20mm)	R-NPT Back	1-Aluminum
	6-Stainless Stl	3-Up	04-1" (25mm)	S-Tri-clamp	2-Brass
		4-Down	05-1¼" (32mm)	G-Grooved	5-Carbon Steel
			06-1½" (40mm)	X-Beveled	6-Stainless Steel
			08-2" (50mm)	W-Socket End ½"-1"	
			10-2½" (65mm)	F-Flange 150#RF	
			12-3" (80mm)	H-Flange 150#FF	
			16-4" (100mm)	J-Flange 300#RF	
			20-5" (125mm)	K-Flange 300#FF	
			24-6" (150mm)	L-Flange DIN PN 10	
				M-Metric Thread End	
				N-Metric Thread Back	

ERDCO®

See-Flo® Meter Rangeability

Sizing Tables

VA1.RTABLE

Liquid Applications

pipe size	Lowest Range gpm water @ 60°F	pressure drop (psi/gpm rate)	Highest Range gpm water @ 60°F	pressure drop (psi/gpm rate)
	specify 10:1 range at or between			
½"-15 mm	0.3-3	.4/4	1.5-15	3/15
¾"-20 mm	0.5-5	1/5	3-30	5/30
1"-25 mm	0.8-8	1.5/8	5-50	6/50
1¼"	2-20	2/20	15-150	8/150
1½"	3-30	2/30	20-200	8/200
2"	4-40	2/40	25-250	8/250
2½"	4-40	2/40	35-350	8/350
3"	5-50	2/50	50-500	8/500
4"	10-100	2/100	100-1000	8/1000
5"	15-150	2/150	150-1500	8/1500
6"	25-250	2/250	200-2000	8/2000

Scaled for 25-250 SCFM @ .3 psi

Gas Applications

pipe size	Lowest range scfm air @ 60°F/0 psig	pressure drop (inches H_2O/scfm rate)	Highest range scfm air @ 60°F/0 psig	pressure drop (inches H_2O/scfm rate)
	specify 10:1 range at or between			
½"-15 mm	0.5-5	2/10	2-20	3/20
¾"-20 mm	0.6-6	2/10	3-30	4/30
1"-25 mm	0.8-8	2/10	5-50	6/50
1¼"	1-10	2/10	15-150	8/150
~~1½"~~	~~1.5-15~~	~~2/15~~	~~20-200~~	~~8/200~~
2"	2-20	2/20	25-250	8/250
~~2½"~~	~~3-30~~	~~2/30~~	~~35-350~~	~~8/350~~
3"	4-40	2/40	50-500	8/500
4"	5-50	2/50	100-1000	8/1000
5"	6-60	2/60	150-1500	8/1500
6"	8-80	2/80	200-2000	8/2000

Notes:

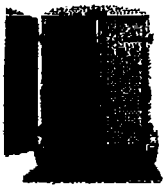
-Units of measure other than gpm and scfm can be specified.
-When specifying a calibration range consider that the nominal flow value should be approximately at mid-scale.
-Pressure drop data are typical for maximum flow reading of the range indicated. A flow that causes a midrange reading will have a pressure drop that is a square root function of the pressure drop at full range. Example: An instrument for a 6" piping system that has a range of 200 to 2,000 gpm will have a pressure drop of 8 psi at 2,000 gpm flow and a pressure drop of $\sqrt{8}$ or 2.828 psi at 1,000 gpm on the same scale.
-Typical pressure drop declines in value in a linear relationship between the maximum of the highest range and maximum of the lowest range. Example: An instrument for a 4" piping system that requires a calibrated range of 40 to 500 gpm will have a typical pressure drop at 500 gpm of 5 psi.
-Sizes designated mm (millimeters) are available with metric thread in accordance with DIN 2999/BS21/ISO R7.

[redacted]

[redacted]

Standard Features

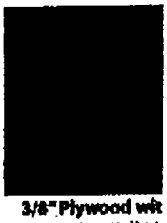
- Single Rear Door (5 ft. Wide Models)
- Double Rear Doors (6 - 8 ft. Wide Models)
- Semi-Style Camlock Door Latch
- Door Hold-Back on Rear Door
- Torsion Axle
- E-Z Lube Hubs with Grease Caps
- White "D" Window Wheels
- Chrome Center Caps
- Radial Tires
- Galvanized Roof
- Colored Aluminum Top Wrap
- 3/8" Plywood Wall Liner with Lauan Trim
- Aluminum Fenders
- Fiberglass Radius Front Cap
- Molded ABS License Plate Holder with Built-In Light
- .030 Aluminum Exterior (Available In Multiple Colors)
- Colored Aluminum Wrap on Rear
- Exposed Steel Painted Epoxy Black
- Painted Undercarriage
- Welded Safety Chains
- Full Color Decals



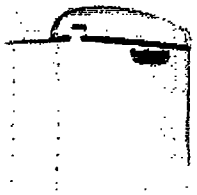
Single or Double Rear Doors

Semi-Style Camlock Doors

Radial Tires with "D" Window Wheels

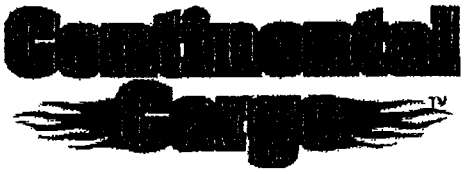


3/8" Plywood wit Lauan Trim Wall Li



Colored Top Wrap and Fiberglass Front Cap

[redacted]



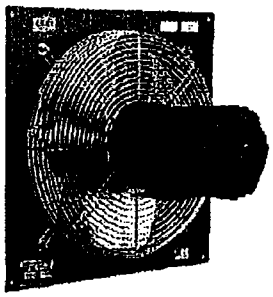
With double rear doors, rear stabilizer jacks and front hitch jack and electric brakes

	Continental Cargo Cargo Trailer 5 ft. Wide Single Axle			
Model	**CC58SA**	**CC510SA**	**CC512SA**	**CC514SA**
Overall Length	11' 10"	13' 10"	15' 10"	17' 10"
Width	7'	7'	7'	7'
Height	6' 5"	6' 5"	6' 5"	6' 5"
Interior Length	8' 7"	10' 7"	12' 7"	14' 7"
Width	4' 8"	4' 8"	4' 8"	4' 8"
Height	4' 10"	4' 10"	4' 10"	4' 10"
Rear Door	Single	Single	Single	Single
Width	4'	4'	4'	4'
Height	4' 2"	4' 2"	4' 2"	4' 2"
Hitch Weight	104 lbs.	116 lbs.	128 lbs.	140 lbs.
Height	17"	17"	17"	17"
Ball Size	2"	2"	2"	2"
Platform Height	17"	17"	17"	17"
G.V.W.R	2,990 lbs.	2,990 lbs.	2,990 lbs.	2,990 lbs.
Curb Weight	1,040 lbs.	1,160 lbs.	1,280 lbs.	1,400 lbs.
Payload	1,950 lbs.	1,830 lbs.	1,710 lbs.	1,590 lbs.
Axles (Single)	2,990 lbs.	2,990 lbs.	2,990 lbs.	2,990 lbs.
Brakes	Optional	Optional	Optional	Optional
Tires	ST205/75R15/C	ST205/75R15/C	ST205/75R15/C	ST205/75R15/C
Wheels	5 Bolt	5 Bolt	5 Bolt	5 Bolt
Frame	3" Tube	3" Tube	3" Tube	3" Tube
Floor (24" O/C)	3/4" Plywood	3/4" Plywood	3/4" Plywood	3/4" Plywood
Side Walls (16" O/C)	3/8" Plywood	3/8" Plywood	3/8" Plywood	3/8" Plywood

G.V.W.R. (Gross Vehicle Weight Rating)
O/C (On Center): Refers to the distance between each stud or joist.
BWW (Between the Wheel Wells)

Some trailers are shown with optional equipment.
Specifications are based on the latest information and are subject to change without notice.

P: PANEL MOUNTED FANS



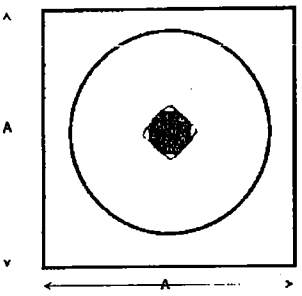
*Sturdily constructed direct drive, horizontal discharge fan.
*Durable powder coat finish.
*Standard heavy duty OSHA motor mount/guard.
*Motors are totally enclosed, air over with overload protection.
*See page 16 for accessories.

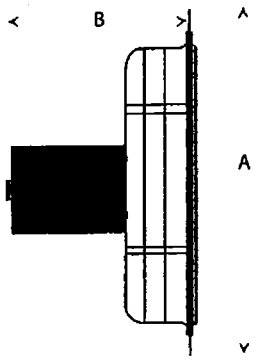
Model P: Panel Fans c/w OSHA Guard

Leader Fan Number	Blade Dia.	RPM	H.P	Volts	CFM @ Static Pressure 0"	0.1"	0.125"	.25"	Weight Lbs.
Single Speed/Variable Speed Fans									
P12-1V	12"	1700	1/4	115/230	1650	1560	1525	1400	23
P12-1VHE		1450	0.07	115	1350	1290	1275	1150	19
P14-1V	14"	1700	1/4	115/230	2170	2030	1950	1900	26
P14-1VHE		1450	0.07	115	1600	1525	1500	1300	21
P16-1V	16"	1700	1/4	115	2570	2470	2410	2260	26
P16-1VHE		1450	0.07	115	1850	1750	1700	1550	22
P18-1	18"	1700	1/4	115/230	3150	3000	2900	2575	31
P20-1	20"	1700	1/3	115/230	3620	3420	3340	3120	34
P24-1V	24"	1700	1/3	115/230	5500	5400	5310	5100	37
Single Speed Fan									
P12-2	12"	1100	1/3	115/230	1100	930	880	600	24
P14-2	14"	1100	1/3	115/230	1750	1550	1500	1100	26
P16-2	16"	1100	1/3	115/230	2150	2075	2000	1700	27
P18-2	18"	1100	1/3	115/230	3200	3000	2900	2750	32
P20-2	20"	1100	1/3	115/230	4400	4200	4100	3900	35
P24-2	24"	1100	1/3	115/230	5300	5050	4950	4700	39
P30-2	30"	1075	1/2	115/230	8000	7000	6000	5500	68
P36-7	36"	860	1/2	115/230	12000	11000	10500	9500	84
Two Speed Fans									
P08-3	8"	1660/1350	0.05	115	400/330	320/260	280/230	180/140	11
P10-3	10"	1660/1350	0.05	115	690/580	590/460	570/390	550/340	11
P12-3								450/625	24
P14-3								50/850	27
P16-3								0/1020	30
P18-3								5/1750	33
P20-3	20"	1725/1140	1/3	115	3640/2420	3440/2270	3360/2210	3140/1890	37
P24-3	24"	1075/860	1/3	115	5300/4240	5050/4040	4950/3960	4700/3760	41
Single Speed Explosion Proof Fans									
P12-4	12"	1725	1/3	115/230	1670	1600	1575	1450	43
P14-4	14"	1725	1/3	115/230	2190	2080	2000	1950	45
P16-4	16"	1725	1/3	115/230	2580	2480	2430	2270	47
P18-4	18"	1725	1/3	115/230	3200	3050	2950	2625	51
P20-4	20"	1725	1/3	115/230	3640	3440	3360	3140	52
P24-4	24"	1725	1/3	115/230	5520	5410	5330	5130	58

Building exhaust fan

*NEW - Explosion proof motors are Class 1 - Group C & D, and Class 2 - Group F & G.



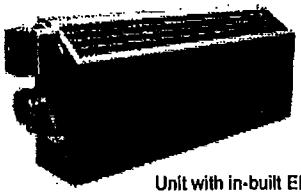


Model Number	A	B* P	B* P-4
P08	14	6-1/2	-
P10			-
P12	17	11	13-3/4
P14	18-3/4		
P16	20-3/4		
P18	22-3/4	11-1/4	14
P20	24-3/4		
P24	28-3/4	11	13-3/4
P30	35-1/4	13-1/4	-
P36	41-1/4	13-1/2	-

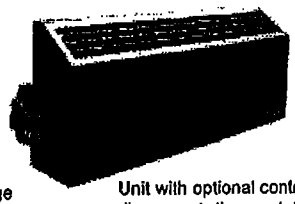
*Sizes are approximates and may vary based on motor manufacturer.

SINGLE PHASE HAZARDOUS LOCATION WALL CONVECTOR

Standard Unit



Unit with in-built EPET line voltage thermostat (Suffix T1 or T2)



Unit with optional control section containing disconnect, thermostat and pilot light (Suffix C1-TDP)

- Cabinet size 18"h igh, 9" wide
- Bottom In - Front Out air flow
- Wall mounting bracket supplied
- Un its can not be operated in room ambients exceeding 104°F (40°C)

- Heavy duty 16 ga.s teel with gray epoxy textured powder coated finish
- 9 " minimum clearance from bottom of heater to floor required
- Stainless steel cartridge element inserted into aluminum finned copper sheath
- Standard unit (without EPET thermostat or control section) is NEMA 4 rated

T-2A SERIES
SINGLE PHASE
CLASS 1, GROUP B, C & D
DIVISION 1 & 2 280° C / 536° F

Building heater

UPC 686334	MODEL	WATTS	BTU's	VOLTS	AMPS	CABINET LENGTH	WT. (LBS.)	LIST
445146	FEP-1812-1RA			120	15.0			
445153	FEP-1820-1RA			208	8.7			
445160	FEP-1824-1RA	1800	6143	240	7.5	34"	50	1140
445177	FEP-1827-1RA			277	6.5			
445184	FEP-1848-1RA			480	3.8			
445191	FEP-3620-1RA			208	17.3			
445207	FEP-3624-1RA			240	15.0			
445214	FEP-3627-1RA	3600	12286	277	13.0	34"	54	1740
445221	FEP-3648-1RA			480	7.5			
445238	FEP-3657-1RA			600	6.0			
445245	FEP-3820-1RA			208	18.3			
445252	FEP-3824-1RA			240	15.8			
445269	FEP-38271-RA	3800	12969	277	13.7	58"	80	1845
445276	FEP-3848-1RA			480	7.9			
445283	FEP-7620-1RA			208	36.5			
445290	FEP-7624-1RA			240	31.7			
445306	FEP-7627-1RA	7600	25938	277	27.4	58"	85	2145
445313	FEP-7648-1RA			480	15.8			
445320	FEP-7657-1RA			600	12.7			

T-3A SERIES
SINGLE PHASE
CLASS 1, GROUP B, C & D
DIVISION 1 & 2 180° C / 356° F

445337	FEP-0812-1RA			120	6.7			
445344	FEP-0820-1RA			208	3.8			
445351	FEP-0824-1RA	800	2730	240	3.3	34"	50	1140
445368	FEP-0827-1RA			277	2.9			
445375	FEP-0848-1RA			480	1.7			
445382	FEP-1612-1RA			120	13.3			
445399	FEP-1620-1RA			208	7.7			
445405	FEP-1624-1RA	1600	5460	240	6.7	34"	54	1740
445412	FEP-1627-1RA			277	5.8			
445429	FEP-1648-1RA			480	3.3			
445436	FEP-1657-1RA			600	2.7			
445443	FEP-1712-1RA			120	14.2			
445450	FEP-1720-1RA			208	8.2			
445467	FEP-1724-1RA	1700	5802	240	7.1	58"	80	1845
445474	FEP-1727-1RA			277	6.1			
445481	FEP-1748-1RA			480	3.5			
445498	FEP-3420-1RA			208	16.3			
445504	FEP-3424-1RA			240	14.2			
445511	FEP-3427-1RA	3400	11604	277	12.3	58"	85	2145
445528	FEP-3448-1RA			480	7.1			
445535	FEP-3457-1RA			600	5.7			

FACTORY INSTALLED CONTROL OPTIONS

SUFFIX	DESCRIPTION	LIST ADDER
T1	EPETD8S single pole thermostat factory mounted to 120v - 277v units	437
T2	EPETD8D double pole thermostat factory mounted to 120v -2 77v units	454
T3	EPETP8S single pole thermostat factory mounted to 480v units	467
T4	EPETP8D double pole thermostat factory mounted to 480v units	484

* Remove RA suffix and add new suffix. **Heater must not exceed 22 Amps when using above options.**

SUFFIX*	DESCRIPTION	LIST ADDER
C1-TD	Control section w ith transformer,24 v contactor,S P thermostat (40°F - 90°F) and disconnects w itch (allu nits)	1503
C1-TDP	Control section w ith transformer, 24v contactor, DP thermostat (40°F - 90°F), disconnects w itch & pilot light(allun its)	1560

* Remove- RA suffix and add new suffix

Not NEMA w ashdow n rated or rated for Group B atmospheres