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SECTION A

Test Methods Used to Analyze Groundwater Samples

Analytes	Laboratory	Method
Anions	EPA - Ada[1]	SW-846 6500
Nitrate, Nitrite, and Ammonia	EPA - Ada[1]	EPA 350.1 and 353.2
Organic Carbon	EPA - Ada[1]	SW-846 9060A
Isotopes and Dissolved Gases	Isotech[2]	No EPA method
Metals (ICP, dissolved and total)	Shaw - Ada[3]	Method 200.7
Metals (ICP-MS, dissolved and total)	CLP[4]	SOW ISM01.3
Methylene Blue Active Substances	TestAmerica[5]	Method 425.1
Methanol Scan	ALS[6]	SW-846 8015M
Organic Acids	Shaw - Ada[3]	RSKSOP112v6
Dissolved Gases	Shaw - Ada[3]	RSKSOP175v5 and 194v4
Water Isotopes	Shaw - Ada[3]	RSKSOP334v0
Diesel Range Organics	EPA - Region 8[9]	SW-846 8015D
Gasoline Range Organics	EPA - Region 8[9]	SW-846 8015D
Semivolatile Organic Compounds (sVOC)	EPA - Region 8[9]	SW-846 8270D
Volatile Organic Compounds (VOC)	EPA - Region 8[9]	SW-846 5035 + 8260
Volatile Organic Compounds (VOC)	Shaw - Ada[3]	SW-846 5021A + 8260
Ethoxylates and Alkylphenols	EPA - Las Vegas[7]	Method in development[10]
Acrylamide	EPA - Las Vegas[7]	Method in development[11]
Glycols	EPA - Region 3[8]	Method in development[12]

[1] General Parameters Laboratory, EPA, Ground Water and Ecosystems Restoration Division, Ada, OK. [2] Isotech Laboratories, Champaigne, IL. [3] Shaw Environmental, Ada, OK. [4] Contract Laboratory Program (Chemtech Consulting, Inc., Mountainside, NJ). [5] TestAmerica Laboratory, Savannah, GA. 6 ALS Environmental, Holland, MI. [7] Environmental Sciences Division, Las Vegas, NV. [8] Region 3 Laboratory, Fort Meade, MD. [9] Region 8 Laboratory, Golden, CO.

SW-846 "Test methods for evaluating solid waste, physical/chemical methods", 3rd Edition (1986).
Method 6500. Dissolved inorganic anions in aqueous matrices by capillary ion electrophoresis.
Method 350.1 Determination of ammonia nitrogen by semi-automated colorimetry.
Method 353.2. Determination of nitrate-nitrite nitrogen by automated colorimetry.
Method 9060A. Total organic carbon.
Method 200.7. Trace elements in water, solids, and biosolids by inductively coupled plasma-atomic emission spectrometry.
Inorganic SOW ISM01.3, Exhibit D - Part B, with method modifications.
Method 425.1. Methylene Blue Active Substances (MBAS).
Method 8015M. Nonhalogenated organics using GC/FID.
RSKSOP-112v6. Standard operating procedure for quantitative analysis of low molecular weight acids in aqueous samples by HPLC.
RSKSOP-175v5. Sample preparation and calculations for dissolved gas analysis in water samples using a GC headspace equilibration technique.
RSKSOP-194v4. Gas analysis by micro gas chromatograph (Agilent Micro 3000).
RSKSOP-334v0. Determination of stable hydrogen and oxygen isotope ratios in water samples using a Picarro L2120i cavity ring-down spectrometer (CRDS).
Method 8270D. Semivolatile organic compounds by gas chromatography/mass spectrometry (GC/MS).
Method 5035. Closed-system purge-and-trap and extraction for volatile organics in soil and waste samples.
Method 5021. Volatile organic compounds in soils and other matrices using equilibrium headspace analysis.
Method 8260. Volatile organic compounds by gas chromatography/mass spectrometry (GCMS).
[10] Methods modified from ASTM D7458-09 and USGS method O1433-01.
[11] Based on EPA Methods 8032A and 8316.
[12] Method based on ASTM D773-11.

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Analytes

Field Parameters	
Temp	Temperature
SPC	Specific Conductivity
TDS	Total Dissolved Solids (calc. from SPC)
DO	Dissolved Oxygen
pH	Measurement of the hydrogen ion activity
ORP	Oxidation/Reduction Potential
Fe^{2+}	Ferrous Iron
H_2S	Hydrogen Sulfide
Anions and Ammonia	
Br^-	Bromide
Cl^-	Chloride
SO_4^{2-}	Sulfate
F^-	Fluoride
$NO_3^- + NO_2^-$	Nitrate + Nitrite
NH_3	Ammonia
Carbon Group	
DOC	Dissolved Organic Carbon
DIC	Dissolved Inorganic Carbon
Isotopes and Dissolved Gases	
He	Helium
H_2	Hydrogen
Ar	Argon
O_2	Oxygen
CO_2	Carbon dioxide
N_2	Nitrogen
CO	Carbon monoxide
C_1	Methane
C_2	Ethane
C_2H_4	Ethene
C_3	Propane
C_3H_6	Propylene
iC_4	Isobutane
nC_4	Normal Butane
iC_5	Isopentane
nC_5	Normal Pentane
C_6+	Hexane Plus
$\delta^{13}C_1$	$[(^{13}C/^{12}C)$ Sample-Standard/$(^{13}C/^{12}C)$ Standard]*1000
δDC_1	$[(^{2}H/H)$ Sample-Standard/$(^{2}H/H)$ Standard]*1000
$\delta^{13}C_2$	$[(^{13}C/^{12}C)$ Sample-Standard/$(^{13}C/^{12}C)$ Standard]*1000
$\delta^{13}C$ DIC	$[(^{13}C/^{12}C)$ Sample-Standard/$(^{13}C/^{12}C)$ Standard]*1000
BTU	British Thermal Unit
Tritium	^{3}H

Metals	
Ag	Silver
Al	Aluminum
As	Arsenic
B	Boron
Ba	Barium
Be	Beryllium
Ca	Calcuim
Cd	Cadmium
Co	Cobalt
Cr	Chromium
Cu	Copper
Fe	Iron
Hg	Mercury
K	Potassium
Li	Lithium
Mg	Magnesium
Mn	Manganese
Mo	Molybdenum
Na	Sodium
Ni	Nickel
P	Phosphorus
Pb	Lead
S	Sulfur
Sb	Antimony
Se	Selenium
Si	Silicon
Sr	Strontium
Th	Thorium
Ti	Titanium
Tl	Thallium
U	Uranium
V	Vanadium
Zn	Zinc
MBAS	
Methylene Blue Active Substances	
Methanol Scan	
Methanol	
Propylene Glycol	
Ethylene Glycol	

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Analytes (cont.)

Organic Acids	
	CAS Number
Lactate	50-21-5
Formate	64-18-6
Acetate	64-19-7
Propionate	79-09-4
Butyrate	107-92-6
Dissolved Gases	
	CAS Number
Methane	74-82-8
Ethane	74-84-0
Propane	74-98-6
Butane	106-97-8
Ethoxylates and Alkylphenols	
	CAS Numbers
Octylphenol ethoxylate	9002-93-1
Nonylphenol ethoxylate	26027-38-3
Ethoxylated alcohol C12	
Ethoxylated alcohol C13	
Ethoxylated alcohol C14	
Nonylphenol	25154-52-3
Octylphenol	27193-28-8
Acrylamide	
	CAS Numbers
Acrylamide	79-06-1
Glycols	
	CAS Number
2-butoxyethanol	111-76-2
Diethylene glycol	111-46-6
Triethylene glycol	112-27-6
Tetraethylene glycol	112-60-7
Water Isotopes	
δ^2H	[($^2H/H$) Sample-Standard/($^2H/H$) Standard]*1000
$\delta^{18}O$	[($^{18}O/^{16}O$) Sample-Standard/($^{18}O/^{16}O$) Standard]*1000
DRO GRO	
DRO	Diesel Range Organics
GRO	Gasoline Range Organics

Volatile Organic Compounds (VOC)	
	CAS Number
ethanol	64-17-5
isopropanol	67-63-0
acrylonitrile	107-13-1
styrene	100-42-5
acetone	67-64-1
tert-butyl Alcohol	75-65-0
methyl tert-butyl ether	1634-04-4
diisopropyl ether	108-20-3
ethyl tert-butyl ether	637-92-3
tert-amyl methyl ether	994-05-8
vinyl chloride	75-01-4
1,1-dichloroethene	75-35-4
carbon disulfide	75-15-0
methylene chloride	75-09-2
trans-1,2-dichloroethene	156-60-5
1,1-dichloroethane	75-34-3
cis-1,2-dichoroethene	156-59-2
chloroform	67-66-3
1,1,1-trichloroethane	71-55-6
carbon tetrachloride	56-23-5
benzene	71-43-2
1,2-dichloroethane	107-06-2
trichloroethene	79-01-6
toluene	108-88-3
1,1,2-trichloroethane	79-00-5
tetrachloroethene	127-18-4
chlorobenzene	108-90-7
ethylbenzene	100-41-4
m+p xylene	108-38-3,106-42-3
o-xylene	95-47-6
isopropylbenzene	98-82-8
1,3,5-trimethylbenzene	108-67-8
1,2,4-trimethylbenzene	95-63-6
1,3-dichlorobenzene	541-73-1
1,4-dichlorobenzene	106-46-7
1,2,3-trimethylbenzene	526-73-8
1,2-dichlorobenzene	95-50-1
naphthalene	91-20-3
*note: VOC list does not include full R8 profile	

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Analytes (cont.)

Semivolatile Organic Compounds (sVOC)			Semivolatile Organic Compounds (sVOC)	
	CAS Number			CAS Number
R-(+)-limonene	5989-27-5		Benzo(a)anthracene	56-55-3
1,2,4-trichlorobenzene	120-82-1		Benzo(a)pyrene	50-32-3
1,2-dichlorobenzene	95-50-1		Benzo(b)fluoranthene	205-99-2
1,2-dinitrobenzene	528-29-0		Benzo(g,h,i)perylene	191-24-2
1,3-dichlorobenzene	541-73-1		Benzo(k)fluoranthene	207-08-9
1,3-dimethyladamantane	702-79-4		Benzoic Acid	65-85-0
1,3-dinitrobenzene	99-65-0		Benzyl alcohol	100-51-6
1,4-dichlorobenzene	106-46-7		Bis-(2-chloroethoxy)methane	111-91-1
1,4-dinitrobenzene	100-25-4		Bis-(2-chloroethyl)ether	111-44-4
1-methylnaphthalene	90-12-0		Bis-(2-chloroisopropyl)ether	108-60-1
2,3,4,6-tetrachlorophenol	58-90-2		Bis-(2-ethylhexyl) adipate	103-23-1
2,3,5,6-tetrachlorophenol	935-95-5		Bis-(2-ethylhexyl) phthalate	117-81-7
2,4,5-trichlorophenol	95-95-4		Butyl benzyl phthalate	85-68-7
2,4,6-trichlorophenol	88-06-2		Carbazole	86-74-8
2,4-dichlorophenol	120-83-2		Chrysene	218-01-9
2,4-dimethylphenol	105-67-9		Dibenz(a,h)anthracene	53-70-3
2,4-dinitrophenol	51-28-5		Dibenzofuran	132-64-9
2,4dinitrotoluene	121-14-2		Diethyl phthalate	84-66-2
2,6-dinitrotoluene	606-20-2		Dimethyl phthalate	131-11-3
2-butoxyethanol	111-76-2		Di-n-butyl phthalate	84-74-2
2-chloronaphthalene	91-58-7		Di-n-octyl phthalate	117-84-0
2-chlorophenol	95-57-8		Diphenylamine	122-39-4
2-methylnaphthalene	91-57-6		Fluoranthene	206-44-0
2-methylphenol	95-48-7		Fluorene	86-73-7
2-nitroaniline	88-74-4		Hexachlorobenzene	118-74-1
2-nitrophenol	88-75-5		Hexachlorobutadiene	87-68-3
3&4-methylphenol	108-39-4 & 106-44-5		Hexachlorocycl opentadiene	77-47-4
3,3'-dichlorobenzidine	91-94-1		Hexachloroethane	67-72-1
3-nitroaniline	99-09-2		Indeno(1,2,3-cd)pyrene	193-39-5
4,6-dinitro-2-methylphenol	534-52-1		Isophorone	78-59-1
4-bromophenyl phenyl ether	101-55-3		Naphthalene	91-20-3
4-chloro-3-methylphenol	59-50-7		Nitrobenzene	98-95-3
4-chloroaniline	106-47-8		N-nitrosodimethylamine	62-75-9
4-chlorophenyl phenyl ether	7005-72-3		N-nitrosodi-n-propylamine	621-64-7
4-nitroaniline	100-01-6		Pentachlorophenol	87-86-5
4-nitrophenol	100-02-7		Phenanthrene	85-01-8
Acenaphthene	83-32-9		Phenol	108-95-2
Acenaphthylene	208-96-8		Pyrene	129-00-0
Adamantane	281-23-2		Pyridine	110-86-1
Aniline	62-53-3		Squalene	111-02-4
Anthracene	120-12-7		Terpiniol	98-55-5
Azobenzene	103-33-3		tri-(2-butoxyethyl) phosphate	78-51-3

QC Flags

Qualifier	Definition
U	The analyte was analyzed for, but was not detected above the reported quantitation limit (QL).
J	The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the QL).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
B	The analyte is found in a blank sample above the QL and the concentration found in the sample is less than 10 times the concentration found in the blank.
H	The sample was prepared or analyzed beyond the specified holding time. Sample results may be biased low.
*	Relative percent difference of a field or lab blank is outside acceptance criteria.
R	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and/or meet quality control criteria. Sample results are not reported.
NA	Data not reported or collected.

Note: For Phase V, the original ICP-MS results were rejected because proper procedures were not followed per the EPA method.

Sample Locations

Sample ID	Longitude	Latitude
PGDW05-0412	-108.61264	43.25885
PGDW20-0412	-108.59128	43.25167
PGDW20d-0412	-108.59128	43.25167
PGDW23-0412	-108.62259	43.24866
PGDW30-0412	-108.62258	43.25753
PGDW50-0412	-108.60845	43.24526
PGPW02-0412	-108.68405	43.24697
EPAMW02-0412-1	-108.59468	43.25293
EPAMW02-0412-2	-108.59468	43.25293
EPAMW01-0412	-108.62185	43.25682
EPAMW01d-0412	-108.62185	43.25682
EPAMW01-0412-2	-108.62185	43.25682
EPAMW01-0412-3	-108.62185	43.25682
EPAMW01-0412-4	-108.62185	43.25682
EPAMW01-0412-5	-108.62185	43.25682
EPAMW01-0412-6	-108.62185	43.25682
EPAMW01-0412-7	-108.62185	43.25682
EPAMW01-0412-8	-108.62185	43.25682
EPAMW01-0412-9	-108.62185	43.25682
EPAMW01-0412-10	-108.62185	43.25682

Key for Sample ID Numbers

ID	Definition
P	Sample site - Pavillion
GDW	Groundwater sample
GPW	Municipal water well sample
EPAMW	Deep monitoring well sample
01	Sampling location
0412	Sample month and year
d	Field Duplicate

Example Sample ID PGDW05-1412			
P Sample Site = Pavillion	**GDW** Ground Water Sample	**05** Sampling Location	**0412** Sample month and year

Field Parameters

Sample ID	Date	Purge Vol	Temp	SPC	TDS	DO	pH	ORP	Turbidity	Alkalinity	Fe^{2+}	Fe^{2+} QC	ΣH_2S	ΣH_2S QC
Units		gal	°C	mS/cm	g/L	mg/L		mV	NTU	mg $CaCO_3$/L	mg Fe^{2+}/L		mg S/L	
QL											0.03		0.01	
PGDW05-0412	4/18/2012	60	11.3	0.837	0.544	0.11	9.30	-102	1.6	91	<0.03	U	0.01	J
PGDW20-0412	4/16/2012	1420	9.8	2.429	1.579	0.00	8.89	-249	1.8	66	<0.03	U	0.09	J
PGDW20d-0412	4/16/2012	1420	9.8	2.429	1.579	0.00	8.89	-249	1.8	66	<0.03	U	0.09	J
PGDW23-0412	4/17/2012	2100	12.2	0.996	0.647	0.01	9.13	-161	0.69	65	<0.03	U	<0.01	U
PGDW30-0412	4/17/2012	315	10.9	0.954	0.620	0.44	8.98	-54	0.87	91	<0.03	U	<0.01	U
PGDW50-0412	4/19/2012	210	10.1	5.922	3.849	0.46	8.04	22	0.49	33	<0.03	U	<0.01	U
PGPW02-0412	4/20/2012	240	11.7	1.856	1.206	0.03	8.46	-235	0.38	77	0.11	J	0.02	J
EPAMW02-0412-1	4/16/2012	50	12.3	3.313	2.153	0.02	11.96	-154	4.5	390	<0.03	U	0.01	J
EPAMW02-0412-2	4/22/2012	535	15.3	2.888 (J)	1.877 (J)	0.01	11.81	-148	15.7	254	<0.03	U	0.01	J
EPAMW01-0412	4/24/2012	670	16.8	1.489	0.968	0.00	11.34	-388	2.0	213	<0.03	U	1.53	J
EPAMW01d-0412	4/24/2012	670	16.8	1.489	0.968	0.00	11.34	-388	2.0	213	<0.03	U	1.53	J
EPAMW01-0412-2	4/24/2012	845	15.9	1.413	0.918	0.00	11.20	-393	NA	NA	NA		NA	
EPAMW01-0412-3	4/24/2012	900	15.4	1.393	0.905	0.00	11.16	-394	NA	NA	NA		NA	
EPAMW01-0412-4	4/24/2012	618	15.9	1.539	1.000	0.01	11.43	-395	NA	NA	NA		NA	
EPAMW01-0412-5	4/24/2012	960	16.4	1.371	0.891	0.01	11.08	-391	NA	NA	NA		NA	
EPAMW01-0412-6	4/24/2012	1080	16.6	1.336	0.868	0.01	10.94	-395	NA	NA	NA		NA	
EPAMW01-0412-7	4/24/2012	1020	16.5	1.354	0.880	0.01	11.01	-397	NA	NA	NA		NA	
EPAMW01-0412-8	4/24/2012	1140	16.3	1.335	0.868	0.00	10.89	-385	NA	NA	NA		NA	
EPAMW01-0412-9	4/24/2012	1213	16.0	1.318	0.857	0.00	10.80	-383	NA	NA	NA		NA	
EPAMW01-0412-10	4/24/2012	1300	14.8	1.307	0.850	0.01	10.71	-379	2.6	181	<0.03	U	2.51	J

Field-determined concentrations of Fe^{2+} and ΣH_2S are screening values.

Anions, Ammonia, DIC and DOC

Sample ID	Date	Water Type	DOC	DOC QC	DIC	DIC QC	Nitrate + Nitrite	Nitrate + Nitrite QC	Ammonia	Ammonia QC
Units			**mg/L**		**mg/L**		**mg N/L**		**mg N/L**	
MDL			**0.07**		**0.04**		**0.008**		**0.006**	
QL			**0.50**		**1.00**		**0.050**		**0.100**	
PGDW05-0412	4/18/2012	Na-SO4	0.57	B	17.7		<0.050	U	0.064	J
PGDW20-0412	4/16/2012	Na-SO4	0.63		14.9		0.073		0.162	
PGDW20d-0412	4/16/2012	Na-SO4	0.63		14.8		0.045	J	0.165	
PGDW23-0412	4/17/2012	Na-SO4	0.65		14.1		0.024	J	0.067	J
PGDW30-0412	4/17/2012	Na-SO4	0.59		19.8		0.019	J	0.062	J
PGDW50-0412	4/19/2012	Na-SO4	5.33		7.84		<0.050	U	0.171	
PGPW02-0412	4/20/2012	Na-SO4	<0.50	U	18.0		0.138		0.104	
EPAMW02-0412-1	4/16/2012	Na-Cl	19.4		1.25		0.056		2.61	
EPAMW02-0412-2	4/22/2012	Na-Cl	15.5		2.26		0.095		1.23	
EPAMW01-0412	4/24/2012	Na-SO4	5.63		15.2		0.120		1.81	
EPAMW01d-0412	4/24/2012	Na-SO4	5.75		15.2		<0.050	U	1.60	
EPAMW01-0412-2	4/24/2012		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012		NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012		NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	Na-SO4	3.36		19.1		<0.050	U	0.490	
FieldBlk01	4/16/2012		<0.50	U	<1.00	U	<0.050	U	<0.100	U
FieldBlk02	4/18/2012		0.08	J	<1.00	U	0.009	J	<0.100	U
FieldBlk03	4/22/2012		<0.50	U	<1.00	U	<0.050	U	<0.100	U
FieldBlk04	4/24/2012		0.07	J	<1.00	U	0.028	J	<0.100	U
EquipBlk01	4/16/2012		<0.50	U	<1.00	U	<0.050	U	<0.100	U
EquipBlk02	4/18/2012		<0.50	U	<1.00	U	0.008	J	<0.100	U
EquipBlk04	4/24/2012		0.07	J	<1.00	U	<0.050	U	<0.100	U

Anions, Ammonia, DIC and DOC (cont.)

Sample ID	Date	Br	Br QC	Cl	Cl QC	SO4	SO4 QC	F	F QC
Units		**mg/L**		**mg/L**		**mg/L**		**mg/L**	
MDL		**0.13**		**0.11**		**0.05**		**0.03**	
QL		**1.00**		**1.00**		**1.00**		**0.20**	
PGDW05-0412	4/18/2012	<1.00	U	16.8		308		0.90	
PGDW20-0412	4/16/2012	<1.00	U	32.3		1130		0.94	
PGDW20d-0412	4/16/2012	<1.00	U	32.3		1240		1.03	
PGDW23-0412	4/17/2012	<1.00	U	19.0		397		0.98	
PGDW30-0412	4/17/2012	<1.00	U	16.1		337		1.05	
PGDW50-0412	4/19/2012	<1.42	U	57.8		3470		0.38	J
PGPW02-0412	4/20/2012	<1.00	U	8.51		886		0.51	J
EPAMW02-0412-1	4/16/2012	<1.00	U	469		81.8		1.50	
EPAMW02-0412-2	4/22/2012	<1.00	U	495		13.5		1.16	
EPAMW01-0412	4/24/2012	<1.00	U	19.4		390		2.29	
EPAMW01d-0412	4/24/2012	<1.00	U	20.9		388		2.33	
EPAMW01-0412-2	4/24/2012	<1.00	U	22.0		397		2.37	
EPAMW01-0412-3	4/24/2012	<1.00	U	21.0		394		2.11	
EPAMW01-0412-4	4/24/2012	<1.00	U	21.0		391		2.24	
EPAMW01-0412-5	4/24/2012	<1.00	U	21.2		406		2.29	
EPAMW01-0412-6	4/24/2012	<1.00	U	21.5		401		2.33	
EPAMW01-0412-7	4/24/2012	<1.00	U	21.0		407		2.01	
EPAMW01-0412-8	4/24/2012	<1.00	U	21.6		411		2.13	
EPAMW01-0412-9	4/24/2012	<1.00	U	20.8		413		2.06	
EPAMW01-0412-10	4/24/2012	<1.00	U	21.2		428		2.01	
FieldBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<0.20	U
FieldBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<0.20	U
FieldBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<0.20	U
FieldBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<0.20	U
EquipBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<0.20	U
EquipBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<0.20	U
EquipBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<0.20	U

Metals

Sample ID	Date Collected	ICP-OES Dissolved Ag[A]	ICP-OES Dissolved Ag QC	ICP-OES Total Ag[B]	ICP-OES Total Ag QC	ICP-OES Dissolved Al[A]	ICP-OES Dissolved Al QC	ICP-OES Total Al[B]	ICP-OES Total Al QC	ICP-MS Dissolved As[C]	ICP-MS Dissolved As QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
MDL		4		4		148		164		0.18	
QL		14		16		494		548		1.00	
PGDW05-0412	4/18/2012	<14	U	<16	J-, U	<494	U	<548	U	<1.00	U
PGDW20-0412	4/16/2012	<14	U	<16	J-, U	<494	U	<548	U	R	R
PGDW20d-0412	4/16/2012	<14	U	<16	J-, U	<494	U	<548	U	0.31	J
PGDW23-0412	4/17/2012	<14	U	<16	J-, U	<494	U	<548	U	0.24	J
PGDW30-0412	4/17/2012	<14	U	<16	J-, U	<494	U	<548	U	0.34	J
PGDW50-0412	4/19/2012	<14	U	<16	J-, U	<494	U	<548	U	1.4	
PGPW02-0412	4/20/2012	<14	U	<16	J-, U	<494	U	<548	U	<1.00	U
EPAMW02-0412-1	4/16/2012	<14	U	<16	J-, U	660	J	661	J	3.1	
EPAMW02-0412-2	4/22/2012	<14	U	<16	J-, U	816	J	1110	J	3.4	
EPAMW01-0412	4/24/2012	<14	U	<16	J-, U	234	J	278	J	0.49	J
EPAMW01d-0412	4/24/2012	<14	U	<16	J-, U	245	J	198	J	0.71	J
EPAMW01-0412-2	4/24/2012	<14	U	NA		211	J	NA		<1.00	U
EPAMW01-0412-3	4/24/2012	<14	U	NA		<494	U	NA		0.53	J
EPAMW01-0412-4	4/24/2012	<14	U	NA		205	J	NA		0.40	J
EPAMW01-0412-5	4/24/2012	<14	U	NA		<494	U	NA		0.28	J
EPAMW01-0412-6	4/24/2012	<14	U	NA		<494	U	NA		0.47	J
EPAMW01-0412-7	4/24/2012	<14	U	NA		<494	U	NA		0.82	J
EPAMW01-0412-8	4/24/2012	<14	U	NA		<494	U	NA		0.43	J
EPAMW01-0412-9	4/24/2012	<14	U	NA		<494	U	NA		0.59	J
EPAMW01-0412-10	4/24/2012	<14	U	<16	J-, U	<494	U	<548	U	<1.00	U
FieldBlk01	4/16/2012	<14	U	5	J-	<494	U	<548	U	<1.00	U
FieldBlk02	4/18/2012	<14	U	<16	J-, U	<494	U	<548	U	0.24	J
FieldBlk03	4/22/2012	<14	U	<16	J-, U	<494	U	<548	U	<1.00	U
FieldBlk04	4/24/2012	<14	U	<16	J-, U	<494	U	<548	U	<1.00	U
EquipBlk01	4/16/2012	<14	U	<16	J-, U	<494	U	<548	U	<1.00	U
EquipBlk02	4/18/2012	<14	U	<16	J-, U	<494	U	<548	U	<1.00	U
EquipBlk04	4/24/2012	<14	U	<16	J-, U	<494	U	<548	U	<1.00	U

A. EPA Method 200.7
B. EPA Methods 3015A and 200.7
C. EPA CLP Inorganic Statement of Work ISMO1.3, Exhibit D - Part B.
R flags: trace metal data rejected for sample PGDW20-0412 due to sample contamination.

Metals (cont.)

Sample ID	Date Collected	ICP-MS Total As[C]	ICP-MS Total As QC	ICP-OES Dissolved B[A]	ICP-OES Dissolved B QC	ICP-OES Total B[B]	ICP-OES Total B QC	ICP-OES Dissolved Ba[A]	ICP-OES Dissolved Ba QC	ICP-OES Total Ba[B]	ICP-OES Total Ba QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
MDL		0.18		100		111		1		1	
QL		1.00		333		370		4		4	
PGDW05-0412	4/18/2012	<1.00	U	131	J	115	J	10	J	10	J
PGDW20-0412	4/16/2012	<1.00	U	285	J	196	J	8	J	9	J
PGDW20d-0412	4/16/2012	<1.00	U	190	J	176	J	9	J	8	J
PGDW23-0412	4/17/2012	<1.00	U	144	J	133	J	10	J	11	J
PGDW30-0412	4/17/2012	<1.00	U	123	J	112	J	7	J	8	J
PGDW50-0412	4/19/2012	1.2		215	J	215	J	5	J	5	J
PGPW02-0412	4/20/2012	<1.00	U	<333	U	<370	U	7	J	7	J
EPAMW02-0412-1	4/16/2012	2.6		114	J	<370	U	95	J	91	J
EPAMW02-0412-2	4/22/2012	3.4		108	J	115	J	147	J	158	J
EPAMW01-0412	4/24/2012	0.46	J	136	J	141	J	21	J	22	J
EPAMW01d-0412	4/24/2012	0.50	J	136	J	141	J	21	J	22	J
EPAMW01-0412-2	4/24/2012	NA		131	J	NA		20	J	NA	
EPAMW01-0412-3	4/24/2012	NA		130	J	NA		20	J	NA	
EPAMW01-0412-4	4/24/2012	NA		142	J	NA		21	J	NA	
EPAMW01-0412-5	4/24/2012	NA		128	J	NA		20	J	NA	
EPAMW01-0412-6	4/24/2012	NA		125	J	NA		20	J	NA	
EPAMW01-0412-7	4/24/2012	NA		126	J	NA		20	J	NA	
EPAMW01-0412-8	4/24/2012	NA		123	J	NA		20	J	NA	
EPAMW01-0412-9	4/24/2012	NA		121	J	NA		20	J	NA	
EPAMW01-0412-10	4/24/2012	0.37	J	119	J	121	J	19	J	20	J
FieldBlk01	4/16/2012	<1.00	U	<333	U	<370	U	<4	U	<4	U
FieldBlk02	4/18/2012	<1.00	U	<333	U	<370	U	<4	U	<4	U
FieldBlk03	4/22/2012	<1.00	U	<333	U	<370	U	<4	U	<4	U
FieldBlk04	4/24/2012	<1.00	U	<333	U	<370	U	<4	U	<4	U
EquipBlk01	4/16/2012	<1.00	U	<333	U	<370	U	<4	U	<4	U
EquipBlk02	4/18/2012	<1.00	U	<333	U	<370	U	<4	U	<4	U
EquipBlk04	4/24/2012	<1.00	U	<333	U	<370	U	<4	U	<4	U

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B. EPA Methods 3015A and 200.7
C. EPA CLP Inorganic Statement of Work ISMO1.3, Exhibit D - Part B.
R flags: trace metal data rejected for sample PGDW20-0412 due to sample contamination.

Metals (cont.)

Sample ID	Date Collected	ICP-OES Dissolved Be[A]	ICP-OES Dissolved Be QC	ICP-OES Total Be[B]	ICP-OES Total Be QC	ICP-OES Dissolved Ca[A]	ICP-OES Dissolved Ca QC	ICP-OES Total Ca[B]	ICP-OES Total Ca QC	ICP-MS Dissolved Cd[C]	ICP-MS Dissolved Cd QC
Units		µg/L		µg/L		mg/L		mg/L		µg/L	
MDL		3		3		0.09		0.10		0.06	
QL		10		11		0.29		0.32		1.00	
PGDW05-0412	4/18/2012	<10	U	<11	U	3.17		3.34	J	<1.00	U
PGDW20-0412	4/16/2012	<10	U	<11	U	57.9		59.8	J	R	R
PGDW20d-0412	4/16/2012	<10	U	<11	U	58.3		59.5	J	<1.00	U
PGDW23-0412	4/17/2012	<10	U	<11	U	7.19		7.30	J	<1.00	U
PGDW30-0412	4/17/2012	<10	U	<11	U	4.42		4.48	J	<1.00	U
PGDW50-0412	4/19/2012	<10	U	<11	U	314		315	J	<1.00	U
PGPW02-0412	4/20/2012	<10	U	<11	U	34.7		35.2	J	<1.00	U
EPAMW02-0412-1	4/16/2012	<10	U	<11	U	50.8		51.7	J	<1.00	U
EPAMW02-0412-2	4/22/2012	<10	U	<11	U	36.1		37.3	J	<1.00	U
EPAMW01-0412	4/24/2012	<10	U	<11	U	9.87		10.1	J	<1.00	U
EPAMW01d-0412	4/24/2012	<10	U	<11	U	9.91		9.99	J	<1.00	U
EPAMW01-0412-2	4/24/2012	<10	U	NA		9.75		NA		<1.00	U
EPAMW01-0412-3	4/24/2012	<10	U	NA		9.67		NA		<1.00	U
EPAMW01-0412-4	4/24/2012	<10	U	NA		9.80		NA		<1.00	U
EPAMW01-0412-5	4/24/2012	<10	U	NA		9.69		NA		<1.00	U
EPAMW01-0412-6	4/24/2012	<10	U	NA		9.66		NA		<1.00	U
EPAMW01-0412-7	4/24/2012	<10	U	NA		9.67		NA		<1.00	U
EPAMW01-0412-8	4/24/2012	<10	U	NA		9.61		NA		<1.00	U
EPAMW01-0412-9	4/24/2012	<10	U	NA		9.65		NA		<1.00	U
EPAMW01-0412-10	4/24/2012	<10	U	<11	U	9.47		9.82	J	<1.00	U
FieldBlk01	4/16/2012	<10	U	<11	U	<0.29	U	<0.32	U	<1.00	U
FieldBlk02	4/18/2012	<10	U	<11	U	<0.29	U	<0.32	U	<1.00	U
FieldBlk03	4/22/2012	<10	U	<11	U	<0.29	U	<0.32	U	0.14	J
FieldBlk04	4/24/2012	<10	U	<11	U	<0.29	U	<0.32	U	0.45	J
EquipBlk01	4/16/2012	<10	U	<11	U	<0.29	U	<0.32	U	0.23	J
EquipBlk02	4/18/2012	<10	U	<11	U	<0.29	U	<0.32	U	0.10	J
EquipBlk04	4/24/2012	<10	U	<11	U	<0.29	U	<0.32	U	0.12	J

A. EPA Method 200.7
B. EPA Methods 3015A and 200.7
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R flags: trace metal data rejected for sample PGDW20-0412 due to sample contamination.

Metals (cont.)

Sample ID	Date Collected	ICP-MS Total Cd[C]	ICP-MS Total Cd QC	ICP-OES Dissolved Co[A]	ICP-OES Dissolved Co QC	ICP-OES Total Co[B]	ICP-OES Total Co QC	ICP-MS Dissolved Cr[C]	ICP-MS Dissolved Cr QC	ICP-MS Total Cr[C]	ICP-MS Total Cr QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
MDL		0.06		1		1		0.06		0.06	
QL		1.00		4		4		2.00		2.00	
PGDW05-0412	4/18/2012	<1.00	U	<4	U	<4	U	<2.00	U	<2.00	U
PGDW20-0412	4/16/2012	<1.00	U	<4	U	<4	U	R	R	<2.00	U
PGDW20d-0412	4/16/2012	<1.00	U	<4	U	<4	U	<2.00	J	<2.00	U
PGDW23-0412	4/17/2012	<1.00	U	<4	U	<4	U	<2.00	J	<2.00	U
PGDW30-0412	4/17/2012	<1.00	U	<4	U	<4	U	13.4		<2.00	U
PGDW50-0412	4/19/2012	<1.00	U	<4	U	<4	U	<2.00	U	<2.00	U
PGPW02-0412	4/20/2012	<1.00	U	<4	U	<4	U	<2.00	U	<2.00	U
EPAMW02-0412-1	4/16/2012	<1.00	U	<4	U	<4	U	<2.00	U	<2.00	U
EPAMW02-0412-2	4/22/2012	<1.00	U	<4	U	<4	U	<2.00	U	5.1	*, J
EPAMW01-0412	4/24/2012	<1.00	U	<4	U	<4	U	<2.00	U	<2.00	U
EPAMW01d-0412	4/24/2012	<1.00	U	<4	U	<4	U	2.2		<2.00	U
EPAMW01-0412-2	4/24/2012	NA		<4	U	NA		<2.00	U	NA	
EPAMW01-0412-3	4/24/2012	NA		<4	U	NA		<2.00	U	NA	
EPAMW01-0412-4	4/24/2012	NA		<4	U	NA		<2.00	U	NA	
EPAMW01-0412-5	4/24/2012	NA		<4	U	NA		<2.00	U	NA	
EPAMW01-0412-6	4/24/2012	NA		<4	U	NA		<2.00	U	NA	
EPAMW01-0412-7	4/24/2012	NA		<4	U	NA		<2.00	U	NA	
EPAMW01-0412-8	4/24/2012	NA		<4	U	NA		<2.00	U	NA	
EPAMW01-0412-9	4/24/2012	NA		<4	U	NA		<2.00	U	NA	
EPAMW01-0412-10	4/24/2012	<1.00	U	<4	U	<4	U	<2.00	U	<2.00	U
FieldBlk01	4/16/2012	<1.00	U	<4	U	<4	U	0.96	J	0.35	*, J
FieldBlk02	4/18/2012	0.09	J	<4	U	<4	U	13.4		0.45	*, J
FieldBlk03	4/22/2012	<1.00	U	<4	U	<4	U	1.4	J	0.30	*, J
FieldBlk04	4/24/2012	<1.00	U	<4	U	<4	U	1.5	J	1.4	*, J
EquipBlk01	4/16/2012	0.10	J	<4	U	<4	U	0.29	J	0.37	*, J
EquipBlk02	4/18/2012	<1.00	U	<4	U	<4	U	0.40	J	1.1	*, J
EquipBlk04	4/24/2012	<1.00	U	<4	U	<4	U	0.78	J	0.50	*, J

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B. EPA Methods 3015A and 200.7
C. EPA CLP Inorganic Statement of Work ISMO1.3, Exhibit D - Part B.
R flags: trace metal data rejected for sample PGDW20-0412 due to sample contamination.

Metals (cont.)

Sample ID	Date Collected	ICP-MS Dissolved Cu[C]	ICP-MS Dissolved Cu QC	ICP-MS Total Cu[C]	ICP-MS Total Cu QC	ICP-OES Dissolved Fe[A]	ICP-OES Dissolved Fe QC	ICP-OES Total Fe[B]	ICP-OES Total Fe QC	ICP-OES Dissolved K[A]	ICP-OES Dissolved K QC
Units		µg/L		µg/L		µg/L		µg/L		mg/L	
MDL		0.11		0.11		20		22		0.11	
QL		2.00		2.00		67		74		0.35	
PGDW05-0412	4/18/2012	<2.00	U	79.5		<67	U	78	J	0.47	J
PGDW20-0412	4/16/2012	R	R	<2.00	U	55	J	137	J	1.64	J
PGDW20d-0412	4/16/2012	<2.00	U	<2.00	U	55	J	136	J	1.27	J
PGDW23-0412	4/17/2012	<2.00	U	<2.00	U	<67	U	25	J	0.61	J
PGDW30-0412	4/17/2012	<2.00	U	<2.00	U	<67	U	74	J	0.55	J
PGDW50-0412	4/19/2012	3.2		5.6		<67	U	<74	U	3.04	J
PGPW02-0412	4/20/2012	<2.00	U	<2.00	U	201		211	J	0.92	J
EPAMW02-0412-1	4/16/2012	<2.00	U	4.6		<67	U	466	J	31.4	J
EPAMW02-0412-2	4/22/2012	4.4		10.1		151		2330	J	16.6	J
EPAMW01-0412	4/24/2012	<2.00	U	<2.00	U	<67	U	56	J	17.3	J
EPAMW01d-0412	4/24/2012	<2.00	U	<2.00	U	<67	U	<74	U	17.2	J
EPAMW01-0412-2	4/24/2012	<2.00	U	NA		<67	U	NA		16.2	J
EPAMW01-0412-3	4/24/2012	<2.00	U	NA		<67	U	NA		16.0	J
EPAMW01-0412-4	4/24/2012	<2.00	U	NA		<67	U	NA		17.8	J
EPAMW01-0412-5	4/24/2012	<2.00	U	NA		<67	U	NA		15.7	J
EPAMW01-0412-6	4/24/2012	<2.00	U	NA		<67	U	NA		15.0	J
EPAMW01-0412-7	4/24/2012	<2.00	U	NA		<67	U	NA		15.3	J
EPAMW01-0412-8	4/24/2012	<2.00	U	NA		<67	U	NA		14.5	J
EPAMW01-0412-9	4/24/2012	<2.00	U	NA		<67	U	NA		14.4	J
EPAMW01-0412-10	4/24/2012	<2.00	U	<2.00	U	<67	U	<74	U	13.6	J
FieldBlk01	4/16/2012	1.1	J	0.52	J	<67	U	<74	U	<0.35	U
FieldBlk02	4/18/2012	1.7	J	0.45	J	<67	U	<74	U	<0.35	U
FieldBlk03	4/22/2012	1.3	J	0.32	J	<67	U	<74	U	<0.35	U
FieldBlk04	4/24/2012	1.3	J	3.4		<67	U	<74	U	<0.35	U
EquipBlk01	4/16/2012	0.87	J	0.37	J	<67	U	<74	U	<0.35	U
EquipBlk02	4/18/2012	0.90	J	0.63	J	<67	U	<74	U	<0.35	U
EquipBlk04	4/24/2012	1.1	J	0.31	J	<67	U	<74	U	<0.35	U

A. EPA Method 200.7
B. EPA Methods 3015A and 200.7
C. EPA CLP Inorganic Statement of Work ISMO1.3, Exhibit D - Part B.
R flags: trace metal data rejected for sample PGDW20-0412 due to sample contamination.

Metals (cont.)

Sample ID	Date Collected	ICP-OES Total K[B]	ICP-OES Total K QC	ICP-OES Dissolved Mg[A]	ICP-OES Dissolved Mg QC	ICP-OES Total Mg[B]	ICP-OES Total Mg QC	ICP-OES Dissolved Mn[A]	ICP-OES Dissolved Mn QC	ICP-OES Total Mn[B]	ICP-OES Total Mn QC
Units		mg/L		mg/L		mg/L		µg/L		µg/L	
MDL		0.12		0.03		0.03		4		4	
QL		0.39		0.10		0.11		14		16	
PGDW05-0412	4/18/2012	0.43	J	0.07	J	0.08	J	<14	U	<16	U
PGDW20-0412	4/16/2012	1.49	J	5.93		6.11	J	22		23	J
PGDW20d-0412	4/16/2012	1.52	J	5.95		6.15	J	21		23	J
PGDW23-0412	4/17/2012	0.69	J	0.09	J	0.10	J	<14	U	<16	U
PGDW30-0412	4/17/2012	0.64	J	0.10	J	0.11	J	<14	U	<16	U
PGDW50-0412	4/19/2012	3.89	J	12.8		12.8	J	90		92	J
PGPW02-0412	4/20/2012	0.99	J	0.24		0.25	J	8	J	9	J
EPAMW02-0412-1	4/16/2012	31.7	J	<0.10	U	<0.11	U	<14	U	5	J
EPAMW02-0412-2	4/22/2012	16.0	J	<0.10	U	0.17	J	<14	U	21	J
EPAMW01-0412	4/24/2012	17.8	J	0.14		0.18	J	<14	U	<16	U
EPAMW01d-0412	4/24/2012	17.9	J	0.15		0.14	J	<14	U	<16	U
EPAMW01-0412-2	4/24/2012	NA	J	0.14		NA		<14	U	NA	
EPAMW01-0412-3	4/24/2012	NA	J	0.15		NA		<14	U	NA	
EPAMW01-0412-4	4/24/2012	NA	J	0.13		NA		<14	U	NA	
EPAMW01-0412-5	4/24/2012	NA	J	0.15		NA		<14	U	NA	
EPAMW01-0412-6	4/24/2012	NA	J	0.16		NA		<14	U	NA	
EPAMW01-0412-7	4/24/2012	NA	J	0.16		NA		<14	U	NA	
EPAMW01-0412-8	4/24/2012	NA	J	0.16		NA		<14	U	NA	
EPAMW01-0412-9	4/24/2012	NA	J	0.17		NA		<14	U	NA	
EPAMW01-0412-10	4/24/2012	14.1	J	0.17		0.18	J	<14	U	<16	U
FieldBlk01	4/16/2012	<0.39	U	<0.10	U	<0.11	U	<14	U	<16	U
FieldBlk02	4/18/2012	<0.39	U	<0.10	U	<0.11	U	<14	U	<16	U
FieldBlk03	4/22/2012	<0.39	U	<0.10	U	<0.11	U	<14	U	<16	U
FieldBlk04	4/24/2012	<0.39	U	<0.10	U	<0.11	U	<14	U	<16	U
EquipBlk01	4/16/2012	<0.39	U	<0.10	U	<0.11	U	<14	U	<16	U
EquipBlk02	4/18/2012	<0.39	U	<0.10	U	<0.11	U	<14	U	<16	U
EquipBlk04	4/24/2012	<0.39	U	<0.10	U	<0.11	U	<14	U	<16	U

A. EPA Method 200.7
B. EPA Methods 3015A and 200.7
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Metals (cont.)

Sample ID	Date Collected	ICP-OES Dissolved Mo[A]	ICP-OES Dissolved Mo QC	ICP-OES Total Mo[B]	ICP-OES Total Mo QC	ICP-OES Dissolved Na[A]	ICP-OES Dissolved Na QC	ICP-OES Total Na[B]	ICP-OES Total Na QC	ICP-MS Dissolved Ni[C]	ICP-MS Dissolved Ni QC
Units		µg/L		µg/L		mg/L		mg/L		µg/L	
MDL		5		6		0.51		0.57		0.11	
QL		17		19		1.71		1.90		1.00	
PGDW05-0412	4/18/2012	<17	U	<19	U	190	J	189	J	<1.00	U
PGDW20-0412	4/16/2012	<17	U	<19	U	491	J	502	J	R	R
PGDW20d-0412	4/16/2012	<17	U	<19	U	493	J	498	J	<1.00	U
PGDW23-0412	4/17/2012	<17	U	<19	U	223	J	221	J	<1.00	U
PGDW30-0412	4/17/2012	<17	U	<19	U	213	J	212	J	14.9	
PGDW50-0412	4/19/2012	<17	U	<19	U	1290	J	1290	J	<1.00	U
PGPW02-0412	4/20/2012	<17	U	7	J	414	J	413	J	<1.00	U
EPAMW02-0412-1	4/16/2012	6	J	10	J	419	J	429	J	4.3	
EPAMW02-0412-2	4/22/2012	<17	U	<19	U	381	J	379	J	2.6	
EPAMW01-0412	4/24/2012	7	J	10	J	276	J	274	J	<1.00	U
EPAMW01d-0412	4/24/2012	8	J	10	J	277	J	276	J	0.39	J
EPAMW01-0412-2	4/24/2012	5	J	NA		271	J	NA		<1.00	U
EPAMW01-0412-3	4/24/2012	<17	U	NA		264	J	NA		0.23	J
EPAMW01-0412-4	4/24/2012	7	J	NA		273	J	NA		<1.00	U
EPAMW01-0412-5	4/24/2012	<17	U	NA		265	J	NA		<1.00	U
EPAMW01-0412-6	4/24/2012	<17	U	NA		264	J	NA		<1.00	U
EPAMW01-0412-7	4/24/2012	<17	U	NA		265	J	NA		<1.00	U
EPAMW01-0412-8	4/24/2012	<17	U	NA		264	J	NA		<1.00	U
EPAMW01-0412-9	4/24/2012	<17	U	NA		268	J	NA		<1.00	U
EPAMW01-0412-10	4/24/2012	<17	U	7	J	264	J	273	J	<1.00	U
FieldBlk01	4/16/2012	<17	U	<19	U	<1.71	U	<1.90	U	<1.00	U
FieldBlk02	4/18/2012	<17	U	<19	U	<1.71	U	<1.90	U	13.5	
FieldBlk03	4/22/2012	<17	U	<19	U	<1.71	U	<1.90	U	<1.00	U
FieldBlk04	4/24/2012	<17	U	<19	U	<1.71	U	<1.90	U	<1.00	U
EquipBlk01	4/16/2012	<17	U	<19	U	<1.71	U	<1.90	U	<1.00	U
EquipBlk02	4/18/2012	<17	U	<19	U	<1.71	U	<1.90	U	<1.00	U
EquipBlk04	4/24/2012	<17	U	<19	U	<1.71	U	<1.90	U	<1.00	U

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R flags: trace metal data rejected for sample PGDW20-0412 due to sample contamination.

Metals (cont.)

Sample ID	Date Collected	ICP-MS Total Ni[C]	ICP-MS Total Ni QC	ICP-OES Dissolved P[A]	ICP-OES Dissolved P QC	ICP-OES Total P[B]	ICP-OES Total P QC	ICP-MS Dissolved Pb[C]	ICP-MS Dissolved Pb QC	ICP-MS Total Pb[C]	ICP-MS Total Pb QC
Units		µg/L		mg/L		mg/L		µg/L		µg/L	
MDL		0.11		0.02		0.02		0.03		0.03	
QL		1.00		0.06		0.07		1.00		1.00	
PGDW05-0412	4/18/2012	<1.00	U	<0.06	U	0.02	J	<1.00	U	1.3	*
PGDW20-0412	4/16/2012	<1.00	U	<0.06	U	<0.07	U	R	R	<1.00	U
PGDW20d-0412	4/16/2012	<1.00	U	<0.06	U	<0.07	U	<1.00	U	<1.00	U
PGDW23-0412	4/17/2012	<1.00	U	<0.06	U	<0.07	U	<1.00	U	<1.00	U
PGDW30-0412	4/17/2012	<1.00	U	<0.06	U	<0.07	U	<1.00	U	<1.00	U
PGDW50-0412	4/19/2012	2.0	*, J	<0.06	U	<0.07	U	<1.00	U	<1.00	U
PGPW02-0412	4/20/2012	<1.00	U	<0.06	U	<0.07	U	<1.00	U	<1.00	U
EPAMW02-0412-1	4/16/2012	5.8	*, J	<0.06	U	<0.07	U	<1.00	U	<1.00	U
EPAMW02-0412-2	4/22/2012	4.5	*, J	<0.06	U	<0.07	U	<1.00	U	0.61	*, J
EPAMW01-0412	4/24/2012	<1.00	U	<0.06	U	<0.07	U	<1.00	U	<1.00	U
EPAMW01d-0412	4/24/2012	<1.00	U	<0.06	U	<0.07	U	<1.00	U	<1.00	U
EPAMW01-0412-2	4/24/2012	NA		<0.06	U	NA		<1.00	U	NA	
EPAMW01-0412-3	4/24/2012	NA		<0.06	U	NA		<1.00	U	NA	
EPAMW01-0412-4	4/24/2012	NA		<0.06	U	NA		<1.00	U	NA	
EPAMW01-0412-5	4/24/2012	NA		<0.06	U	NA		<1.00	U	NA	
EPAMW01-0412-6	4/24/2012	NA		<0.06	U	NA		<1.00	U	NA	
EPAMW01-0412-7	4/24/2012	NA		<0.06	U	NA		<1.00	U	NA	
EPAMW01-0412-8	4/24/2012	NA		<0.06	U	NA		<1.00	U	NA	
EPAMW01-0412-9	4/24/2012	NA		<0.06	U	NA		<1.00	U	NA	
EPAMW01-0412-10	4/24/2012	<1.00	U	<0.06	U	<0.07	U	<1.00	U	<1.00	U
FieldBlk01	4/16/2012	<1.00	U	<0.06	U	<0.07	U	0.23	J	0.17	*, J
FieldBlk02	4/18/2012	<1.00	U	<0.06	U	<0.07	U	0.94	J	0.16	*, J
FieldBlk03	4/22/2012	<1.00	U	<0.06	U	<0.07	U	0.59	J	<1.00	U
FieldBlk04	4/24/2012	1.4	*, J	<0.06	U	<0.07	U	0.55	J	0.40	*, J
EquipBlk01	4/16/2012	<1.00	U	<0.06	U	<0.07	U	0.13	J	<1.00	U
EquipBlk02	4/18/2012	<1.00	U	<0.06	U	<0.07	U	0.13	J	0.28	*, J
EquipBlk04	4/24/2012	<1.00	U	<0.06	U	<0.07	U	0.39	J	<1.00	U

A. EPA Method 200.7
B. EPA Methods 3015A and 200.7
C. EPA CLP Inorganic Statement of Work ISMO1.3, Exhibit D - Part B.
R flags: trace metal data rejected for sample PGDW20-0412 due to sample contamination.

Metals (cont.)

Sample ID	Date Collected	ICP-OES Dissolved S[A]	ICP-OES Dissolved S QC	ICP-OES Total S[B]	ICP-OES Total S QC	ICP-MS Dissolved Sb[C]	ICP-MS Dissolved Sb QC	ICP-MS Total Sb[C]	ICP-MS Total Sb QC	ICP-MS Dissolved Se[C]	ICP-MS Dissolved Se QC
Units		mg/L		mg/L		µg/L		µg/L		µg/L	
MDL		0.14		0.15		0.08		0.08		1.20	
QL		0.46		0.51		2.00		2.00		5.00	
PGDW05-0412	4/18/2012	101	J	96.6	J	<2.00	U	<2.00	U	<5.00	U
PGDW20-0412	4/16/2012	375	J	354	J	R	R	<2.00	U	R	R
PGDW20d-0412	4/16/2012	375	J	353	J	<2.00	U	<2.00	U	<5.00	U
PGDW23-0412	4/17/2012	135	J	125	J	<2.00	U	<2.00	U	<5.00	U
PGDW30-0412	4/17/2012	118	J	109	J	<2.00	U	<2.00	U	<5.00	U
PGDW50-0412	4/19/2012	1120	J	1130	J	<2.00	U	<2.00	U	1.30	J
PGPW02-0412	4/20/2012	284	J	275	J	<2.00	U	<2.00	U	<5.00	U
EPAMW02-0412-1	4/16/2012	32.1	J	30.7	J	<2.00	U	<2.00	U	4.7	J
EPAMW02-0412-2	4/22/2012	7.38	J	5.35	J	<2.00	U	<2.00	U	4.9	J
EPAMW01-0412	4/24/2012	177	J	120	J	<2.00	U	<2.00	U	<5.00	U
EPAMW01d-0412	4/24/2012	171	J	120	J	<2.00	U	<2.00	U	<5.00	U
EPAMW01-0412-2	4/24/2012	202	J	NA		<2.00	U	NA		<5.00	U
EPAMW01-0412-3	4/24/2012	198	J	NA		<2.00	U	NA		<5.00	U
EPAMW01-0412-4	4/24/2012	187	J	NA		<2.00	U	NA		<5.00	U
EPAMW01-0412-5	4/24/2012	210	J	NA		<2.00	U	NA		<5.00	U
EPAMW01-0412-6	4/24/2012	208	J	NA		<2.00	U	NA		<5.00	U
EPAMW01-0412-7	4/24/2012	210	J	NA		<2.00	U	NA		<5.00	U
EPAMW01-0412-8	4/24/2012	210	J	NA		<2.00	U	NA		<5.00	U
EPAMW01-0412-9	4/24/2012	214	J	NA		<2.00	U	NA		<5.00	U
EPAMW01-0412-10	4/24/2012	200	J	129	J	<2.00	U	<2.00	U	<5.00	U
FieldBlk01	4/16/2012	<0.46	U	<0.51	U	<2.00	U	<2.00	U	<5.00	U
FieldBlk02	4/18/2012	<0.46	U	<0.51	U	<2.00	U	<2.00	U	<5.00	U
FieldBlk03	4/22/2012	<0.46	U	<0.51	U	0.30	J	<2.00	U	<5.00	U
FieldBlk04	4/24/2012	<0.46	U	<0.51	U	0.20	J	<2.00	U	<5.00	U
EquipBlk01	4/16/2012	<0.46	U	<0.51	U	0.13	J	0.30	J	<5.00	U
EquipBlk02	4/18/2012	<0.46	U	<0.51	U	0.11	J	0.18	J	<5.00	U
EquipBlk04	4/24/2012	<0.46	U	<0.51	U	0.09	J	0.12	J	<5.00	U

A. EPA Method 200.7
B. EPA Methods 3015A and 200.7
C. EPA CLP Inorganic Statement of Work ISMO1.3, Exhibit D - Part B.
R flags: trace metal data rejected for sample PGDW20-0412 due to sample contamination.

Metals (cont.)

Sample ID	Date Collected	ICP-MS Total Se[C]	ICP-MS Total Se QC	ICP-OES Dissolved Si[A]	ICP-OES Dissolved Si QC	ICP-OES Total Si[B]	ICP-OES Total Si QC	ICP-OES Dissolved Sr[A]	ICP-OES Dissolved Sr QC	ICP-OES Total Sr[B]	ICP-OES Total Sr QC
Units		µg/L		mg/L		mg/L		µg/L		µg/L	
MDL		1.20		0.13		0.14		1		1	
QL		5.00		0.43		0.48		4		4	
PGDW05-0412	4/18/2012	<5.00	U	5.21	J+	5.56	J+	53		56	J
PGDW20-0412	4/16/2012	<5.00	U	5.69	J+	5.91	J+	864		879	J
PGDW20d-0412	4/16/2012	<5.00	U	5.68	J+	5.91	J+	873		872	J
PGDW23-0412	4/17/2012	<5.00	U	5.15	J+	5.52	J+	92		92	J
PGDW30-0412	4/17/2012	<5.00	U	4.71	J+	4.97	J+	69		69	J
PGDW50-0412	4/19/2012	<5.00	U	4.74	J+	4.80	J+	3000		2940	J
PGPW02-0412	4/20/2012	<5.00	U	5.05	J+	5.24	J+	330		333	J
EPAMW02-0412-1	4/16/2012	4.5	J	4.89	J+	5.03	J+	1260		1240	J
EPAMW02-0412-2	4/22/2012	4.3	J	5.00	J+	6.03	J+	806		786	J
EPAMW01-0412	4/24/2012	<5.00	U	10.50	J+	11.90	J+	315		318	J
EPAMW01d-0412	4/24/2012	<5.00	U	10.50	J+	11.70	J+	314		320	J
EPAMW01-0412-2	4/24/2012	NA		10.10	J+	NA		312		NA	
EPAMW01-0412-3	4/24/2012	NA		9.95	J+	NA		309		NA	
EPAMW01-0412-4	4/24/2012	NA		12.00	J+	NA		328		NA	
EPAMW01-0412-5	4/24/2012	NA		9.54	J+	NA		307		NA	
EPAMW01-0412-6	4/24/2012	NA		8.81	J+	NA		301		NA	
EPAMW01-0412-7	4/24/2012	NA		9.09	J+	NA		304		NA	
EPAMW01-0412-8	4/24/2012	NA		8.43	J+	NA		298		NA	
EPAMW01-0412-9	4/24/2012	NA		8.18	J+	NA		301		NA	
EPAMW01-0412-10	4/24/2012	<5.00	U	7.69	J+	7.66	J+	291		292	J
FieldBlk01	4/16/2012	<5.00	U	<0.43	U	<0.48	U	<4	U	<4	U
FieldBlk02	4/18/2012	<5.00	U	<0.43	U	<0.48	U	<4	U	<4	U
FieldBlk03	4/22/2012	<5.00	U	<0.43	U	<0.48	U	<4	U	<4	U
FieldBlk04	4/24/2012	<5.00	U	<0.43	U	<0.48	U	<4	U	<4	U
EquipBlk01	4/16/2012	<5.00	U	<0.43	U	<0.48	U	<4	U	<4	U
EquipBlk02	4/18/2012	<5.00	U	<0.43	U	<0.48	U	<4	U	<4	U
EquipBlk04	4/24/2012	<5.00	U	<0.43	U	<0.48	U	<4	U	<4	U

A. EPA Method 200.7
B. EPA Methods 3015A and 200.7
C. EPA CLP Inorganic Statement of Work ISMO1.3, Exhibit D - Part B.
R flags: trace metal data rejected for sample PGDW20-0412 due to sample contamination.

Metals (cont.)

Sample ID	Date Collected	ICP-OES Dissolved Ti[A]	ICP-OES Dissolved Ti QC	ICP-OES Total Ti[B]	ICP-OES Total Ti QC	ICP-MS Dissolved Ti[C]	ICP-MS Dissolved Ti QC	ICP-MS Total Ti[C]	ICP-MS Total Ti QC	ICP-OES Dissolved V[A]	ICP-OES Dissolved V QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
MDL		2		2		0.04		0.04		3	
QL		7		8		1.00		1.00		10	
PGDW05-0412	4/18/2012	<7	U	<8	U	<1.00	U	<1.00	U	<10	U
PGDW20-0412	4/16/2012	<7	U	<8	U	R	R	<1.00	U	<10	U
PGDW20d-0412	4/16/2012	<7	U	<8	U	<1.00	U	<1.00	U	<10	U
PGDW23-0412	4/17/2012	<7	U	<8	U	<1.00	U	<1.00	U	<10	U
PGDW30-0412	4/17/2012	<7	U	<8	U	<1.00	U	<1.00	U	<10	U
PGDW50-0412	4/19/2012	3	J	3	J	0.32	J	<1.00	U	<10	U
PGPW02-0412	4/20/2012	<7	U	<8	U	<1.00	U	<1.00	U	<10	U
EPAMW02-0412-1	4/16/2012	<7	U	<8	U	<1.00	U	<1.00	U	<10	U
EPAMW02-0412-2	4/22/2012	<7	U	11	J	<1.00	U	<1.00	U	<10	U
EPAMW01-0412	4/24/2012	<7	U	3	J	<1.00	U	<1.00	U	<10	U
EPAMW01d-0412	4/24/2012	<7	U	<8	U	<1.00	U	<1.00	U	<10	U
EPAMW01-0412-2	4/24/2012	<7	U	NA		<1.00	U	NA		<10	U
EPAMW01-0412-3	4/24/2012	<7	U	NA		<1.00	U	NA		<10	U
EPAMW01-0412-4	4/24/2012	<7	U	NA		<1.00	U	NA		<10	U
EPAMW01-0412-5	4/24/2012	<7	U	NA		<1.00	U	NA		<10	U
EPAMW01-0412-6	4/24/2012	<7	U	NA		<1.00	U	NA		<10	U
EPAMW01-0412-7	4/24/2012	<7	U	NA		<1.00	U	NA		<10	U
EPAMW01-0412-8	4/24/2012	<7	U	NA		<1.00	U	NA		<10	U
EPAMW01-0412-9	4/24/2012	<7	U	NA		<1.00	U	NA		<10	U
EPAMW01-0412-10	4/24/2012	<7	U	<8	U	<1.00	U	<1.00	U	<10	U
FieldBlk01	4/16/2012	<7	U	<8	U	<1.00	U	0.31	J	<10	U
FieldBlk02	4/18/2012	<7	U	<8	U	<1.00	U	0.12	J	<10	U
FieldBlk03	4/22/2012	<7	U	<8	U	0.35	J	0.07	J	<10	U
FieldBlk04	4/24/2012	<7	U	<8	U	0.10	J	0.05	J	<10	U
EquipBlk01	4/16/2012	<7	U	<8	U	<1.00	U	0.41	J	<10	U
EquipBlk02	4/18/2012	<7	U	<8	U	<1.00	U	0.13	J	<10	U
EquipBlk04	4/24/2012	<7	U	<8	U	<1.00	U	0.07	J	<10	U

A. EPA Method 200.7
B. EPA Methods 3015A and 200.7
C. EPA CLP Inorganic Statement of Work ISMO1.3, Exhibit D - Part B.
R flags: trace metal data rejected for sample PGDW20-0412 due to sample contamination.

Metals (cont.)

Sample ID	Date Collected	ICP-OES Total V[B]	ICP-OES Total V QC	ICP-OES Dissolved Zn[A]	ICP-OES Dissolved Zn QC	ICP-OES Total Zn[B]	ICP-OES Total Zn QC
Units		µg/L		µg/L		µg/L	
MDL		3		15		17	
QL		11		50		56	
PGDW05-0412	4/18/2012	<11	U	<50	U	<56	U
PGDW20-0412	4/16/2012	<11	U	<50	U	<56	U
PGDW20d-0412	4/16/2012	<11	U	<50	U	<56	U
PGDW23-0412	4/17/2012	<11	U	<50	U	<56	U
PGDW30-0412	4/17/2012	<11	U	<50	U	<56	U
PGDW50-0412	4/19/2012	<11	U	<50	U	<56	U
PGPW02-0412	4/20/2012	<11	U	<50	U	<56	U
EPAMW02-0412-1	4/16/2012	4	J	<50	U	<56	U
EPAMW02-0412-2	4/22/2012	4	J	<50	U	168	J
EPAMW01-0412	4/24/2012	<11	U	<50	U	<56	U
EPAMW01d-0412	4/24/2012	<11	U	<50	U	<56	U
EPAMW01-0412-2	4/24/2012	NA		<50	U	NA	
EPAMW01-0412-3	4/24/2012	NA		<50	U	NA	
EPAMW01-0412-4	4/24/2012	NA		<50	U	NA	
EPAMW01-0412-5	4/24/2012	NA		<50	U	NA	
EPAMW01-0412-6	4/24/2012	NA		<50	U	NA	
EPAMW01-0412-7	4/24/2012	NA		<50	U	NA	
EPAMW01-0412-8	4/24/2012	NA		<50	U	NA	
EPAMW01-0412-9	4/24/2012	NA		<50	U	NA	
EPAMW01-0412-10	4/24/2012	<11	U	<50	U	<56	U
FieldBlk01	4/16/2012	<11	U	<50	U	<56	U
FieldBlk02	4/18/2012	<11	U	<50	U	<56	U
FieldBlk03	4/22/2012	<11	U	<50	U	<56	U
FieldBlk04	4/24/2012	<11	U	<50	U	<56	U
EquipBlk01	4/16/2012	<11	U	<50	U	<56	U
EquipBlk02	4/18/2012	<11	U	<50	U	<56	U
EquipBlk04	4/24/2012	<11	U	<50	U	<56	U

A. EPA Method 200.7
B. EPA Methods 3015A and 200.7
C. EPA CLP Inorganic Statement of Work ISMO1.3, Exhibit D - Part B.
R flags: trace metal data rejected for sample PGDW20-0412 due to sample contamination.

Organic Acids

Sample ID	Date	Lactate (50-21-5)	Lactate QC	Formate (141-53-7)	Formate QC	Acetate (127-09-3)	Acetate QC	Propionate (137-40-6)	Propionate QC	Butyrate (156-54-7)	Butyrate QC
Units		**mg/L**		**mg/L**		**mg/L**		**mg/L**		**mg/L**	
MDL		**0.009**		**0.012**		**0.009**		**0.016**		**0.009**	
QL		**0.100**		**0.100**		**0.100**		**0.100**		**0.100**	
PGDW05-0412	4/18/2012	<0.100	U	R	R	<0.100	U	<0.100	U	<0.100	U
PGDW20-0412	4/16/2012	<0.100	U	R	R	<0.100	U	<0.100	U	<0.100	U
PGDW20d-0412	4/16/2012	<0.100	U	R	R	<0.100	U	<0.100	U	<0.100	U
PGDW23-0412	4/17/2012	<0.100	U	R	R	<0.100	U	<0.100	U	<0.100	U
PGDW30-0412	4/17/2012	<0.100	U	R	R	<0.100	U	<0.100	U	<0.100	U
PGDW50-0412	4/19/2012	<0.100	U	R	R	<0.100	U	<0.100	U	<0.100	U
PGPW02-0412	4/20/2012	<0.100	U	R	R	<0.100	U	<0.100	U	<0.100	U
EPAMW02-0412-1	4/16/2012	0.25		R	R	4.80		0.844		<0.100	U
EPAMW02-0412-2	4/22/2012	<0.100	U	R	R	2.84	J	0.687	J	<0.100	U
EPAMW01-0412	4/24/2012	<0.100	U	R	R	3.42	*	0.075	J	<0.100	U
EPAMW01d-0412	4/24/2012	<0.100	U	R	R	5.96	*	0.095	J	<0.100	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<0.100	U	R	R	6.08		0.084	J	<0.100	U
FieldBlk01	4/16/2012	<0.100	U	R	R	<0.100	U	<0.100	U	<0.100	U
FieldBlk02	4/18/2012	<0.100	U	R	R	<0.100	U	<0.100	U	<0.100	U
FieldBlk03	4/22/2012	<0.100	U	R	R	<0.100	U	<0.100	U	<0.100	U
FieldBlk04	4/24/2012	<0.100	U	R	R	<0.100	U	<0.100	U	<0.100	U
EquipBlk01	4/16/2012	<0.100	U	R	R	<0.100	U	<0.100	U	<0.100	U
EquipBlk02	4/18/2012	<0.100	U	R	R	<0.100	U	<0.100	U	<0.100	U
EquipBlk04	4/24/2012	<0.100	U	R	R	<0.100	U	<0.100	U	<0.100	U

R flags: data rejected due to field and equipment blank contamination.

Dissolved Gases

Sample ID	Date	Methane (74-82-8)	Methane QC	Ethane (74-84-0)	Ethane QC	Propane (74-98-6)	Propane QC	Butane (106-97-8)	Butane QC
Units		**mg/L**		**mg/L**		**mg/L**		**mg/L**	
MDL		**0.0003**		**0.0005**		**0.0007**		**0.0007**	
QL		**0.0013**		**0.0027**		**0.0038**		**0.0047**	
PGDW05-0412	4/18/2012	0.053	B	<0.0027	U	<0.0038	U	<0.0047	U
PGDW20-0412	4/16/2012	0.111		0.008		<0.0038	U	<0.0047	U
PGDW20d-0412	4/16/2012	0.108		0.007		<0.0038	U	<0.0047	U
PGDW23-0412	4/17/2012	0.226		0.019		0.0114		0.0009	J
PGDW30-0412	4/17/2012	0.384		0.003		<0.0038	U	<0.0047	U
PGDW50-0412	4/19/2012	<0.0013	U	<0.0027	U	<0.0038	U	<0.0047	U
PGPW02-0412	4/20/2012	0.008	B	<0.0027	U	<0.0038	U	<0.0047	U
EPAMW02-0412-1	4/16/2012	19.1		3.06		1.58		0.380	
EPAMW02-0412-2	4/22/2012	22.0		3.07		1.78		0.517	
EPAMW01-0412	4/24/2012	17.3		2.38		0.763		0.199	
EPAMW01d-0412	4/24/2012	17.3		2.21		0.663		0.169	
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	18.8		2.27		0.715		0.184	
FieldBlk01	4/16/2012	<0.0013	U	<0.0027	U	<0.0038	U	<0.0047	U
FieldBlk02	4/18/2012	0.012		<0.0027	U	0.0011	J	<0.0047	U
FieldBlk03	4/22/2012	<0.0013	U	<0.0027	U	<0.0038	U	<0.0047	U
FieldBlk04	4/24/2012	<0.0013	U	<0.0027	U	<0.0038	U	<0.0047	U
EquipBlk01	4/16/2012	<0.0013	U	<0.0027	U	<0.0038	U	<0.0047	U
EquipBlk02	4/18/2012	0.012		0.002	J	0.0008	J	<0.0047	U
EquipBlk04	4/24/2012	<0.0013	U	<0.0027	U	<0.0038	U	<0.0047	U
TripBlk01	4/16/2012	<0.0013	U	<0.0027	U	<0.0038	U	<0.0047	U
TripBlk02	4/18/2012	<0.0013	U	<0.0027	U	<0.0038	U	<0.0047	U
TripBlk03	4/22/2012	<0.0013	U	<0.0027	U	<0.0038	U	<0.0047	U
TripBlk04	4/24/2012	<0.0013	U	<0.0027	U	<0.0038	U	<0.0047	U

Volatile Organic Compounds (Shaw Environmental)

Sample ID	Date	vinyl chloride	vinyl chloride QC	1,1-dichloroethene	1,1-dichloroethene QC	methylene chloride	methylene chloride QC	trans-1,2-dichloroethene	trans-1,2-dichloroethene QC	1,1-dichloroethane	1,1-dichloroethane QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
MDL		0.14		0.07		0.19		0.05		0.15	
QL		1.00		0.50		0.50		0.50		0.50	
PGDW05-0412	4/18/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW20-0412	4/16/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW20d-0412	4/16/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW23-0412	4/17/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW30-0412	4/17/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW50-0412	4/19/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGPW02-0412	4/20/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW02-0412-1	4/16/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW02-0412-2	4/22/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412	4/24/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01d-0412	4/24/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-2	4/24/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-3	4/24/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-4	4/24/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-5	4/24/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-6	4/24/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-7	4/24/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-8	4/24/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-9	4/24/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-10	4/24/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk01	4/16/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk02	4/18/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk03	4/22/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk04	4/24/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk01	4/16/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk02	4/18/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk03	4/22/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk04	4/24/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
TripBlk01	4/16/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
TripBlk02	4/18/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
TripBlk03	4/22/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
TripBlk04	4/24/2012	<1.00	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U

Volatile Organic Compounds (Shaw Environmental, cont.)

Sample ID	Date	cis-1,2-dichloroethene	cis-1,2-dichloroetheneQC	chloroform	chloroform QC	1,1,1-trichloroethane	1,1,1-trichloroethane QC	carbon tetrachloride	carbon tetrachloride QC	1,2-dichloroethane	1,2-dichloroethane QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
MDL		0.07		0.03		0.04		0.03		0.07	
QL		0.50		0.50		0.50		0.50		0.50	
PGDW05-0412	4/18/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW20-0412	4/16/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW20d-0412	4/16/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW23-0412	4/17/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW30-0412	4/17/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW50-0412	4/19/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGPW02-0412	4/20/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW02-0412-1	4/16/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW02-0412-2	4/22/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01d-0412	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-2	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-3	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-4	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-5	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-6	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-7	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-8	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-9	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-10	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk01	4/16/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk02	4/18/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk03	4/22/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk04	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk01	4/16/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk02	4/18/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk03	4/22/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk04	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
TripBlk01	4/16/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
TripBlk02	4/18/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
TripBlk03	4/22/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
TripBlk04	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U

Volatile Organic Compounds (Shaw Environmental, cont.)

Sample ID	Date	trichloroethene	trichloroethene QC	1,1,2-trichloroethane	1,1,2-trichloroethane QC	tetrachloroethene	tetrachloroethene QC	chlorobenzene	chlorobenzene QC	1,3-dichlorobenzene	1,3-dichlorobenzene QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
MDL		0.03		0.09		0.04		0.06		0.04	
QL		0.50		0.50		0.50		0.50		0.50	
PGDW05-0412	4/18/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW20-0412	4/16/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW20d-0412	4/16/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW23-0412	4/17/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW30-0412	4/17/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW50-0412	4/19/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGPW02-0412	4/20/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW02-0412-1	4/16/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW02-0412-2	4/22/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01d-0412	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-2	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-3	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-4	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-5	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-6	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-7	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-8	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-9	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-10	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk01	4/16/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk02	4/18/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk03	4/22/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk04	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk01	4/16/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk02	4/18/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk03	4/22/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk04	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
TripBlk01	4/16/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
TripBlk02	4/18/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
TripBlk03	4/22/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
TripBlk04	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U

Volatile Organic Compounds (Shaw Environmental, cont.)

Sample ID	Date	1,4-dichlorobenzene	1,4-dichlorobenzene QC	1,2-dichlorobenzene	1,2-dichlorobenzene QC	ethanol	ethanol QC	isopropanol	isopropanol QC	n-propanol	n-propanol QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
MDL		0.03		0.11		24.7		11.4		13.5	
QL		0.50		1.00		100		100		100	
PGDW05-0412	4/18/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
PGDW20-0412	4/16/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
PGDW20d-0412	4/16/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
PGDW23-0412	4/17/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
PGDW30-0412	4/17/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
PGDW50-0412	4/19/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
PGPW02-0412	4/20/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
EPAMW02-0412-1	4/16/2012	<0.50	U	<1.00	U	<100	U	862		62	J-
EPAMW02-0412-2	4/22/2012	<0.50	U	<1.00	U	<100	U	802		<100	J-, U
EPAMW01-0412	4/24/2012	<0.50	U	<1.00	U	<100	U	69.8	J	<100	J-, U
EPAMW01d-0412	4/24/2012	<0.50	U	<1.00	U	<100	U	69.2	J	<100	J-, U
EPAMW01-0412-2	4/24/2012	<0.50	U	<1.00	U	<100	U	74.8	J	<100	J-, U
EPAMW01-0412-3	4/24/2012	<0.50	U	<1.00	U	<100	U	76.8	J	<100	J-, U
EPAMW01-0412-4	4/24/2012	<0.50	U	<1.00	U	<100	U	65.0	J	<100	J-, U
EPAMW01-0412-5	4/24/2012	<0.50	U	<1.00	U	<100	U	82.2	J	<100	J-, U
EPAMW01-0412-6	4/24/2012	<0.50	U	<1.00	U	<100	U	77.4	J	<100	J-, U
EPAMW01-0412-7	4/24/2012	<0.50	U	<1.00	U	<100	U	62.6	J	<100	J-, U
EPAMW01-0412-8	4/24/2012	<0.50	U	<1.00	U	<100	U	80.0	J	<100	J-, U
EPAMW01-0412-9	4/24/2012	<0.50	U	<1.00	U	<100	U	68.5	J	<100	J-, U
EPAMW01-0412-10	4/24/2012	<0.50	U	<1.00	U	<100	U	69.3	J	<100	J-, U
FieldBlk01	4/16/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
FieldBlk02	4/18/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
FieldBlk03	4/22/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
FieldBlk04	4/24/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
EquipBlk01	4/16/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
EquipBlk02	4/18/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
EquipBlk03	4/22/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
EquipBlk04	4/24/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
TripBlk01	4/16/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
TripBlk02	4/18/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
TripBlk03	4/22/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U
TripBlk04	4/24/2012	<0.50	U	<1.00	U	<100	U	<100	U	<100	J-, U

Volatile Organic Compounds (Shaw Environmental, cont.)

Sample ID	Date	isobutanol	isobutanol QC	n-butanol	n-butanol QC	acetone	acetone QC	tert-butyl alcohol	tert-butyl alcohol QC	methyl tert-butyl ether	methyl tert-butyl ether QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
MDL		15.6		15.5		3.97		1.72		0.11	
QL		100		100		5.00		5.00		0.50	
PGDW05-0412	4/18/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
PGDW20-0412	4/16/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
PGDW20d-0412	4/16/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
PGDW23-0412	4/17/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
PGDW30-0412	4/17/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
PGDW50-0412	4/19/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
PGPW02-0412	4/20/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
EPAMW02-0412-1	4/16/2012	<100	U	<100	U	1460		5910		<0.50	U
EPAMW02-0412-2	4/22/2012	<100	U	<100	U	231		6120		<0.50	U
EPAMW01-0412	4/24/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
EPAMW01d-0412	4/24/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
EPAMW01-0412-2	4/24/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
EPAMW01-0412-3	4/24/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
EPAMW01-0412-4	4/24/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
EPAMW01-0412-5	4/24/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
EPAMW01-0412-6	4/24/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
EPAMW01-0412-7	4/24/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
EPAMW01-0412-8	4/24/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
EPAMW01-0412-9	4/24/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
EPAMW01-0412-10	4/24/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
FieldBlk01	4/16/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
FieldBlk02	4/18/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
FieldBlk03	4/22/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
FieldBlk04	4/24/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
EquipBlk01	4/16/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
EquipBlk02	4/18/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
EquipBlk03	4/22/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
EquipBlk04	4/24/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
TripBlk01	4/16/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
TripBlk02	4/18/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
TripBlk03	4/22/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U
TripBlk04	4/24/2012	<100	U	<100	U	<5.00	U	<5.00	U	<0.50	U

Volatile Organic Compounds (Shaw Environmental, cont.)

Sample ID	Date	di-isopropyl ether	di-isopropyl ether QC	ethyl tert-butyl ether	ethyl tert-butyl ether QC	benzene	benzene QC	tert-amyl methyl ether	tert-amyl methyl ether QC	2,5-dimethylfuran	2,5-dimethylfuran QC
Units		**µg/L**		**µg/L**		**µg/L**		**µg/L**		**µg/L**	
MDL		**0.11**		**0.03**		**0.06**		**0.06**		**0.03**	
QL		**0.50**		**0.50**		**0.50**		**0.50**		**0.50**	
PGDW05-0412	4/18/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW20-0412	4/16/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW20d-0412	4/16/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW23-0412	4/17/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW30-0412	4/17/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGDW50-0412	4/19/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
PGPW02-0412	4/20/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW02-0412-1	4/16/2012	<0.50	U	<0.50	U	166		<0.50	U	<0.50	U
EPAMW02-0412-2	4/22/2012	<0.50	U	<0.50	U	232		<0.50	U	<0.50	U
EPAMW01-0412	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01d-0412	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-2	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-3	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-4	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-5	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-6	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-7	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-8	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-9	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-10	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk01	4/16/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk02	4/18/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk03	4/22/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk04	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk01	4/16/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk02	4/18/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk03	4/22/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk04	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
TripBlk01	4/16/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
TripBlk02	4/18/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
TripBlk03	4/22/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U
TripBlk04	4/24/2012	<0.50	U	<0.50	U	<0.50	U	<0.50	U	<0.50	U

Volatile Organic Compounds (Shaw Environmental, cont.)

Sample ID	Date	toluene	toluene QC	1,2-dibromoethane	1,2-dibromoethane QC	ethyl benzene	ethyl benzene QC	m+p xylene	m+p xylene QC	o-xylene	o-xylene QC
Units		**µg/L**		**µg/L**		**µg/L**		**µg/L**		**µg/L**	
MDL		**0.03**		**0.09**		**0.03**		**0.08**		**0.03**	
QL		**0.50**		**1.00**		**0.50**		**0.50**		**0.50**	
PGDW05-0412	4/18/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
PGDW20-0412	4/16/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
PGDW20d-0412	4/16/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
PGDW23-0412	4/17/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
PGDW30-0412	4/17/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
PGDW50-0412	4/19/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
PGPW02-0412	4/20/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
EPAMW02-0412-1	4/16/2012	402		<1.00	U	61.1		549		161	
EPAMW02-0412-2	4/22/2012	607		<1.00	U	101		894		245	
EPAMW01-0412	4/24/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01d-0412	4/24/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	0.06	J
EPAMW01-0412-2	4/24/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-3	4/24/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-4	4/24/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-5	4/24/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-6	4/24/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-7	4/24/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-8	4/24/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-9	4/24/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
EPAMW01-0412-10	4/24/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk01	4/16/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk02	4/18/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk03	4/22/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
FieldBlk04	4/24/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk01	4/16/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk02	4/18/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk03	4/22/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
EquipBlk04	4/24/2012	0.297	J	<1.00	U	<0.50	U	<0.50	U	<0.50	U
TripBlk01	4/16/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
TripBlk02	4/18/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
TripBlk03	4/22/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U
TripBlk04	4/24/2012	<0.50	U	<1.00	U	<0.50	U	<0.50	U	<0.50	U

Volatile Organic Compounds (Shaw Environmental, cont.)

Sample ID	Date	1,3,5-Trimethylbenzene	1,3,5-Trimethylbenzene QC	1,2,4-Trimethylbenzene	1,2,4-Trimethylbenzene QC	1,2,3-Trimethylbenzene	1,2,3-Trimethylbenzene QC	naphthalene	naphthalene QC
Units		µg/L		µg/L		µg/L		µg/L	
MDL		0.04		0.02		0.04		0.03	
QL		1.00		1.00		1.00		1.00	
PGDW05-0412	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20d-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW23-0412	4/17/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW30-0412	4/17/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW50-0412	4/19/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGPW02-0412	4/20/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW02-0412-1	4/16/2012	39.5		74.9		27.6		4.89	
EPAMW02-0412-2	4/22/2012	71.4		137		45.5		7.49	
EPAMW01-0412	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01d-0412	4/24/2012	0.15	J	0.27	J	0.26	J	3.78	
EPAMW01-0412-2	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-3	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-4	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-5	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-6	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-7	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-8	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-9	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-10	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
TripBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
TripBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
TripBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U
TripBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U

Volatile Organic Compounds (Region 8)

Sample ID	Date	1,1,1,2-tetrachloroethane	1,1,1,2-tetrachloroethane QC	1,1,1-trichloroethane	1,1,1-trichloroethane QC	1,1,2,2-tetrachloroethane	1,1,2,2-tetrachloroethane QC	1,1,2-trichloroethane	1,1,2-trichloroethane QC	1,1-dichloroethane	1,1-dichloroethane QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		0.25		0.25		0.25		0.25		0.25	
PGDW05-0412	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20d-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW23-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW30-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW50-0412	4/19/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGPW02-0412	4/20/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-1	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-2	4/22/2012	<5.0	U	<5.0	U	<5.0	U	<5.0	U	<5.0	U
EPAMW01-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01d-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U

All values flagged as screening values by lab; second source verification standard was not used.

Volatile Organic Compounds (Region 8, cont.)

Sample ID	Date	1,1-dichloroethene	1,1-dichloroethene QC	1,1-dichloropropene	1,1-dichloropropene QC	1,2,3-trichlorobenzene	1,2,3-trichlorobenzene QC	1,2,3-trichloropropane	1,2,3-trichloropropane QC	1,2,4-trichlorobenzene	1,2,4-trichlorobenzene QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		0.25		0.25		0.25		0.25		0.25	
PGDW05-0412	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20d-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW23-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW30-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW50-0412	4/19/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGPW02-0412	4/20/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-1	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-2	4/22/2012	<5.0	U	<5.0	U	<5.0	U	<5.0	U	<5.0	U
EPAMW01-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01d-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U

All values flagged as screening values by lab; second source verification standard was not used.

Volatile Organic Compounds (Region 8, cont.)

Sample ID	Date	1,2,4-trimethylbenzene	1,2,4-trimethylbenzene QC	1,2-dibromo-3-chloropropane	1,2-dibromo-3-chloropropane QC	1,2-dibromomethane (EDB)	1,2-dibromomethane (EDB) QC	1,2-dichlorobenzene	1,2-dichlorobenzene QC	1,2-dichloroethane	1,2-dichloroethane QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		0.25		0.25		0.25		0.25		0.25	
PGDW05-0412	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20d-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW23-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW30-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW50-0412	4/19/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGPW02-0412	4/20/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-1	4/16/2012	77.0	J	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-2	4/22/2012	148	J	<5.0	U	<5.0	U	<5.0	U	<5.0	U
EPAMW01-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01d-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U

All values flagged as screening values by lab; second source verification standard was not used.

Volatile Organic Compounds (Region 8, cont.)

Sample ID	Date	1,2-dichloropropane	1,2-dichloropropane QC	1,3,5-trimethylbenzene	1,3,5-trimethylbenzene QC	1,3-dichlorobenzene	1,3-dichlorobenzene QC	1,3-dichloropropane	1,3-dichloropropane QC	1,3-dimethyl adamantane	1,3-dimethyl adamantane QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		0.25		0.25		0.25		0.25		0.25	
PGDW05-0412	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	2.82	J
PGDW20-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20d-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW23-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW30-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	2.50	J
PGDW50-0412	4/19/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGPW02-0412	4/20/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-1	4/16/2012	<0.25	U	39.5	J	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-2	4/22/2012	<5.0	U	74.0	J	<5.0	U	<5.0	U	<5.0	U
EPAMW01-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01d-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U

All values flagged as screening values by lab; second source verification standard was not used.

Volatile Organic Compounds (Region 8, cont.)

Sample ID	Date	1,4-dichlorobenzene	1,4-dichlorobenzene_QC	2,2-dichloropropane	2,2-dichloropropane_QC	2-butanone	2-butanone_QC	2-chlorotoluene	2-chlorotoluene_QC	2-hexanone	2-hexanone_QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		0.25		0.25		0.25		0.25		0.25	
PGDW05-0412	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20d-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW23-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW30-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW50-0412	4/19/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGPW02-0412	4/20/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-1	4/16/2012	<0.25	U	<0.25	U	208	J	<0.25	U	<0.25	U
EPAMW02-0412-2	4/22/2012	<5.0	U	<5.0	U	86.2	J	<5.0	U	<5.0	U
EPAMW01-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	0.26	J
EPAMW01d-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U

All values flagged as screening values by lab; second source verification standard was not used.

Volatile Organic Compounds (Region 8, cont.)

Sample ID	Date	4-chlorotoluene	4-chlorotoluene QC	4-methyl-2-pentanone	4-methyl-2-pentanone QC	acetone	acetone QC	acrylonitrile	acrylonitrile QC	adamantane	adamantane QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		0.25		0.25		1.00		0.25		0.25	
PGDW05-0412	4/18/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
PGDW20-0412	4/16/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
PGDW20d-0412	4/16/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
PGDW23-0412	4/17/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
PGDW30-0412	4/17/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
PGDW50-0412	4/19/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
PGPW02-0412	4/20/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
EPAMW02-0412-1	4/16/2012	<0.25	U	<0.25	U	982	J	<0.25	U	<0.25	U
EPAMW02-0412-2	4/22/2012	<5.0	U	<5.0	U	157	J	<5.0	U	<5.0	U
EPAMW01-0412	4/24/2012	<0.25	U	1.39	J	155	J	<0.25	U	<0.25	U
EPAMW01d-0412	4/24/2012	<0.25	U	1.07	J	133	J	<0.25	U	<0.25	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<0.25	U	0.59	J	114	J	<0.25	U	<0.25	U
FieldBlk01	4/16/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
FieldBlk02	4/18/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
FieldBlk03	4/22/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
FieldBlk04	4/24/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
EquipBlk01	4/16/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
EquipBlk02	4/18/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
EquipBlk03	4/22/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
EquipBlk04	4/24/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
TripBlk01	4/16/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
TripBlk02	4/18/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
TripBlk03	4/22/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
TripBlk04	4/24/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U

All values flagged as screening values by lab; second source verification standard was not used.

Volatile Organic Compounds (Region 8, cont.)

Sample ID	Date	allyl chloride	allyl chloride QC	benzene	benzene QC	bromobenzene	bromobenzene QC	bromochloromethane	bromochloromethane QC	bromodichloromethane	bromodichloromethane QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		0.25		0.25		0.25		0.25		0.25	
PGDW05-0412	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20d-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW23-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW30-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW50-0412	4/19/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGPW02-0412	4/20/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-1	4/16/2012	<0.25	U	175	J	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-2	4/22/2012	<5.0	U	247	J	<5.0	U	<5.0	U	<5.0	U
EPAMW01-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01d-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U

All values flagged as screening values by lab; second source verification standard was not used.

Volatile Organic Compounds (Region 8, cont.)

Sample ID	Date	bromoform	bromoform QC	bromomethane	bromomethane QC	carbon disulfide	carbon disulfide QC	carbon tetrachloride	carbon tetrachloride QC	chlorobenzene	chlorobenzene QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		0.25		0.25		0.25		0.25		0.25	
PGDW05-0412	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20d-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW23-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW30-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW50-0412	4/19/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGPW02-0412	4/20/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-1	4/16/2012	<0.25	U	<0.25	U	5.40	J	<0.25	U	<0.25	U
EPAMW02-0412-2	4/22/2012	<5.0	U	<5.0	U	<5.0	U	<5.0	U	<5.0	U
EPAMW01-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01d-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U

All values flagged as screening values by lab; second source verification standard was not used.

Volatile Organic Compounds (Region 8, cont.)

Sample ID	Date	chlorodibromomethane	chlorodibromomethane QC	chloroethane	chloroethane QC	chloroform	chloroform QC	chloromethane	chloromethane QC	cis-1,2-dichloroethane	cis-1,2-dichloroethane QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		0.25		0.25		0.25		0.25		0.25	
PGDW05-0412	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20d-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW23-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW30-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW50-0412	4/19/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGPW02-0412	4/20/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-1	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-2	4/22/2012	<5.0	U	<5.0	U	<5.0	U	<5.0	U	<5.0	U
EPAMW01-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01d-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U

All values flagged as screening values by lab; second source verification standard was not used.

Volatile Organic Compounds (Region 8, cont.)

Sample ID	Date	cis-1,3-dichloropropene	cis-1,3-dichloropropene QC	dibromomethane	dibromomethane QC	dichlorodifluoromethane	dichlorodifluoromethane QC	ethyl ether	ethyl ether QA	ethylbenzene	ethylbenzene QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		0.25		0.25		1.00		0.25		0.25	
PGDW05-0412	4/18/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
PGDW20-0412	4/16/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
PGDW20d-0412	4/16/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
PGDW23-0412	4/17/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
PGDW30-0412	4/17/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
PGDW50-0412	4/19/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
PGPW02-0412	4/20/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
EPAMW02-0412-1	4/16/2012	<0.25	U	<0.25	U	<1.00	U	1.94	J	57.0	J
EPAMW02-0412-2	4/22/2012	<5.0	U	<5.0	U	<20.0	U	<5.0	U	89.6	J
EPAMW01-0412	4/24/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
EPAMW01d-0412	4/24/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
FieldBlk01	4/16/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
FieldBlk02	4/18/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
FieldBlk03	4/22/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
FieldBlk04	4/24/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
EquipBlk01	4/16/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
EquipBlk02	4/18/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
EquipBlk03	4/22/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
EquipBlk04	4/24/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
TripBlk01	4/16/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
TripBlk02	4/18/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
TripBlk03	4/22/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U
TripBlk04	4/24/2012	<0.25	U	<0.25	U	<1.00	U	<0.25	U	<0.25	U

All values flagged as screening values by lab; second source verification standard was not used.

Volatile Organic Compounds (Region 8, cont.)

Sample ID	Date	hexachlorobutadiene	hexachlorobutadiene QC	hexachloroethane	hexachloroethane QC	iodomethane	iodomethane QC	isopropylbenzene	isopropylbenzene QC	m,p-xylene	m,p-xylene QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		0.25		0.25		0.25		0.25		0.25	
PGDW05-0412	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20d-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW23-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW30-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW50-0412	4/19/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGPW02-0412	4/20/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-1	4/16/2012	<0.25	U	<0.25	U	<0.25	U	9.03	J	578	J
EPAMW02-0412-2	4/22/2012	<5.0	U	<5.0	U	<5.0	U	9.40	J	973	J
EPAMW01-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01d-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U

All values flagged as screening values by lab; second source verification standard was not used.

Volatile Organic Compounds (Region 8, cont.)

Sample ID	Date	methacrylonitrile	methacrylonitrile QC	methyl acrylate	methyl acrylate QC	methyl tert-butyl ether	methyl tert-butyl ether QC	methylene chloride	methylene chloride QC	naphthalene	naphthalene QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		0.25		0.25		0.25		0.25		0.25	
PGDW05-0412	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20d-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW23-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW30-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW50-0412	4/19/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGPW02-0412	4/20/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-1	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	7.19	J
EPAMW02-0412-2	4/22/2012	<5.0	U	<5.0	U	<5.0	U	<5.0	U	7.20	J
EPAMW01-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01d-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U

All values flagged as screening values by lab; second source verification standard was not used.

Volatile Organic Compounds (Region 8, cont.)

Sample ID	Date	n-butyl benzene	n-butyl benzene QC	n-propyl benzene	n-propyl benzene QC	o-xylene	o-xylene QC	p-isopropyltoluene	p-isopropyltoluene QC	sec-butylbenzene	sec-butylbenzene QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		0.25		0.25		0.25		0.25		0.25	
PGDW05-0412	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20d-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW23-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW30-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW50-0412	4/19/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGPW02-0412	4/20/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-1	4/16/2012	0.38	J	9.94	J	164	J	1.36	J	1.05	J
EPAMW02-0412-2	4/22/2012	<5.0	U	11.8	J	253	J	<5.0	U	<5.0	U
EPAMW01-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01d-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U

All values flagged as screening values by lab; second source verification standard was not used.

Volatile Organic Compounds (Region 8, cont.)

Sample ID	Date	styrene	styrene QC	tert-butylbenzene	tert-butylbenzene QC	tetrachloroethene	tetrachloroethene QC	toluene	toluene QC	trans-1,2-dichloroethene	trans-1,2-dichloroethene QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		0.25		0.25		0.25		0.25		0.25	
PGDW05-0412	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW20d-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW23-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW30-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGDW50-0412	4/19/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
PGPW02-0412	4/20/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW02-0412-1	4/16/2012	0.43	J	0.83	J	<0.25	U	437	J	<0.25	U
EPAMW02-0412-2	4/22/2012	<5.0	U	<5.0	U	<5.0	U	677	J	<5.0	U
EPAMW01-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01d-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
FieldBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
EquipBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	0.31	J	<0.25	U
TripBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U
TripBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<0.25	U

All values flagged as screening values by lab; second source verification standard was not used.

Volatile Organic Compounds (Region 8, cont.)

Sample ID	Date	trans-1,3-dichloropropene	trans-1,3-dichloropropene QC	trichloroethene	trichloroethene QC	trichlorofluoromethane	trichlorofluoromethane QC	vinyl chloride	vinyl chloride QC	xylenes (total)	xylenes (total) QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		0.25		0.25		0.25		0.25		1.00	
PGDW05-0412	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
PGDW20-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
PGDW20d-0412	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
PGDW23-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
PGDW30-0412	4/17/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
PGDW50-0412	4/19/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
PGPW02-0412	4/20/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
EPAMW02-0412-1	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	742	J
EPAMW02-0412-2	4/22/2012	<5.0	U	<5.0	U	<5.0	U	<5.0	U	1230	J
EPAMW01-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
EPAMW01d-0412	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
FieldBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
FieldBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
FieldBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
FieldBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
EquipBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
EquipBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
EquipBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
EquipBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
TripBlk01	4/16/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
TripBlk02	4/18/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
TripBlk03	4/22/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U
TripBlk04	4/24/2012	<0.25	U	<0.25	U	<0.25	U	<0.25	U	<1.00	U

All values flagged as screening values by lab; second source verification standard was not used.

Semivolatile Organic Compounds

Sample ID	Date	R-(+)-limonene (5989-27-5)	R-(+)-limonene QC	1,2,4-trichlorobenzene (120-82-1)	1,2,4-trichlorobenzene QC	1,2-dichlorobenzene (95-50-1)	1,2-dichlorobenzene QC	1,2-dinitrobenzene (528-29-0)	1,2-dinitrobenzene QC	1,3-dichlorobenzene (541-73-1)	1,3-dichlorobenzene QC
Units		**µg/L**		**µg/L**		**µg/L**		**µg/L**		**µg/L**	
QL		**1.00**		**1.00**		**1.00**		**1.00**		**1.00**	
PGDW05-0412	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20d-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW23-0412	4/17/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW30-0412	4/17/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW50-0412	4/19/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGPW02-0412	4/20/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW02-0412-1	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW02-0412-2	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01d-0412	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	1.98		<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U

Semivolatile Organic Compounds (cont.)

Sample ID	Date	1,3-dimethyladamantane (702-79-4)	1,3-dimethyladamantane QC	1,3-dinitrobenzene (99-65-0)	1,3-dinitrobenzene QC	1,4-dichlorobenzene (106-46-7)	1,4-dichlorobenzene QC	1,4-dinitrobenzene (100-25-4)	1,4-dinitrobenzene QC	1-methylnaphthalene (90-12-0)	1-methylnaphthalene QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		1.00		1.00		1.00		1.00		1.00	
PGDW05-0412	4/18/2012	1.36		<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20d-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW23-0412	4/17/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW30-0412	4/17/2012	1.08		<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW50-0412	4/19/2012	<1.00	J-, U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGPW02-0412	4/20/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW02-0412-1	4/16/2012	<1.00	J-, U	<1.00	U	<1.00	U	<1.00	U	2.23	
EPAMW02-0412-2	4/22/2012	<1.00	J-, U	<1.00	U	<1.00	U	<1.00	U	2.85	
EPAMW01-0412	4/24/2012	<1.00	J-, U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01d-0412	4/24/2012	<1.00	J-, U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	<1.00	J-, U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	<1.00	J-, U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<1.00	J-, U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk03	4/22/2012	<1.00	J-, U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk04	4/24/2012	<1.00	J-, U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk03	4/22/2012	<1.00	J-, U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk04	4/24/2012	<1.00	J-, U	<1.00	U	<1.00	U	<1.00	U	<1.00	U

Semivolatile Organic Compounds (cont.)

Sample ID	Date	2,3,4,6-tetrachlorophenol (58-90-2)	2,3,4,6-tetrachlorophenol QC	2,3,5,6-tetrachlorophenol (935-95-5)	2,3,5,6-tetrachlorophenol QC	2,4,5-trichlorophenol (95-95-4)	2,4,5-trichlorophenol QC	2,4,6-trichlorophenol (88-06-2)	2,4,6-trichlorophenol QC	2,4-dichlorophenol (120-83-2)	2,4-dichlorophenol QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		2.00		2.00		2.00		2.00		2.00	
PGDW05-0412	4/18/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
PGDW20-0412	4/16/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
PGDW20d-0412	4/16/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
PGDW23-0412	4/17/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
PGDW30-0412	4/17/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
PGDW50-0412	4/19/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
PGPW02-0412	4/20/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
EPAMW02-0412-1	4/16/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
EPAMW02-0412-2	4/22/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
EPAMW01-0412	4/24/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
EPAMW01d-0412	4/24/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
FieldBlk01	4/16/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
FieldBlk02	4/18/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
FieldBlk03	4/22/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
FieldBlk04	4/24/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
EquipBlk01	4/16/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
EquipBlk02	4/18/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
EquipBlk03	4/22/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U
EquipBlk04	4/24/2012	<2.00	U	<2.00	U	<2.00	U	<2.00	U	<2.00	U

Semivolatile Organic Compounds (cont.)

Sample ID	Date	2,4-dimethylphenol (105-67-9)	2,4-dimethylphenol QC	2,4-dinitrophenol (51-28-5)	2,4-dinitrophenol QC	2,4-dinitrotoluene (121-14-2)	2,4-dinitrotoluene QC	2,6-dinitrotoluene (606-20-2)	2,6-dinitrotoluene QC	2-butoxyethanol (111-76-2)	2-butoxyethanol QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		2.00		3.00		1.00		1.00		1.00	
PGDW05-0412	4/18/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20-0412	4/16/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20d-0412	4/16/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW23-0412	4/17/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW30-0412	4/17/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW50-0412	4/19/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGPW02-0412	4/20/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW02-0412-1	4/16/2012	36.6	J+	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW02-0412-2	4/22/2012	32.0		<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412	4/24/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01d-0412	4/24/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	5.78	
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	3.49	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk01	4/16/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk02	4/18/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk03	4/22/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk04	4/24/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk01	4/16/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk02	4/18/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk03	4/22/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk04	4/24/2012	<2.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U

Semivolatile Organic Compounds (cont.)

Sample ID	Date	tri-(2-butoxyethyl) phosphate (78-51-3)	tri-(2-butoxyethyl) phosphate QC	2-chloronaphthalene (91-58-7)	2-chloronaphthalene QC	2-chlorophenol (95-57-8)	2-chlorophenol QC	2-methylnaphthalene (91-57-6)	2-methylnaphthalene QC	2-methylphenol (95-48-7)	2-methylphenol QC
Units		**µg/L**		**µg/L**		**µg/L**		**µg/L**		**µg/L**	
QL		**1.00**		**1.00**		**2.00**		**1.00**		**2.00**	
PGDW05-0412	4/18/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
PGDW20-0412	4/16/2012	1.13		<1.00	U	<2.00	U	<1.00	U	<2.00	U
PGDW20d-0412	4/16/2012	1.66		<1.00	U	<2.00	U	<1.00	U	<2.00	U
PGDW23-0412	4/17/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
PGDW30-0412	4/17/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
PGDW50-0412	4/19/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
PGPW02-0412	4/20/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
EPAMW02-0412-1	4/16/2012	<1.00	U	<1.00	U	<2.00	U	4.08		22.2	
EPAMW02-0412-2	4/22/2012	<1.00	U	<1.00	U	<2.00	U	5.52		20.8	J
EPAMW01-0412	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
EPAMW01d-0412	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
FieldBlk01	4/16/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
FieldBlk02	4/18/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
FieldBlk03	4/22/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
FieldBlk04	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
EquipBlk01	4/16/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
EquipBlk02	4/18/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
EquipBlk03	4/22/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
EquipBlk04	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U

Semivolatile Organic Compounds (cont.)

Sample ID	Date	2-nitroaniline (88-74-4)	2-nitroaniline QC	2-nitrophenol (88-75-5)	2-nitrophenol QC	3&4-methylphenol (108-39-4 & 106-44-5)	3&4-methylphenol QC	3,3'-dichlorobenzidine (91-94-1)	3,3'-dichlorobenzidine QC	3-nitroaniline (99-09-2)	3-nitroaniline QC
Units		**µg/L**		**µg/L**		**µg/L**		**µg/L**		**µg/L**	
QL		**1.00**		**2.00**		**5.00**		**1.00**		**3.00**	
PGDW05-0412	4/18/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
PGDW20-0412	4/16/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
PGDW20d-0412	4/16/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
PGDW23-0412	4/17/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
PGDW30-0412	4/17/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
PGDW50-0412	4/19/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
PGPW02-0412	4/20/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
EPAMW02-0412-1	4/16/2012	<1.00	U	<2.00	U	39.8		<1.00	U	<3.00	J-, U
EPAMW02-0412-2	4/22/2012	<1.00	U	<2.00	U	33.5		<1.00	U	<3.00	U
EPAMW01-0412	4/24/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
EPAMW01d-0412	4/24/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
FieldBlk01	4/16/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
FieldBlk02	4/18/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
FieldBlk03	4/22/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
FieldBlk04	4/24/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
EquipBlk01	4/16/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
EquipBlk02	4/18/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
EquipBlk03	4/22/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U
EquipBlk04	4/24/2012	<1.00	U	<2.00	U	<5.00	U	<1.00	U	<3.00	U

Semivolatile Organic Compounds (cont.)

Sample ID	Date	4,6-dinitro-2-methylphenol (534-52-1)	4,6-dinitro-2-methylphenol QC	4-bromophenyl phenyl ether (101-55-3)	4-bromophenyl phenyl ether QC	4-chloro-3-methylphenol (59-50-7)	4-chloro-3-methylphenol QC	4-chloroaniline (106-47-8)	4-chloroaniline QC	4-chlorophenyl phenyl ether (7005-72-3)	4-chlorophenyl phenyl ether QC
Units		**µg/L**		**µg/L**		**µg/L**		**µg/L**		**µg/L**	
QL		**2.00**		**1.00**		**2.00**		**3.00**		**1.00**	
PGDW05-0412	4/18/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
PGDW20-0412	4/16/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
PGDW20d-0412	4/16/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
PGDW23-0412	4/17/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
PGDW30-0412	4/17/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
PGDW50-0412	4/19/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
PGPW02-0412	4/20/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
EPAMW02-0412-1	4/16/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	J-, U	<1.00	U
EPAMW02-0412-2	4/22/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
EPAMW01-0412	4/24/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
EPAMW01d-0412	4/24/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
FieldBlk01	4/16/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
FieldBlk02	4/18/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
FieldBlk03	4/22/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
FieldBlk04	4/24/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
EquipBlk01	4/16/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
EquipBlk02	4/18/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
EquipBlk03	4/22/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U
EquipBlk04	4/24/2012	<2.00	U	<1.00	U	<2.00	U	<3.00	U	<1.00	U

Semivolatile Organic Compounds (cont.)

Sample ID	Date	4-nitroaniline (100-01-6)	4-nitroaniline QC	4-nitrophenol (100-02-7)	4-nitrophenol QC	Acenaphthene (83-32-9)	Acenaphthene QC	Acenaphthylene (208-96-8)	Acenaphthylene QC	Adamantane (281-23-2)	Adamantane QC
Units		**µg/L**		**µg/L**		**µg/L**		**µg/L**		**µg/L**	
QL		**3.00**		**3.00**		**1.00**		**1.00**		**1.00**	
PGDW05-0412	4/18/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20-0412	4/16/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20d-0412	4/16/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW23-0412	4/17/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW30-0412	4/17/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW50-0412	4/19/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGPW02-0412	4/20/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW02-0412-1	4/16/2012	<3.00	J-, U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW02-0412-2	4/22/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412	4/24/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01d-0412	4/24/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk01	4/16/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk02	4/18/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk03	4/22/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk04	4/24/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk01	4/16/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk02	4/18/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk03	4/22/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk04	4/24/2012	<3.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U

Semivolatile Organic Compounds (cont.)

Sample ID	Date	Aniline (62-53-3)	Aniline QC	Anthracene (120-12-7)	Anthracene QC	Azobenzene (103-33-3)	Azobenzene QC	Benzo(a)anthracene (56-55-3)	Benzo(a)anthracene QC	Benzo(a)pyrene (50-32-3)	Benzo(a)pyrene QC
Units		**µg/L**		**µg/L**		**µg/L**		**µg/L**		**µg/L**	
QL		**1.00**		**1.00**		**1.00**		**1.00**		**1.00**	
PGDW05-0412	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20d-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW23-0412	4/17/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW30-0412	4/17/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW50-0412	4/19/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGPW02-0412	4/20/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW02-0412-1	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW02-0412-2	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01d-0412	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U

Semivolatile Organic Compounds (cont.)

Sample ID	Date	Benzo(b)fluoranthene (205-99-2)	Benzo(b)fluoranthene QC	Benzo(g,h,i)perylene (191-24-2)	Benzo(g,h,i)perylene QC	Benzo(k)fluoranthene (207-08-9)	Benzo(k)fluoranthene QC	Benzoic Acid (65-85-0)	Benzoic Acid QC	Benzyl alcohol (100-51-6)	Benzyl alcohol QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		1.00		1.00		1.00		3.00		1.00	
PGDW05-0412	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<3.00	U	<1.00	U
PGDW20-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<3.00	U	<1.00	U
PGDW20d-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<3.00	U	<1.00	U
PGDW23-0412	4/17/2012	<1.00	U	<1.00	U	<1.00	U	<3.00	U	<1.00	U
PGDW30-0412	4/17/2012	<1.00	U	<1.00	U	<1.00	U	<3.00	U	<1.00	U
PGDW50-0412	4/19/2012	<1.00	U	<1.00	U	<1.00	U	<3.00	U	<1.00	U
PGPW02-0412	4/20/2012	<1.00	U	<1.00	U	<1.00	U	<3.00	U	<1.00	U
EPAMW02-0412-1	4/16/2012	<1.00	U	<1.00	U	<1.00	U	513		<1.00	J-, U
EPAMW02-0412-2	4/22/2012	<1.00	U	<1.00	U	<1.00	U	110	*	<1.00	U
EPAMW01-0412	4/24/2012	<1.00	U	<1.00	U	<1.00	U	221	*	<1.00	U
EPAMW01d-0412	4/24/2012	<1.00	U	<1.00	U	<1.00	U	309	*	<1.00	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	<1.00	U	<1.00	U	<1.00	U	735	*, J	<1.00	U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	<1.00	U	<1.00	U	<1.00	U	310	*	<1.00	U
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<1.00	U	<1.00	U	<1.00	U	237	*	<1.00	U
FieldBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<3.00	U	<1.00	U
FieldBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<3.00	U	<1.00	U
FieldBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<3.00	U	<1.00	U
FieldBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<3.00	U	<1.00	U
EquipBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<3.00	U	<1.00	U
EquipBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<3.00	U	<1.00	U
EquipBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<3.00	U	<1.00	U
EquipBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<3.00	U	<1.00	U

Semivolatile Organic Compounds (cont.)

Sample ID	Date	Bis (2-chloroethoxy)methane (111-91-1)	Bis (2-chloroethoxy)methane QC	Bis (2-chloroethyl)ether (111-44-4)	Bis (2-chloroethyl)ether QC	Bis (2-chloroisopropyl)ether (108-60-1)	Bis (2-chloroisopropyl)ether QC	Bis (2-ethylhexyl) adipate (103-23-1)	Bis (2-ethylhexyl) adipate QC	Bis (2-ethylhexyl) phthalate (117-81-7)	Bis (2-ethylhexyl) phthalate QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		1.00		1.00		1.00		1.00		2.00	
PGDW05-0412	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	5.17	
PGDW20-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
PGDW20d-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
PGDW23-0412	4/17/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
PGDW30-0412	4/17/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
PGDW50-0412	4/19/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
PGPW02-0412	4/20/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
EPAMW02-0412-1	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	3.52	J-
EPAMW02-0412-2	4/22/2012	<1.00	U	<1.00	U	<1.00	U	1.03		2.10	
EPAMW01-0412	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
EPAMW01d-0412	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
FieldBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
FieldBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
FieldBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
FieldBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
EquipBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
EquipBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
EquipBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U
EquipBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<2.00	U

Semivolatile Organic Compounds (cont.)

Sample ID	Date	Butyl benzyl phthalate (85-68-7)	Butyl benzyl phthalate QC	Carbazole (86-74-8)	Carbazole QC	Chrysene (218-01-9)	Chrysene QC	Dibenz(a,h)anthracene (53-70-3)	Dibenz(a,h)anthracene QC	Dibenzofuran (132-64-9)	Dibenzofuran QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		**1.00**		**3.00**		**1.00**		**1.00**		**1.00**	
PGDW05-0412	4/18/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20-0412	4/16/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20d-0412	4/16/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW23-0412	4/17/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW30-0412	4/17/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW50-0412	4/19/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
PGPW02-0412	4/20/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW02-0412-1	4/16/2012	<1.00	U	<3.00	U	<1.00	J-, U	<1.00	U	<1.00	U
EPAMW02-0412-2	4/22/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412	4/24/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01d-0412	4/24/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk01	4/16/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk02	4/18/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk03	4/22/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk04	4/24/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk01	4/16/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk02	4/18/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk03	4/22/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk04	4/24/2012	<1.00	U	<3.00	U	<1.00	U	<1.00	U	<1.00	U

Semivolatile Organic Compounds (cont.)

Sample ID	Date	Diethyl phthalate (84-66-2)	Diethyl phthalate QC	Dimethyl phthalate (131-11-3)	Dimethyl phthalate QC	Di-n-butyl phthalate (84-74-2)	Di-n-butyl phthalate QC	Di-n-octyl phthalate (117-84-0)	Di-n-octyl phthalate QC	Diphenylamine (122-39-4)	Diphenylamine QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		1.00		1.00		1.00		1.00		1.00	
PGDW05-0412	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20d-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW23-0412	4/17/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW30-0412	4/17/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW50-0412	4/19/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGPW02-0412	4/20/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW02-0412-1	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW02-0412-2	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01d-0412	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U

Semivolatile Organic Compounds (cont.)

Sample ID	Date	Fluoranthene (206-44-0)	Fluoranthene QC	Fluorene (86-73-7)	Fluorene QC	Hexachlorobenzene (118-74-1)	Hexachlorobenzene QC	Hexachlorobutadiene (87-68-3)	Hexachlorobutadiene QC	Hexachlorocyclopentadiene (77-47-4)	Hexachlorocyclopentadiene QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		1.00		1.00		1.00		1.00		1.00	
PGDW05-0412	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20d-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW23-0412	4/17/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW30-0412	4/17/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW50-0412	4/19/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGPW02-0412	4/20/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW02-0412-1	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW02-0412-2	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01d-0412	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U

Semivolatile Organic Compounds (cont.)

Sample ID	Date	Hexachloroethane (67-72-1)	Hexachloroethane QC	Indeno(1,2,3-cd)pyrene (193-39-5)	Indeno(1,2,3-cd)pyrene QC	Isophorone (78-59-1)	Isophorone QC	Naphthalene (91-20-3)	Naphthalene QC	Nitrobenzene (98-95-3)	Nitrobenzene QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		1.00		1.00		1.00		1.00		1.00	
PGDW05-0412	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW20d-0412	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW23-0412	4/17/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW30-0412	4/17/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGDW50-0412	4/19/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
PGPW02-0412	4/20/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW02-0412-1	4/16/2012	<1.00	U	<1.00	U	<1.00	U	4.29		<1.00	U
EPAMW02-0412-2	4/22/2012	<1.00	U	<1.00	U	<1.00	U	4.78		<1.00	U
EPAMW01-0412	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01d-0412	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
FieldBlk04	4/24/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk01	4/16/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk02	4/18/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk03	4/22/2012	<1.00	U	<1.00	U	<1.00	U	<1.00	U	<1.00	U
EquipBlk04	4/24/2012	<1.00	U	<1.00	U	1.17		<1.00	U	<1.00	U

Semivolatile Organic Compounds (cont.)

Sample ID	Date	N-nitrosodimethylamine (62-75-9)	N-nitrosodimethylamine QC	N-nitrosodi-n-propylamine (621-64-7)	N-nitrosodi-n-propylamine QC	Pentachlorophenol (87-86-5)	Pentachlorophenol QC	Phenanthrene (85-01-8)	Phenanthrene QC	Phenol (108-95-2)	Phenol QC
Units		**µg/L**		**µg/L**		**µg/L**		**µg/L**		**µg/L**	
QL		**1.00**		**1.00**		**2.00**		**1.00**		**2.00**	
PGDW05-0412	4/18/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
PGDW20-0412	4/16/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
PGDW20d-0412	4/16/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
PGDW23-0412	4/17/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
PGDW30-0412	4/17/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
PGDW50-0412	4/19/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
PGPW02-0412	4/20/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
EPAMW02-0412-1	4/16/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	32.7	J-
EPAMW02-0412-2	4/22/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	16.0	
EPAMW01-0412	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	8.09	J+
EPAMW01d-0412	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	8.42	
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	9.65	
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	6.68	
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	5.42	
FieldBlk01	4/16/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
FieldBlk02	4/18/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
FieldBlk03	4/22/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
FieldBlk04	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
EquipBlk01	4/16/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
EquipBlk02	4/18/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
EquipBlk03	4/22/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U
EquipBlk04	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U	<2.00	U

Semivolatile Organic Compounds (cont.)

Sample ID	Date	Pyrene (129-00-0)	Pyrene QC	Pyridine (110-86-1)	Pyridine QC	Squalene (111-02-4)	Squalene QC	Terpinol (98-55-5)	Terpinol QC
Units		µg/L		µg/L		µg/L		µg/L	
QL		1.00		1.00		2.00		1.00	
PGDW05-0412	4/18/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
PGDW20-0412	4/16/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
PGDW20d-0412	4/16/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
PGDW23-0412	4/17/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
PGDW30-0412	4/17/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
PGDW50-0412	4/19/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	J-, U
PGPW02-0412	4/20/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
EPAMW02-0412-1	4/16/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
EPAMW02-0412-2	4/22/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
EPAMW01-0412	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
EPAMW01d-0412	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
FieldBlk01	4/16/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
FieldBlk02	4/18/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
FieldBlk03	4/22/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
FieldBlk04	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
EquipBlk01	4/16/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
EquipBlk02	4/18/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
EquipBlk03	4/22/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U
EquipBlk04	4/24/2012	<1.00	U	<1.00	U	<2.00	U	<1.00	U

Diesel Range Organics and Gasoline Range Organics

Sample ID	Date	GRO/TPH	GRO/TPH QC	DRO	DRO QC
Units		µg/L		µg/L	
QL		20		20	
PGDW05-0412	4/18/2012	48		63.5	
PGDW20-0412	4/16/2012	<20	U	<20	U
PGDW20d-0412	4/16/2012	<20	U	<20	U
PGDW23-0412	4/17/2012	<20	U	<20	U
PGDW30-0412	4/17/2012	27.3		43.8	
PGDW50-0412	4/19/2012	<20	H, U	<20	U
PGPW02-0412	4/20/2012	<20	U	<20	U
EPAMW02-0412-1	4/16/2012	4500		4150	
EPAMW02-0412-2	4/22/2012	5290		2100	
EPAMW01-0412	4/24/2012	528		484	
EPAMW01d-0412	4/24/2012	539		476	
EPAMW01-0412-2	4/24/2012	531		NA	
EPAMW01-0412-3	4/24/2012	493		NA	
EPAMW01-0412-4	4/24/2012	584		555	
EPAMW01-0412-5	4/24/2012	461		NA	
EPAMW01-0412-6	4/24/2012	444		NA	
EPAMW01-0412-7	4/24/2012	418		379	
EPAMW01-0412-8	4/24/2012	402		NA	
EPAMW01-0412-9	4/24/2012	410		NA	
EPAMW01-0412-10	4/24/2012	328		267	
FieldBlk01	4/16/2012	<20	U	<20	U
FieldBlk02	4/18/2012	<20	U	<20	U
FieldBlk03	4/22/2012	<20	U	<20	U
FieldBlk04	4/24/2012	<20	U	<20	U
EquipBlk01	4/16/2012	<20	U	<20	U
EquipBlk02	4/18/2012	<20	U	<20	U
EquipBlk03	4/22/2012	<20	U	<20	U
EquipBlk04	4/24/2012	22.4	J	<20	U

Glycols

Sample ID	Date	2-butoxyethanol (111-76-2)	2-butoxyethanol QC	Diethylene glycol (111-46-6)	Diethylene glycol QC	Triethylene glycol (112-27-6)	Triethylene glycol QC	Tetraethylene glycol (112-60-7)	Tetraethylene glycol QC
Units		µg/L		µg/L		µg/L		µg/L	
QL		5.0		5.0		10.0		10.0	
PGDW05-0412	4/18/2012	<5.0	J-, U	<5.0	J-, U	<10.0	J-, U	<10.0	J-, U
PGDW20-0412	4/16/2012	<5.0	J-, U	<5.0	J-, U	<10.0	J-, U	<10.0	J-, U
PGDW20d-0412	4/16/2012	<5.0	J-, U	<5.0	J-, U	<10.0	J-, U	<10.0	J-, U
PGDW23-0412	4/17/2012	<5.0	J-, U	<5.0	J-, U	<10.0	J-, U	<10.0	J-, U
PGDW30-0412	4/17/2012	<5.0	J-, U	<5.0	J-, U	<10.0	J-, U	<10.0	J-, U
PGDW50-0412	4/19/2012	<5.0	U	<5.0	U	<10.0	U	<10.0	U
PGPW02-0412	4/20/2012	<5.0	U	<5.0	U	<10.0	U	<10.0	U
EPAMW02-0412-1	4/16/2012	6.8	J-	1260	J-	262	J-	22.6	J-
EPAMW02-0412-2	4/22/2012	<5.0	U	378	J	72.3	J	3.6	J
EPAMW01-0412	4/24/2012	3.5	J-	53.9	J	11.5	J-	<10.0	J-, U
EPAMW01d-0412	4/24/2012	3.0	J-	53.9	J	11.6	J-	<10.0	J-, U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	5.1	J-	60	J	12.7	J-	<10.0	J-, U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	1.5	J-	34.1	J	4.9	J-	<10.0	J-, U
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<5.0	J-, U	26.4	J	2.9	J-	<10.0	J-, U
FieldBlk01	4/16/2012	<5.0	J-, U	<5.0	J-, U	<10.0	J-, U	<10.0	J-, U
FieldBlk02	4/18/2012	<5.0	J-, U	<5.0	J-, U	<10.0	J-, U	<10.0	J-, U
FieldBlk03	4/22/2012	<5.0	U	<5.0	U	<10.0	U	<10.0	U
FieldBlk04	4/24/2012	<5.0	U	<5.0	U	<10.0	U	<10.0	U
EquipBlk01	4/16/2012	<5.0	U	<5.0	U	<10.0	U	<10.0	U
EquipBlk02	4/18/2012	<5.0	J-, U	<5.0	J-, U	<10.0	J-, U	<10.0	J-, U
EquipBlk04	4/24/2012	<5.0	U	<5.0	U	<10.0	U	<10.0	U

Method used for analysis of glycols is in development.

Methanol, Ethylene Glycol, and Propylene Glycol

Sample ID	Date	Methanol	Methanol QC	Ethylene Glycol	Ethylene Glycol QC	Propylene Glycol	Propylene Glycol QC
Units		**µg/L**		**µg/L**		**µg/L**	
QL		**5000**		**5000**		**5000**	
PGDW05-0412	4/18/2012	<5000	U	<5000	U	<5000	U
PGDW20-0412	4/16/2012	<5000	U	<5000	U	<5000	U
PGDW20d-0412	4/16/2012	<5000	U	<5000	U	<5000	U
PGDW23-0412	4/17/2012	<5000	U	<5000	U	<5000	U
PGDW30-0412	4/17/2012	<5000	U	<5000	U	<5000	U
PGDW50-0412	4/19/2012	<5000	U	<5000	U	<5000	U
PGPW02-0412	4/20/2012	<5000	U	<5000	U	<5000	U
EPAMW02-0412-1	4/16/2012	<5000	U	<5000	U	<5000	U
EPAMW02-0412-2	4/22/2012	<5000	U	<5000	U	<5000	U
EPAMW01-0412	4/24/2012	<5000	U	<5000	U	<5000	U
EPAMW01d-0412	4/24/2012	<5000	U	<5000	U	<5000	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA	
EPAMW01-0412-4	4/24/2012	NA		NA		NA	
EPAMW01-0412-5	4/24/2012	NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA	
EPAMW01-0412-7	4/24/2012	NA		NA		NA	
EPAMW01-0412-8	4/24/2012	NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA	
EPAMW01-0412-10	4/24/2012	<5000	U	<5000	U	<5000	U
FieldBlk01	4/16/2012	<5000	U	<5000	U	<5000	U
FieldBlk02	4/18/2012	<5000	U	<5000	U	<5000	U
FieldBlk03	4/22/2012	<5000	U	<5000	U	<5000	U
FieldBlk04	4/24/2012	<5000	U	<5000	U	<5000	U
EquipBlk01	4/16/2012	<5000	U	<5000	U	<5000	U
EquipBlk02	4/18/2012	<5000	U	<5000	U	<5000	U
EquipBlk04	4/24/2012	<5000	U	<5000	U	<5000	U

Ethoxylates, Alkylphenols, and Acrylamide

Sample ID	Date	Nonylphenol ethoxylate	Nonylphenol ethoxylate QC	Ethoxylated alcohol C12	Ethoxylated alcohol C12 QC	Ethoxylated alcohol C13	Ethoxylated alcohol C13 QC	Ethoxylated alcohol C14	Ethoxylated alcohol C14 QC	Ethoxylated alcohol C15	Ethoxylated alcohol C15 QC	Nonylphenol	Nonylphenol QC	Octylphenol	Octylphenol QC	Acrylamide	Acrylamide QC
Units		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
QL		0.2		0.05		0.05		0.05		0.05		0.05		0.05		0.2	
PGDW05-0412	4/18/2012	R	R	R	R	R	R	R	R	R	R	0.11	J-, B	<0.05	U	<0.20	U
PGDW20-0412	4/16/2012	R	R	R	R	R	R	R	R	R	R	<0.05	U	<0.05	H, U	<0.20	U
PGDW20d-0412	4/16/2012	R	R	R	R	R	R	R	R	R	R	<0.05	U	<0.05	H, U	<0.20	U
PGDW23-0412	4/17/2012	R	R	R	R	R	R	R	R	R	R	<0.05	U	<0.05	U	<0.20	U
PGDW30-0412	4/17/2012	R	R	R	R	R	R	R	R	R	R	<0.05	U	<0.05	U	<0.20	U
PGDW50-0412	4/19/2012	R	R	R	R	R	R	R	R	R	R	0.10	J-, B	<0.05	U	<0.20	U
PGPW02-0412	4/20/2012	R	R	R	R	R	R	R	R	R	R	0.06	J-, B	<0.05	U	<0.20	U
EPAMW02-0412-1	4/16/2012	R	R	R	R	R	R	R	R	R	R	28	H, J-	2.9	H, J	<0.20	U
EPAMW02-0412-2	4/22/2012	R	R	R	R	R	R	R	R	R	R	7.4-7.9	J-	0.5-0.7	J	<0.20	U
EPAMW01-0412	4/24/2012	R	R	R	R	R	R	R	R	R	R	0.60	J-, B	0.14	J	<0.20	U
EPAMW01d-0412	4/24/2012	R	R	R	R	R	R	R	R	R	R	0.57	J-, B	0.13	J	<0.20	U
EPAMW01-0412-2	4/24/2012	NA		NA		NA		NA		NA		NA		NA		NA	
EPAMW01-0412-3	4/24/2012	NA		NA		NA		NA		NA		NA		NA		NA	
EPAMW01-0412-4	4/24/2012	R	R	R	R	R	R	R	R	R	R	0.65	J-, B	0.16	J	<0.20	U
EPAMW01-0412-5	4/24/2012	NA		NA		NA		NA		NA		NA		NA		NA	
EPAMW01-0412-6	4/24/2012	NA		NA		NA		NA		NA		NA		NA		NA	
EPAMW01-0412-7	4/24/2012	R	R	R	R	R	R	R	R	R	R	0.65	J, B	0.10	J	<0.20	U
EPAMW01-0412-8	4/24/2012	NA		NA		NA		NA		NA		NA		NA		NA	
EPAMW01-0412-9	4/24/2012	NA		NA		NA		NA		NA		NA		NA		NA	
EPAMW01-0412-10	4/24/2012	R	R	R	R	R	R	R	R	R	R	0.24	J-, B	0.051	J	<0.20	U
FieldBlk01	4/16/2012	R	R	R	R	R	R	R	R	R	R	0.42	J-	<0.05	U	<0.20	U
FieldBlk02	4/18/2012	R	R	R	R	R	R	R	R	R	R	0.06	J-	<0.05	U	<0.20	U
FieldBlk03	4/22/2012	R	R	R	R	R	R	R	R	R	R	<0.05	U	<0.05	U	<0.20	U
FieldBlk04	4/24/2012	R	R	R	R	R	R	R	R	R	R	0.07	J-	<0.05	U	<0.20	U
EquipBlk01	4/16/2012	R	R	R	R	R	R	R	R	R	R	0.05	J-, H	<0.05	H, U	<0.20	U
EquipBlk02	4/18/2012	R	R	R	R	R	R	R	R	R	R	0.06	J	<0.05	U	<0.20	U
EquipBlk04	4/22/2012	R	R	R	R	R	R	R	R	R	R	0.07	J	<0.05	U	<0.20	U

R flags: data rejected due to significant lab, field, and equipment blank contamination, and laboratory QA/QC deficiencies.
Methods used for analysis are in development.

Methylene Blue Active Substances

Sample ID	Date	MBAS	MBAS QA
Units		mg/L	
QL		0.2 LAS †	
PGDW05-0412	4/18/2012	<0.2	U
PGDW20-0412	4/18/2012	<0.2	U
PGDW20d-0412	4/18/2012	<0.2	U
PGDW23-0412	4/17/2012	<0.2	U
PGDW30-0412	4/17/2012	<0.2	U
PGDW50-0412	4/19/2012	<0.2	U
PGPW02-0412	4/20/2012	<0.2	U
EPAMW02-0412-1	4/16/2012	<0.2	U
EPAMW02-0412-2	4/22/2012	<0.2	U
EPAMW01-0412	4/24/2012	<0.2	U
EPAMW01d-0412	4/24/2012	<0.2	U
EPAMW01-0412-2	4/24/2012	NA	
EPAMW01-0412-3	4/24/2012	NA	
EPAMW01-0412-4	4/24/2012	<0.2	U
EPAMW01-0412-5	4/24/2012	NA	
EPAMW01-0412-6	4/24/2012	NA	
EPAMW01-0412-7	4/24/2012	<0.2	U
EPAMW01-0412-8	4/24/2012	NA	
EPAMW01-0412-9	4/24/2012	NA	
EPAMW01-0412-10	4/24/2012	<0.2	U
FieldBlk01	4/16/2012	**	
FieldBlk02	4/18/2012	<0.2	U
FieldBlk03	4/22/2012	<0.2	U
FieldBlk04	4/24/2012	<0.2	U
EquipBlk01	4/16/2012	**	
EquipBlk02	4/18/2012	<0.2	U
EquipBlk04	4/24/2012	<0.2	U

** Samples lost in shipment.
† Linear Alkylate Sulfonate

Water Isotopes

Sample ID	Date	δ^2H	QC Flags	$\delta^{18}O$	QC Flags
Units		‰		‰	
PGDW05-0412	4/18/2012	-111.0		-12.9	
PGDW20-0412	4/16/2012	-108.0		-12.8	
PGDW20d-0412	4/16/2012	-108.5	J	-12.9	
PGDW23-0412	4/17/2012	-111.0		-13.0	
PGDW30-0412	4/17/2012	-111.0		-13.0	
PGDW50-0412	4/19/2012	-100.5		-12.7	
PGPW02-0412	4/20/2012	-113.2		-13.5	
EPAMW02-0412-1	4/16/2012	-116.3		-14.2	
EPAMW02-0412-2	4/22/2012	-116.8		-14.2	
EPAMW01-0412	4/24/2012	-113.1		-13.2	
EPAMW01d-0412	4/24/2012	-113.0		-13.3	
EPAMW01-0412-2	4/24/2012	-113.0		-13.3	
EPAMW01-0412-3	4/24/2012	-113.0		-13.3	
EPAMW01-0412-4	4/24/2012	-112.9		-13.3	
EPAMW01-0412-5	4/24/2012	-113.1		-13.3	
EPAMW01-0412-6	4/24/2012	-113.2		-13.4	
EPAMW01-0412-7	4/24/2012	-113.2		-13.3	
EPAMW01-0412-8	4/24/2012	-113.3		-13.4	
EPAMW01-0412-9	4/24/2012	-113.4		-13.3	
EPAMW01-0412-10	4/24/2012	-113.6		-13.3	

Isotech Gas Isotopes

Sample ID	Date	He	H_2	Ar	O_2	CO_2	N_2	CO	C_1	C_2	C_2H_4
Units		%	%	%	%	%	%	%	%	%	%
PGDW05-0412	4/18/2012	NA	NA	1.67	7.36	0.02	90.67	0.05	0.24	ND	ND
PGDW20-0412	4/16/2012	NA	NA	1.63	9.27	0.14	88.31	0.07	0.56	0.017	ND
PGDW20d-0412	4/16/2012	NA	NA	1.59	8.46	0.13	89.20	0.05	0.55	0.016	ND
PGDW23-0412	4/17/2012	NA	NA	1.68	10.81	0.04	86.43	0.13	0.91	ND	ND
PGDW30-0412	4/17/2012	NA	NA	1.64	4.85	0.03	88.20	0.03	5.25	0.001	ND
PGDW50-0412	4/19/2012	NA	NA	1.21	7.51	0.10	91.17	ND	0.01	ND	ND
PGPW02-0412	4/20/2012	NA	NA	1.47	8.50	0.09	89.92	ND	0.03	ND	ND
EPAMW02-0412-1	4/16/2012	0.02	NA	0.16	1.68	ND	7.14	0.01	82.65	5.13	0.001
EPAMW02-0412-2	4/22/2012	NA	NA	0.13	2.15	ND	5.55	ND	81.89	6.36	0.001
EPAMW01-0412	4/24/2012	NA	NA	0.26	0.38	ND	12.41	ND	80.38	4.87	0.002
EPAMW01d-0412	4/24/2012	NA	NA	0.24	0.11	ND	10.93	ND	82.07	4.96	0.002
EPAMW01-0412-2	4/24/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPAMW01-0412-3	4/24/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPAMW01-0412-4	4/24/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPAMW01-0412-5	4/24/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPAMW01-0412-6	4/24/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPAMW01-0412-7	4/24/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPAMW01-0412-8	4/24/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPAMW01-0412-9	4/24/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPAMW01-0412-10	4/24/2012	0.02	NA	0.404	0.02	ND	20.97	ND	73.34	3.89	0.001

Isotech Gas Isotopes (cont.)

Sample ID	Date	C_3	C_3H_6	iC_4	nC_4	iC_5	nC_5	C_6+	$\delta^{13}C_1$	δDC_1	$\delta^{13}C_2$
Units		%	%	%	%	%	%	%	‰	‰	‰
PGDW05-0412	4/18/2012	ND	ND	ND	ND	ND	ND	ND	0.70	NA	NA
PGDW20-0412	4/16/2012	0.0015	ND	0.0007	ND	ND	ND	ND	-32.0	NA	NA
PGDW20d-0412	4/16/2012	0.0013	ND	0.0007	ND	ND	ND	ND	-32.0	NA	NA
PGDW23-0412	4/17/2012	ND	ND	0.0011	ND	ND	ND	ND	12.7	205	NA
PGDW30-0412	4/17/2012	ND	ND	ND	ND	ND	ND	ND	-27.5	-123	NA
PGDW50-0412	4/19/2012	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA
PGPW02-0412	4/20/2012	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA
EPAMW02-0412-1	4/16/2012	2.00	0.0030	0.638	0.385	0.116	0.0373	0.0322	-41.2	-209.1	-26.2
EPAMW02-0412-2	4/22/2012	2.39	0.0055	0.750	0.509	0.145	0.0520	0.0661	-41.2	-199.6	-26.3
EPAMW01-0412	4/24/2012	1.08	0.0012	0.253	0.214	0.075	0.0347	0.0424	-38.2	-205.3	-26.5
EPAMW01d-0412	4/24/2012	1.08	0.0012	0.249	0.212	0.074	0.0345	0.0418	NA	NA	NA
EPAMW01-0412-2	4/24/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPAMW01-0412-3	4/24/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPAMW01-0412-4	4/24/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPAMW01-0412-5	4/24/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPAMW01-0412-6	4/24/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPAMW01-0412-7	4/24/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPAMW01-0412-8	4/24/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPAMW01-0412-9	4/24/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPAMW01-0412-10	4/24/2012	0.856	0.0007	0.215	0.166	0.062	0.0266	0.0319	-38.5	-205.9	-26.6

Isotech Gas Isotopes (cont.)

Sample ID	Date	$\delta^{13}C$ DIC	Tritium	Specific Gravity	BTU	Helium dilution
Units		‰	TU			factor
PGDW05-0412	4/18/2012	-16.02	<0.80	0.983	3	0.71
PGDW20-0412	4/16/2012	-17.25	<0.80	0.985	6	0.73
PGDW20d-0412	4/16/2012	-17.13	<0.80	0.984	6	0.70
PGDW23-0412	4/17/2012	-14.22	<0.80	0.986	10	0.73
PGDW30-0412	4/17/2012	-11.95	<0.80	0.959	53	0.70
PGDW50-0412	4/19/2012	-8.92	<0.80	0.983	0	0.64
PGPW02-0412	4/20/2012	-9.34	<0.80	0.985	0	0.56
EPAMW02-0412-1	4/16/2012	**	<0.80	0.657	1021	NA
EPAMW02-0412-2	4/22/2012	**	<0.80	0.668	1057	0.56
EPAMW01-0412	4/24/2012	-11.70	<0.80	0.654	951	0.33
EPAMW01d-0412	4/24/2012	-12.13	<0.80	0.646	969	0.30
EPAMW01-0412-2	4/24/2012	NA	NA	NA	NA	NA
EPAMW01-0412-3	4/24/2012	NA	NA	NA	NA	NA
EPAMW01-0412-4	4/24/2012	NA	NA	NA	NA	NA
EPAMW01-0412-5	4/24/2012	NA	NA	NA	NA	NA
EPAMW01-0412-6	4/24/2012	NA	NA	NA	NA	NA
EPAMW01-0412-7	4/24/2012	NA	NA	NA	NA	NA
EPAMW01-0412-8	4/24/2012	NA	NA	NA	NA	NA
EPAMW01-0412-9	4/24/2012	NA	NA	NA	NA	NA
EPAMW01-0412-10	4/24/2012	-11.94	<0.80	0.679	852	NA

ND, not detected. EPAMW01d-0412 - sample lost at laboratory. **Not enough inorganic carbon in sample for analysis.

SECTION B

B1. Introduction

Sampling and analysis activities were conducted under an approved Quality Assurance Project Plan (QAPP) titled "Groundwater Investigation in Pavillion, Wyoming, version 6" dated 2/17/2012. Deviations from this QAPP are described in Section B9 as well as in an Addendum to this QAPP, approved in September, 2012. In Phase V of the Pavillion study, groundwater samples were collected from April 16 to April 24, 2012. Five domestic wells, one municipal supply well, and two deep monitoring wells were sampled. A total of 457 samples (not including duplicates of glass containers) were collected and delivered to 8 laboratories for analysis: Shaw Environmental, Ada, OK; EPA ORD/NRMRL, Ada, OK; ALS Environmental, Holland, MI; TestAmerica, Savannah, GA; EPA Region 8, Golden, CO; EPA Region 3, Fort Meade, MD; EPA ORD/NERL, Las Vegas, NV; and, Isotech, Champaigne, IL. Measurements were made for over 322 analytes per sample location. Of the 457 samples, 194 samples (42%) were Quality Control (QC) samples, including blanks, field duplicates, matrix spikes, and matrix spike duplicates. This Section describes general Quality Assurance (QA) and results of the QC samples, including discussion of chain of custody, holding times, blank results, field duplicate results, laboratory Quality Assurance narratives, double-lab comparison of volatile organic compounds, Performance Evaluation (PE) samples, QAPP additions and deviations, field QA/QC, application of data qualifiers, tentatively identified compounds (TICs), the Audit of Data Quality (ADQ), and impact on data quality.

All reported data met project requirements unless otherwise indicated by the application of data qualifiers. Data not meeting project requirements are rejected as unusable and are not reported.

B2. Chain of Custody

Sample types, bottle types, sample preservation methods, analyte holding times, and laboratories receiving samples are listed in Table B1. Samples collected in the field were packed on ice into ice chests for shipment by overnight delivery with completed chain of custody documents and temperature blank containers. With the few exceptions noted below, samples were received by the laboratories in good condition and all temperature blanks read below 5°C.

The first sample shipment to TestAmerica (Methylene Blue Active Substances, MBAS analysis) was delayed in shipment by the carrier. This shipment included samples:PGDW20-0412, PGDW20d-0412, FieldBlk01, and EquipBlk01 (collected 4/16/2012). Because MBAS analysis has a 48 hour holding time, samples in this set were not received in time to make the holding time requirement. Consequently, new samples from PGDW20 were collected on 4/18/2012 and submitted for analysis along with fresh field and equipment blanks. The chain-of-custody form accompanying sample PGDW50-0412 shipped on 4/19/2012 for MBAS analysis was signed for, but the time and date were left off the custody form. The case narrative in the data report indicates the sample was received on 4/20/2012. These observations have no impact on data quality.

An ice chest received by Shaw Environmental on 4/18/2012 was noted to have one of the two custody seals cut, presumably during transport or delivery. The second custody seal was intact and the samples were noted to be in good condition. In other shipments, several glass bottles were received broken (FieldBlk01 for Ethoxylates, 1 L amber glass; PGPW02-0412 for GRO, 40 mL amber glass; EquipBlk03 for EPA Method 8260, 40 mL amber glass; EPAMW02-0412-2 for low molecular weight acids, 40 mL clear glass). Because samples stored in glass bottles were all collected in duplicate in case of breakage, adequate sample was available to perform required analyses. For sample EPAMW02-0412-2, both the primary and duplicate bottles for low molecular weight acids were broken in shipment. A sample preserved with TSP (trisodium phosphate) for VOC analysis was substituted. This preservative differs from the QAPP requirements (sodium hydroxide). TSP is a base and has been used as a preservative for low molecular weight acids. The results for this sample are consistent with a sample taken from the same well several days earlier. There is no impact on data quality. One sample delivered to Isotech (EPAMW01d-0412) was spilled in the laboratory; consequently, dissolved gas isotopic signatures are not available for this field duplicate sample. There is no impact on data quality because the primary sample was analyzed.

Table B1. Sample containers, preservation, and holding times for groundwater samples in Phase V.

Sample Type	Analysis Method (EPA Method)	Sample Bottles/# of bottles*	Preservation/Storage	Holding Time(s)
Dissolved gases	Shaw Environmental: RSKSOP-194v4 &-175v5 (No EPA Method)	60 mL serum bottles/2	No Headspace TSP[†], pH>10; refrigerate ≤6°[††]	14 days
Metals (filtered)	Shaw Environmental: RSKSOP-213v4 &-257v3 (EPA Methods 200.7 and 6020); CHEMTECH: EPA CLP Inorganic SOW ISM01.3, Exhibit D – Part B, with method modifications	125 mL plastic bottle/1	HNO_3, pH<2; room temperature	6 months (Hg 28 days)
Metals (unfiltered)	Shaw Environmental: RSKSOP-179v2; RSKSOP-213v4 & RSKSOP-257v3 (EPA Methods 200.7 and 6020) ; CHEMTECH: EPA CLP Inorganic SOW ISM01.3, Exhibit D – Part B, with method modifications	125 mL plastic bottle/1	HNO_3, pH<2; room temperature	6 months (Hg 28 days)
SO_4, Cl, F, Br	ORD/NRMRL (Ada): RSKSOP-276v3 (EPA Method 6500)	30 mL plastic/1	Refrigerate ≤6°C	28 days
$NO_3 + NO_2$, NH_4	ORD/NRMRL (Ada): RSKSOP-214v5 (EPA Method 350.1 and 353.2)	30 mL plastic/1	H_2SO_4, pH<2; refrigerate ≤6°C	28 days
DIC	ORD/NRMRL (Ada): RSKSOP-102v5 or 330v0 (EPA Method 9060A)	40 mL clear glass VOA vial/2	Refrigerate ≤6°C	14 days
DOC	ORD/NRMRL (Ada): RSKSOP-102v5 or 330v0 (EPA Method 9060A)	40 mL clear glass VOA vial/2	H_3PO_4, pH<2; refrigerate ≤6°C	28 days
Alcohols, aromatic, and chlorinated hydrocarbons	Shaw Environmental: RSKSOP-259v1 (EPA Method 5021A plus 8260C)	40 mL amber glass VOA vial/2	No Headspace TSP[†], pH>10; refrigerate ≤6°C	14 days
Volatile Organic Compounds	Region 8: EPA Method 5035 plus 8260C	40 mL amber glass VOA vial/2	No Headspace HCl, pH<2; refrigerate ≤6°C	14 days
Semi-Volatile Organic Compounds	Region 8: EPA Method 8270D, ORGM-508 r1.0	1 L amber glass/2	Refrigerate ≤6°C	7 days until extraction; 30 days post-extraction for analysis
Low Molecular Weight Acids	Shaw Environmental: RSKSOP-112v6 (No EPA Method)	40 mL glass VOA vial/2	NaOH, pH>10; refrigerate ≤6°C	30 days
O, H stable isotopes of water	Shaw Environmental: RSKSOP-334v0 (No EPA Method)	20 mL glass VOA vial/1	Refrigerate ≤6°C	Stable
$\delta^{13}C$ DIC	Isotech: gas stripping and IRMS (No EPA Method)	60 mL plastic bottle/1	Refrigerate ≤6°C	No information
$\delta^{13}C$ and δD of methane	Isotech: gas stripping and IRMS (No EPA Method)	1 L plastic bottle/1	Caplet of benzalkonium chloride; refrigerate ≤6°C	No information
Tritium	Isotech: electrolytic enrichment and radiometric analysis of ^3H (No EPA Method)	500 mL plastic bottle/1	Refrigerate ≤6°C	6 months

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Table B1 (cont). Sample containers, preservation, and holding times for groundwater samples in Phase V.

Sample Type	Analysis Method (EPA Method)	Sample Bottles/# of bottles*	Preservation/Storage	Holding Time(s)
DRO	Region 8: EPA Method 8015D, ORGM-508 r1.0	1L amber glass bottle/1	HCl, pH<2; refrigerate ≤6°C	7 days until extraction, 40 days after extraction
GRO	Region 8: EPA Method 8015D	40 mL amber glass VOA vial/2	No headspace; HCl, pH<2; refrigerate ≤6°C	14 days
Glycols	Region 3 method** (No EPA Method)	40 mL amber glass VOA vial/2	Refrigerate ≤6°C	14 days
Methanol, propylene glycol, ethylene glycol	ALS Environmental: EPA Method 8015M	40 mL amber glass VOA vial/2	HCl, pH<2; refrigerate ≤6°C	14 days
Acrylamide, alkylphenols, ethoxylated alcohols, ethoxylated alkylphenols	ORD/NERL methods (Las Vegas) ***	1 L amber glass/2	Refrigerate ≤6°C	30 days
MBAS	TestAmerica: EPA Method 425.1	500 mL plastic bottle/1	Refrigerate ≤6°C	2 days

† Trisodium phosphate. †† Above freezing point of water. *Spare bottles made available for laboratory QC samples and for replacement of compromised samples (broken bottle, QC failures, etc.). **EPA Methods 8000C and 8321 were followed for method development and QA/QC; method based on ASTM D773-11. ***Methods modified from ASTM D7458-09 and USGS method O1433-01 for ethoxylated alcohols and alkylphenols; EPA Method 8032A and 8316 were used for acrylamide.

B3. Holding Times

Holding times are the length of time a sample can be stored after collection and prior to analysis without significantly affecting the analytical results. Holding times vary with the analyte, sample matrix, and analytical methodology. Sample holding times for the various analyses conducted in Phase V are listed in Table B1 and range from 48 hours to 6 months. As noted above, the short holding time for MBAS analysis required that field samples be shipped to the TestAmerica laboratory on the same day as their collection. In one case, arrangements were made for weekend sample receipt and analysis by TestAmerica. All samples for MBAS were analyzed within the specified holding time. Sample PGDW50-0412 was analyzed outside of holding time guidelines for Gasoline Range Organics (GRO). This sample was not preserved in the field to the pH<2 criterion. The GRO analysis holding time for unpreserved samples is reduced from 14 days to 7 days. Sample PGDW50-0412 was analyzed 3 hours after the 7 day holding time expired; GRO data for this sample are flagged as estimated. Several samples for ethoxylated alcohols and alkyphenols were extracted outside the 30-day holding time; these samples exceeding the holding time for extraction are flagged. Generally, estimated analyte concentrations for samples with holding time exceedances are biased low.

B4. Blank Samples

An extensive series of blank samples was collected in Phase V, including field blanks, equipment blanks, and trip blanks (Table B2). These quality control samples were intended to test for possible bias from potential sources of contamination during field sample collection, equipment cleaning, sample bottle transport to and from the field, and laboratory procedures. The same source water was used for the preparation of all blank samples (Barnstead NANOpure Diamond UV water). Field blanks were collected to evaluate potential contamination from sample bottles and environmental sources. Equipment blanks were collected to determine if cleaning procedures or sample equipment (filters, fittings, tubing) potentially contributed to analyte detections. Trip blanks consisted of serum bottles or VOC vials filled with NANOpure water and sealed in the laboratory. Trip blanks were used to evaluate whether VOC and dissolved gas serum bottles were contaminated during sample storage, sampling, or shipment to and from the field. All other analyses have associated field and equipment blanks, except isotope ratio analyses for which no blank sampling schemes are appropriate. Sample bottle types, preservation, and holding times were applied to blank samples in the same way as they were applied to field samples (Table B1).

Table B2. Field QC samples for groundwater analysis.

QC Sample	Purpose	Method	Frequency
Trip Blanks (VOCs and Dissolved Gases only)	Assess contamination during transportation.	Fill bottles with reagent water and preserve, take to field and returned without opening.	One in an ice chest with VOA and dissolved gas samples.
Equipment Blanks	Assess contamination from field equipment, sampling procedures, decontamination procedures, sample container, preservative, and shipping.	Apply only to samples collected via equipment, such as filtered samples: Reagent water is filtered and collected into bottles and preserved same as filtered samples.	One per day of sampling with submersible pumps.
Field Duplicates	Represent precision of field sampling, analysis, and site heterogeneity.	One or more samples collected immediately after original sample.	One in every 10 samples, or if <10 samples collected for a water type (ground or surface), collect a duplicate for one sample.
Temperature Blanks	Measure temperature of samples in the cooler.	Water sample that is transported in cooler to lab.	One per cooler.
Field Blanks*	Assess contamination introduced from sample container with applicable preservative.	In the field, reagent water is collected into sample containers with preservatives.	One per day of sampling.

* Blank samples were not collected for isotope ratio measurements, including $^{18}O/^{16}O$, $^{2}H/H$, and $^{13}C/^{12}C$.

The following criteria are used for flagging samples with potential blank contamination. Sample contamination is considered possible if analyte concentrations in blanks are above the method Quantitation Limit (QL) and if the analyte is present in an associated field sample at a level <10◊ the concentration in the blank. In cases where a laboratory, equipment, field, or trip blank are between the MDL and the QL, the associated sample results that are between the MDL and QL are reported as <QL with a U qualifier. Blank samples are associated to field samples by dates of collection; for example, most sample shipments include both field samples and blank samples that are used for blank contamination assessments. See section on QAPP Additions and Deviations for additional information. Results of blanks analyses are reported in Tables B3-B17.

Dissolved methane was reported above the QL (9◊) in one field blank and one equipment blank collected on the same day (4/18/2012; Table B3). These blank detections affect three samples: PGDW05-0412, PGDW50-0412 and PGPW02-0412, all with low-level methane detections. Methane values for these three samples are qualified with a U or B. Because methane, ethane, and propane were identified in the blank samples, this contamination was likely introduced in the laboratory as carry over from calibration standards or analysis of high-concentration samples.

There were no dissolved or total metal concentrations by ICP-OES above QLs in any of the field or equipment blank samples (Tables B4, B5, B6 and B7). Trace metals as determined by ICP-MS showed dissolved chromium and dissolved nickel above the QL in one field blank (FieldBlk02; Table B8). Total copper and total nickel were both present above the QL in one field blank (FieldBlk04; Table B8). None of the associated field samples are impacted by these

blank detections because the metals concentrations did not exceed the QL.

The anions: fluoride, chloride, sulfate, and nitrate+nitrite, were not detected above QLs in any of the blank samples (Table B9). Dissolved inorganic carbon and organic carbon concentrations were not reported above QLs in any of the blank samples (Table B9).

Formate was detected in all field samples and in all blank samples at generally comparable levels (Table B10). The formate data are all rejected due to form ate contamination in the sample vials.

Twelve blank samples were collected for alcohols/aromatic/chlorinated hydrocarbons (Shaw Environmental) and volatile organic compounds (EPA Region 8). Results are presented in Tables B11 and B12. Toluene was detected in one sample (EquipBlk04) by EPA Method 5021A plus 8260C at a concentration of 0.297 µg/L, below the method QL of 0.50 µg/L (Table B11). Toluene was also detected in the same sample by EPA Method 5035 plus 8260C at a concentration of 0.31 µg/L, just above the method QL of 0.25 µg/L (Table B12). This blank detection affects a series of detections of toluene below the QL in EPAMW01 (time series analysis). All other detections of volatile organic compounds in the domestic wells and deep monitoring wells are not impacted by blank contamination.

The only semi-volatile organic contaminant found in field and equipment blanks was isophorone in EquipBlk04 (1.17 µg/L, QL=1.00 µg/L; Table B13). This analyte was not detected in any field sample. Detections of semi-volatile organic compounds in the domestic wells and deep monitoring wells are not impacted by blank contamination.

For DRO and GRO analyses, blank contamination was detected in EquipBlk04 for GRO at a concentration of 22.4 µg/L, just above the QL of 20 µg/L (Table B14). This result impacts none of the associated field samples as all of the EPAMW01 time series samples have GRO concentrations >325 µg/L. Detections of GRO and DRO in the domestic wells and deep monitoring wells are not impacted by blank contamination.

Glycols were not reported above QLs or Minimum Detection Levels (MDLs) in any of the blank samples (Tables B14 and B15). None of the detections of glycols or 2-butoxyethanol in the deep monitoring wells are impacted by blank contamination.

Samples for analysis of acrylamide, alkylphenols, ethoxylated alcohols, and ethoxylated alkylphenols were sent to the EPA ORD/NERL laboratory in Las Vegas. With the exception of acrylamide and octylphenol, other analytes were consistently detec ted in field blanks, equipment blanks, and laboratory blanks (Table B16). Other QA/QC issues associated with these data were noted in the Audit of Data Quality (see Table B30).

Methylene Blue Active Substances (MBAS) were not detected in any of the blank samples (Table B17). Samples collected in the field for MBAS analysis are not impacted by blank contamination.

Table B3. Dissolved gas blank results for Phase V.

Label	Date	Methane	Ethane	Propane	n-Butane
		mg/L	mg/L	mg/L	mg/L
FieldBlk01	4/16/2012	<0.0003	<0.0005	<0.0007	<0.0007
FieldBlk02	4/18/2012	0.012	<0.0005	BQL 0.0011	<0.0007
FieldBlk03	4/22/2012	<0.0003	<0.0005	<0.0007	<0.0007
FieldBlk04	4/24/2012	<0.0003	<0.0005	<0.0007	<0.0007
EquipBlk01	4/16/2012	<0.0003	<0.0005	<0.0007	<0.0007
EquipBlk02	4/18/2012	0.012	BQL 0.0016	BQL 0.0008	<0.0007
EquipBlk04	4/24/2012	<0.0003	<0.0005	<0.0007	<0.0007
TripBlk01	4/17/2012	<0.0003	<0.0005	<0.0007	<0.0007
TripBlk02	4/18/2012	<0.0003	<0.0005	<0.0007	<0.0007
TripBlk03	4/22/2012	<0.0003	<0.0005	<0.0007	<0.0007
TripBlk04	4/24/2012	<0.0003	<0.0005	<0.0007	<0.0007
MDL		0.0003	0.0005	0.0007	0.0007
QL		0.0013	0.0027	0.0038	0.0047
Detections in samples		12/12	9/12	7/12	6/12
Concentration min		BQL 0.0013	0.0030	BQL 0.0016	BQL 0.0009
Concentration max		22.00	3.07	1.78	0.52

Units are mg/L. BQL – below quantitation level. MDL – Method Detection Limit. QL – Quantitation Limit. Detections in samples: the number of times the analyte was detected in Phase V sampling compared to the total number of samples collected. Minimum and maximum sample concentrations in Phase V sampling in mg/L are provided for reference.

Table B4. ICP-OES blank results for undigested samples (field filtered).

Label	Date	Al	Ag	B	Ba	Be	Ca	Co	Fe	K	Mg
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FieldBlk01	4/16/2012	<0.148	<0.004	<0.100	<0.001	<0.001	<0.086	<0.001	<0.020	<0.106	<0.030
FieldBlk02	4/18/2012	<0.148	<0.004	<0.100	<0.001	<0.001	<0.086	<0.001	<0.020	<0.106	<0.030
FieldBlk03	4/22/2012	<0.148	<0.004	<0.100	<0.001	<0.001	<0.086	<0.001	<0.020	<0.106	<0.030
FieldBlk04	4/24/2012	<0.148	<0.004	<0.100	<0.001	<0.001	<0.086	<0.001	<0.020	<0.106	<0.030
EquipBlk01	4/16/2012	<0.148	<0.004	<0.100	<0.001	<0.001	<0.086	<0.001	<0.020	<0.106	<0.030
EquipBlk02	4/18/2012	<0.148	<0.004	<0.100	<0.001	<0.001	<0.086	<0.001	<0.020	<0.106	<0.030
EquipBlk04	4/24/2012	<0.148	<0.004	<0.100	<0.001	<0.001	<0.086	<0.001	<0.020	<0.106	<0.030
MDL		0.148	0.004	0.100	0.001	0.001	0.086	0.001	0.020	0.106	0.030
QL		0.494	0.014	0.333	0.004	0.003	0.287	0.004	0.067	0.354	0.100
Detections in samples		6/20	0/20	19/20	20/20	0/20	20/20	0/20	4/20	20/20	18/20
Concentration min		BQL 0.205	--	BQL 0.108	0.005	--	3.17	--	BQL 0.055	0.469	BQL 0.069
Concentration max		0.816	--	BQL 0.285	0.147	--	314	--	0.201	31.4	12.8

Units are mg/L. BQL – below quantitation level. MDL – Method Detection Limit. QL – Quantitation Limit. Detections in samples: the number of times the analyte was detected in Phase V sampling compared to the total number of samples collected. Minimum and maximum sample concentrations in Phase V sampling in mg/L are provided for reference.

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Table B5. ICP-OES blank results for undigested samples (field filtered).

Label	Date	Mn	Mo	Na	Sb	Sr	Ti	Zn	Si	S	P
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FieldBlk01	4/16/2012	<0.004	<0.005	<0.513	<0.005	<0.001	<0.002	<0.015	<0.130	<0.138	<0.018
FieldBlk02	4/18/2012	<0.004	<0.005	<0.513	<0.005	<0.001	<0.002	<0.015	<0.130	<0.138	<0.018
FieldBlk03	4/22/2012	<0.004	<0.005	<0.513	<0.005	<0.001	<0.002	<0.015	<0.130	<0.138	<0.018
FieldBlk04	4/24/2012	<0.004	<0.005	<0.513	<0.005	<0.001	<0.002	<0.015	<0.130	<0.138	<0.018
EquipBlk01	4/16/2012	<0.004	<0.005	<0.513	<0.005	<0.001	<0.002	<0.015	<0.130	<0.138	<0.018
EquipBlk02	4/18/2012	<0.004	<0.005	<0.513	<0.005	<0.001	<0.002	<0.015	<0.130	<0.138	<0.018
EquipBlk04	4/24/2012	<0.004	<0.005	<0.513	<0.005	<0.001	<0.002	<0.015	<0.130	<0.138	<0.018
MDL		0.004	0.005	0.513	0.005	0.001	0.002	0.015	0.130	0.138	0.018
QL		0.014	0.017	1.71	0.017	0.004	0.007	0.050	0.434	0.460	0.060
Detections in samples		4/20	5/20	20/20	0/20	20/20	1/20	0/20	20/20	20/20	0/20
Concentration min		0.008	BQL 0.005	190	--	0.053	0.003	--	4.71	7.38	--
Concentration max		0.090	BQL 0.008	1290	--	3.00	--	--	12.0	1120	--

Units are mg/L. BQL – below quantitation level. MDL – Method Detection Limit. QL – Quantitation Limit. Detections in samples: the number of times the analyte was detected in Phase V sampling compared to the total number of samples collected. Minimum and maximum sample concentrations in Phase V sampling in mg/L are provided for reference.

Table B6. ICP-OES blank results for digested samples (unfiltered).

Label	Date	Al	Ag	B	Ba	Be	Ca	Co	Fe	K	Mg
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FieldBlk01	4/16/2012	<0.164	BQL 0.005	<0.111	<0.001	<0.003	<0.095	<0.001	<0.022	<0.118	<0.033
FieldBlk02	4/18/2012	<0.164	<0.004	<0.111	<0.001	<0.003	<0.095	<0.001	<0.022	<0.118	<0.033
FieldBlk03	4/22/2012	<0.164	<0.004	<0.111	<0.001	<0.003	<0.095	<0.001	<0.022	<0.118	<0.033
FieldBlk04	4/24/2012	<0.164	<0.004	<0.111	<0.001	<0.003	<0.095	<0.001	<0.022	<0.118	<0.033
EquipBlk01	4/16/2012	<0.164	<0.004	<0.111	<0.001	<0.003	<0.095	<0.001	<0.022	<0.118	<0.033
EquipBlk02	4/18/2012	<0.164	<0.004	<0.111	<0.001	<0.003	<0.095	<0.001	<0.022	<0.118	<0.033
EquipBlk04	4/24/2012	<0.164	<0.004	<0.111	<0.001	<0.003	<0.095	<0.001	<0.022	<0.118	<0.033
MDL		0.164	0.004	0.111	0.001	0.003	0.095	0.001	0.022	0.118	0.033
QL		0.548	0.016	0.370	0.004	0.011	0.319	0.004	0.074	0.393	0.111
Detections in samples		4/12	3/12	10/12	12/12	0/12	12/12	0/12	9/12	12/12	11/12
Concentration min		BQL 0.198	BQL 0.005	BQL 0.112	0.005	--	3.34	--	BQL 0.025	0.426	BQL 0.081
Concentration max		1.11	BQL 0.010	BQL 0.215	0.158	--	315	--	2.33	31.7	6.15

Units are mg/L. BQL – below quantitation level. MDL – Method Detection Limit. QL – Quantitation Limit. Detections in samples: the number of times the analyte was detected in Phase V sampling compared to the total number of samples collected. Minimum and maximum sample concentrations in Phase V sampling in mg/L are provided for reference.

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Table B7. ICP-OES blank results for digested samples (unfiltered).

Label	Date	Mn	Mo	Na	Sb	Sr	Ti	Zn	Si	S	P
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FieldBlk01	4/16/2012	<0.004	<0.006	<0.569	<0.006	<0.001	<0.002	<0.017	<0.144	<0.153	<0.020
FieldBlk02	4/18/2012	<0.004	<0.006	<0.569	BQL 0.006	<0.001	<0.002	<0.017	<0.144	<0.153	<0.020
FieldBlk03	4/22/2012	<0.004	<0.006	<0.569	<0.006	<0.001	<0.002	<0.017	<0.144	<0.153	<0.020
FieldBlk04	4/24/2012	<0.004	<0.006	<0.569	<0.006	<0.001	<0.002	<0.017	<0.144	<0.153	<0.020
EquipBlk01	4/16/2012	<0.004	<0.006	<0.569	<0.006	<0.001	<0.002	<0.017	<0.144	<0.153	<0.020
EquipBlk02	4/18/2012	<0.004	<0.006	<0.569	BQL 0.007	<0.001	<0.002	<0.017	<0.144	<0.153	<0.020
EquipBlk04	4/24/2012	<0.004	<0.006	<0.569	<0.006	<0.001	<0.002	<0.017	<0.144	<0.153	<0.020
MDL		0.004	0.006	0.569	0.006	0.001	0.002	0.017	0.144	0.153	0.020
QL		0.016	0.019	1.90	0.019	0.004	0.007	0.056	0.482	0.511	0.067
Detections in samples		6/12	5/12	12/12	2/12	12/12	3/12	1/12	12/12	12/12	0/12
Concentration min		BQL 0.005	BQL 0.007	189	BQL 0.006	0.056	BQL 0.003	0.168	4.80	5.35	--
Concentration max		0.092	BQL 0.010	1290	BQL 0.011	2.94	0.011	--	11.9	1130	--

Units are mg/L. BQL – below quantitation level. MDL – Method Detection Limit. QL – Quantitation Limit. Detections in samples: the number of times the analyte was detected in Phase V sampling compared to the total number of samples collected. Minimum and maximum sample concentrations in Phase V sampling in mg/L are provided for reference.

Table B8. ICP-MS blank results for undigested and digested samples.

Label	Date	As	Cd	Cr	Cu	Ni	Pb	Sb	Se	Tl
Undigested (filtered)		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
FieldBlk01	4/16/2012	<1.00	<1.00	BQL 0.96	BQL 1.1	<1.00	BQL 0.23	<2.00	<5.0	<1.00
FieldBlk02	4/18/2012	BQL 0.24	<1.00	13.4	BQL 1.7	13.5	BQL 0.94	<2.00	<5.0	<1.00
FieldBlk03	4/22/2012	<1.00	BQL 0.14	BQL 1.4	BQL 1.3	<1.00	BQL 0.59	BQL 0.30	<5.0	BQL 0.35
FieldBlk04	4/24/2012	<1.00	BQL 0.45	BQL 1.5	BQL 1.3	<1.00	BQL 0.55	BQL 0.20	<5.0	BQL 0.10
EquipBlk01	4/16/2012	<1.00	BQL 0.23	BQL 0.29	BQL 0.87	<1.00	BQL 0.13	BQL 0.13	<5.0	<1.00
EquipBlk02	4/18/2012	<1.00	BQL 0.10	BQL 0.40	BQL 0.90	<1.00	BQL 0.13	BQL 0.11	<5.0	<1.00
EquipBlk04	4/24/2012	<1.00	BQL 0.12	BQL 0.78	BQL 1.1	<1.00	BQL 0.39	BQL 0.09	<5.0	<1.00
MDL		0.18	0.063	0.062	0.11	0.11	0.025	0.084	1.2	0.043
QL		1.00	1.00	2.00	2.00	1.00	1.00	2.00	5.0	1.00
Label	**Date**	**As**	**Cd**	**Cr**	**Cu**	**Ni**	**Pb**	**Sb**	**Se**	**Tl**
Digested (total)		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
FieldBlk01	4/16/2012	<1.00	<1.00	BQL 0.35	BQL 0.52	<1.00	BQL 0.17	<2.00	<5.0	BQL 0.31
FieldBlk02	4/18/2012	<1.00	BQL 0.09	BQL 0.45	BQL 0.45	<1.00	BQL 0.16	<2.00	<5.0	BQL 0.12
FieldBlk03	4/22/2012	<1.00	<1.00	BQL 0.30	BQL 0.32	<1.00	<1.00	<2.00	<5.0	BQL 0.07
FieldBlk04	4/24/2012	<1.00	<1.00	BQL 1.4	3.4	1.4	BQL 0.40	<2.00	<5.0	BQL 0.05
EquipBlk01	4/16/2012	BQL 0.42	BQL 0.10	BQL 0.37	BQL 0.37	<1.00	<1.00	BQL 0.30	<5.0	BQL 0.41
EquipBlk02	4/18/2012	<1.00	<1.00	BQL 1.1	BQL 0.63	<1.00	BQL 0.28	BQL 0.18	<5.0	BQL 0.13
EquipBlk04	4/24/2012	<1.00	<1.00	BQL 0.50	BQL 0.31	<1.00	<1.00	BQL 0.12	<5.0	BQL 0.07
MDL		0.18	0.063	0.062	0.11	0.11	0.025	0.084	1.2	0.043
QL		1.00	1.00	2.00	2.00	1.00	1.00	2.00	5.0	1.00

Units are µg/L. BQL – below quantitation level. MDL – Method Detection Limit. QL – Quantitation Limit. Note: non-detect concentration values are reported as below the QL.

Table B9. Blank results for capillary electrophoresis, Lachat flow injection analysis, inorganic carbon and organic carbon analyses in Phase V.

Label	Date	Cl	SO_4	F	NO_3+NO_2	NH_4	DIC	DOC
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FieldBlk01	4/16/2012	<0.106	<0.049	<0.029	<0.008	<0.006	BQL 0.220	<0.044
FieldBlk02	4/18/2012	<0.106	<0.049	<0.029	BQL 0.009	<0.006	BQL 0.229	BQL 0.076
FieldBlk03	4/22/2012	<0.106	<0.049	<0.029	<0.008	<0.006	BQL 0.203	<0.044
FieldBlk04	4/24/2012	<0.106	<0.049	<0.029	BQL 0.028	<0.006	BQL 0.220	BQL 0.067
EquipBlk01	4/16/2012	<0.106	<0.049	<0.029	<0.008	<0.006	BQL 0.214	<0.044
EquipBlk02	4/18/2012	<0.106	<0.049	<0.029	BQL 0.008	<0.006	BQL 0.208	<0.044
EquipBlk04	4/24/2012	<0.106	<0.049	<0.029	<0.008	<0.006	BQL 0.203	BQL 0.067
MDL		0.106	0.049	0.029	0.008	0.006	0.067	0.044
QL		1.00	1.00	0.200	0.050	0.100	0.50	1.00
Detections in samples		20/20	20/20	20/20	10/20	12/20	12/12	12/12
Concentration min		8.51	13.5	BQL 0.382	BQL 0.019	BQL 0.062	1.25	BQL 0.370
Concentration max		495	3470	2.37	0.138	2.61	19.8	19.4

Units are mg/L. BQL – below quantitation level. MDL – Method Detection Limit. QL – Quantitation Limit. Detections in samples: the number of times the analyte was detected in Phase V sampling compared to the total number of samples collected. Minimum and maximum sample concentrations in Phase V sampling in mg/L are provided for reference.

Table B10. Blank results for organic acid analyses in Phase V.

Label	Date	Lactate	Formate	Acetate	Propionate	Isobutyrate	Butyrate
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FieldBlk01	4/16/2012	<0.009	1.69	<0.009	<0.016	<0.008	<0.009
FieldBlk02	4/18/2012	<0.009	1.77	<0.009	<0.016	<0.008	<0.009
FieldBlk03	4/22/2012	<0.009	2.12	<0.009	<0.016	<0.008	<0.009
FieldBlk04	4/24/2012	<0.009	2.67	<0.009	<0.016	<0.008	<0.009
EquipBlk01	4/16/2012	<0.009	1.63	<0.009	<0.016	<0.008	<0.009
EquipBlk02	4/18/2012	<0.009	1.83	<0.009	<0.016	<0.008	<0.009
EquipBlk04	4/24/2012	<0.009	2.67	<0.009	<0.016	<0.008	<0.009
MDL		0.009	0.012	0.009	0.016	0.008	0.009
QL		0.10	0.10	0.10	0.10	0.10	0.10
Detections in samples		1/12	12/12	5/12	5/12	0/12	0/12
Concentration min		0.25	0.55	2.84	BQL 0.075	--	--
Concentration max		--	3.06	6.08	0.844	--	--

Units are mg/L. BQL – below quantitation level. MDL – Method Detection Limit. QL – Quantitation Limit. Detections in samples: the number of times the analyte was detected in Phase V sampling compared to the total number of samples collected. Minimum and maximum sample concentrations in Phase V sampling in mg/L are provided for reference.

Table B11. Blank results for alcohols, aromatic, and chlorinated hydrocarbons (µg/L) in Phase V (Shaw Environmental, Ada, OK).

Label	FieldBlk01	FieldBlk02	FieldBlk03	FieldBlk04	EquipBlk01	EquipBlk02	EquipBlk04	TripBlk01	TripBlk02	TripBlk03	TripBlk04	MDL	QL
Date	4/16/12	4/18/12	4/22/12	4/24/12	4/16/12	4/18/12	4/24/12	4/17/12	4/18/12	4/22/12	4/24/12		
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Vinyl chloride	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	0.14	1.0
1,1-Dichloroethene	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.07	0.5
Methylene Chloride	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	0.19	0.5
trans-1,2-Dichloroethene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	0.5
1,1-dichloroethane	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	0.15	0.5
cis-1,2-Dichloroethene	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.07	0.5
Chloroform	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	0.5
1,1,1-Trichloroethane	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	0.5
Carbon Tetrachloride	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	0.5
1,2-Dichloroethane	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.07	0.5
Trichloroethene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	0.5
1,1,2-Trichloroethane	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	0.09	0.5
Tetrachloroethene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	0.5
Chlorobenzene	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.06	0.5
1,3-Dichlorobenzene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	0.5
1,4-Dichlorobenzene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	0.5
1,2-Dichlorobenzene	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	0.11	1.0
Ethanol	<24.7	<24.7	<24.7	<24.7	<24.7	<24.7	<24.7	<24.7	<24.7	<24.7	<24.7	24.7	100
Isopropanol	<11.4	<11.4	<11.4	<11.4	<11.4	<11.4	<11.4	<11.4	<11.4	<11.4	<11.4	11.4	100
n-Propanol	<13.5	<13.5	<13.5	<13.5	<13.5	<13.5	<13.5	<13.5	<13.5	<13.5	<13.5	13.5	100
Isobutanol	<15.6	<15.6	<15.6	<15.6	<15.6	<15.6	<15.6	<15.6	<15.6	<15.6	<15.6	15.6	100

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Table B11. Blank results for alcohols, aromatic, and chlorinated hydrocarbons (µg/L) in Phase V (Shaw Environmental, Ada, OK) cont.

Label	FieldBlk01	FieldBlk02	FieldBlk03	FieldBlk04	EquipBlk01	EquipBlk02	EquipBlk04	TripBlk01	TripBlk02	TripBlk03	TripBlk04	MDL	QL
Date	4/16/12	4/18/12	4/22/12	4/24/12	4/16/12	4/18/12	4/24/12	4/17/12	4/18/12	4/22/12	4/24/12		
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
n-Butanol	<15.5	<15.5	<15.5	<15.5	<15.5	<15.5	<15.5	<15.5	<15.5	<15.5	<15.5	15.5	100
Acetone	<3.97	<3.97	<3.97	<3.97	<3.97	<3.97	<3.97	<3.97	<3.97	<3.97	<3.97	3.97	5.0
tert-Butyl Alcohol	<1.72	<1.72	<1.72	<1.72	<1.72	<1.72	<1.72	<1.72	<1.72	<1.72	<1.72	1.72	5.0
Methyl tert-Butyl Ether	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	0.11	0.5
di-Isopropyl Ether	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	0.11	0.5
Ethyl tert-Butyl Ether	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	0.5
Benzene	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.06	0.5
tert-Amyl Methyl Ether	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.06	0.5
2,5-Dimethylfuran	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	0.5
Toluene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	BQL 0.297	<0.03	<0.03	<0.03	<0.03	0.03	0.5
1,2-Dibromoethane	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	0.09	1.0
Ethyl Benzene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	0.5
m+p Xylene	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	0.08	0.5
o-Xylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	0.5
1,3,5-Trimethylbenzene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	1.0
1,2,4-Trimethylbenzene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	1.0
1,2,3-Trimethylbenzene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	1.0
Naphthalene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	1.0

Results in µg/L. BQL – below quantitation level. MDL – Method Detection Limit. QL – Quantitation Limit.

EPAPAV0000948

Table B12. Blank results for Volatile Organic Compounds (µg/L) in Phase V (Region 8 laboratory, Golden, CO).

Label	FieldBlk01	FieldBlk02	FieldBlk03	FieldBlk04	EquipBlk01	EquipBlk02	EquipBlk03	EquipBlk04	TripBlk01	TripBlk02	TripBlk03	TripBlk04	QL
Date	4/16/12	4/18/12	4/22/12	4/24/12	4/16/12	4/18/12	4/22/12	4/24/12	4/17/12	4/18/12	4/22/12	4/24/12	
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1,1,1,2-Tetrachloroethane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,1,1-Trichloroethane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,1,2,2-Tetrachloroethane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,1,2-Trichloroethane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,1-Dichloroethane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,1-Dichloroethene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,1-Dichloropropene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,2,3-Trichlorobenzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,2,3-Trichloropropane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,2,4-Trichlorobenzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,2,4-Trimethylbenzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,2-Dibromo-3-chloropropane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,2-Dibromoethane (EDB)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,2-Dichlorobenzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,2-Dichloroethane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,2-Dichloropropane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,3,5-Trimethylbenzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,3-Dichlorobenzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,3-Dichloropropane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,3-Dimethyl adamantane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
1,4-Dichlorobenzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25

EPAPAV0000949

Table B12. Blank results for Volatile Organic Compounds (µg/L) in Phase V (Region 8 laboratory, Golden, CO) cont.

Label	FieldBlk01	FieldBlk02	FieldBlk03	FieldBlk04	EquipBlk01	EquipBlk02	EquipBlk03	EquipBlk04	TripBlk01	TripBlk02	TripBlk03	TripBlk04	QL
Date	4/16/12	4/18/12	4/22/12	4/24/12	4/16/12	4/18/12	4/22/12	4/24/12	4/17/12	4/18/12	4/22/12	4/24/12	
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
2,2-Dichloropropane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
2-Butanone	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50
2-Chlorotoluene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
2-Hexanone	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
4-Chlorotoluene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
4-Methyl-2-pentanone	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Acetone	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Acrylonitrile	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Adamantane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Allyl chloride	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Benzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Bromobenzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Bromochloromethane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Bromodichloromethane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Bromoform	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Bromomethane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Carbon disulfide	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Carbon tetrachloride	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Chlorobenzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Chlorodibromomethane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Chloroethane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25

EPAPAV0000950

Table B12. Blank results for Volatile Organic Compounds (µg/L) in Phase V (Region 8 laboratory, Golden, CO) cont.

Label	FieldBlk01	FieldBlk02	FieldBlk03	FieldBlk04	EquipBlk01	EquipBlk02	EquipBlk03	EquipBlk04	TripBlk01	TripBlk02	TripBlk03	TripBlk04	QL
Date	4/16/12	4/18/12	4/22/12	4/24/12	4/16/12	4/18/12	4/22/12	4/24/12	4/17/12	4/18/12	4/22/12	4/24/12	
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Chloroform	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Chloromethane	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.25
cis-1,2-Dichloroethene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
cis-1,3-Dichloropropene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Dibromomethane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Dichlorodifluoromethane	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Ethyl Ether	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Ethylbenzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Hexachlorobutadiene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Hexachloroethane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Iodomethane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Isopropylbenzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
m,p-Xylene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50
Methacrylonitrile	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Methyl Acrylate	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Methyl tert-Butyl Ether	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Methylene chloride	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Naphthalene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
n-Butyl Benzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
n-Propyl Benzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
o-Xylene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25

EPAPAV0000951

Table B12. Blank results for Volatile Organic Compounds (µg/L) in Phase V (Region 8 laboratory, Golden, CO) cont.

Label	FieldBlk01	FieldBlk02	FieldBlk03	FieldBlk04	EquipBlk01	EquipBlk02	EquipBlk03	EquipBlk04	TripBlk01	TripBlk02	TripBlk03	TripBlk04	QL
Date	4/16/12	4/18/12	4/22/12	4/24/12	4/16/12	4/18/12	4/22/12	4/24/12	4/17/12	4/18/12	4/22/12	4/24/12	
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
p-Isopropyltoluene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
sec-Butylbenzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.25
Styrene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
tert-Butylbenzene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Tetrachloroethene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Toluene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.310	<1.00	<1.00	<1.00	<1.00	1.00
trans-1,2-Dichloroethene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
trans-1,3-Dichloropropene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Trichloroethene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Trichlorofluoromethane	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Vinyl chloride	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.25
Xylenes (total)	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00

Results in µg/L . QL – Quantitation Limit. Note all values flagged as estimated due to missing second source calibration verification.

EPAPAV0000952

Table B13. Blank results for Semi-Volatile Organic Compounds (µg/L) in Phase V (Region 8 laboratory, Golden, CO).

Label	FieldBlk01	FieldBlk02	FieldBlk03	FieldBlk04	EquipBlk01	EquipBlk02	EquipBlk03	EquipBlk04	QL
Date	4/16/12	4/18/12	4/22/12	4/24/12	4/16/12	4/18/12	4/22/12	4/24/12	
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Limonene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
1,2,4-Trichlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
1,2-Dichlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
1,2-Dinitrobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
1,3-Dichlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
1,3-Dinitrobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
1,3-Dimethyl adamantane	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
1,4-Dichlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
1,4-Dinitrobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
1-Methylnaphthalene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
2,3,4,6-Tetrachlorophenol	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	2.00
2,3,5,6-Tetrachlorophenol	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	2.00
2,4,5-Trichlorophenol	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	2.00
2,4,6-Trichlorophenol	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	2.00
2,4-Dichlorophenol	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	2.00
2,4-Dimethylphenol	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	2.00
2,4-Dinitrophenol	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	3.00
2,4-Dinitrotoluene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
2,6-Dinitrotoluene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
2-Butoxyethanol	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
2-Butoxyethanol phosphate	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00

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Table B13. Blank results for Semi-Volatile Organic Compounds (µg/L) in Phase V (Region 8 laboratory, Golden, CO) cont.

Label	FieldBlk01	FieldBlk02	FieldBlk03	FieldBlk04	EquipBlk01	EquipBlk02	EquipBlk03	EquipBlk04	QL
Date	4/16/12	4/18/12	4/22/12	4/24/12	4/16/12	4/18/12	4/22/12	4/24/12	
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
2-Chloronaphthalene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
2-Chlorophenol	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	2.00
2-Methylnaphthalene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
2-Methylphenol	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	2.00
2-Nitroaniline	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
2-Nitrophenol	<2.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	2.00
3&4-Methylphenol	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	5.00
3,3′-Dichlorobenzidine	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
3-Nitroaniline	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	3.00
4,6-Dinitro-2-methylphenol	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	2.00
4-Bromophenyl phenyl ether	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
4-Chloro-3-methylphenol	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	2.00
4-Chloroaniline	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	3.00
4-Chlorophenyl phenyl ether	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
4-Nitroaniline	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	3.00
4-Nitrophenol	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	3.00
Acenaphthene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Acenaphthylene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Adamantane	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Aniline	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Anthracene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00

Table B13. Blank results for Semi-Volatile Organic Compounds (µg/L) in Phase V (Region 8 laboratory, Golden, CO) cont.

Label	FieldBlk01	FieldBlk02	FieldBlk03	FieldBlk04	EquipBlk01	EquipBlk02	EquipBlk03	EquipBlk04	QL
Date	4/16/12	4/18/12	4/22/12	4/24/12	4/16/12	4/18/12	4/22/12	4/24/12	
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Azobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Benzo (a) anthracene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Benzo (a) pyrene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Benzo (b) fluoranthene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Benzo (g,h,i) perylene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Benzo (k) fluoranthene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Benzoic acid	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	3.00
Benzyl alcohol	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Bis(2-chloroethoxy)methane	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Bis(2-chloroethyl)ether	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Bis(2-chloroisopropyl)ether	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Bis(2-Ethylhexyl) adipate	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Bis(2-ethylhexyl)phthalate	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	2.00
Butyl benzyl phthalate	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Carbazole	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00	3.00
Chrysene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Dibenz (a,h) anthracene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Dibenzofuran	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Diethyl phthalate	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Dimethyl phthalate	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Di-n-butyl phthalate	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00

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Table B13. Blank results for Semi-Volatile Organic Compounds (µg/L) in Phase V (Region 8 laboratory, Golden, CO) cont.

Label	FieldBlk01	FieldBlk02	FieldBlk03	FieldBlk04	EquipBlk01	EquipBlk02	EquipBlk03	EquipBlk04	QL
Date	4/16/12	4/18/12	4/22/12	4/24/12	4/16/12	4/18/12	4/22/12	4/24/12	
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Di-n-octyl phthalate	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Diphenylamine	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Fluoranthene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Fluorene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Hexachlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Hexachlorobutadiene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Hexachlorocyclopentadiene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Hexachloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Indeno (1,2,3-cd) pyrene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Isophorone	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.17	1.00
Naphthalene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Nitrobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
N-Nitrosodimethylamine	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
N-Nitrosodi-n-propylamine	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Pentachlorophenol	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	2.00
Phenanthrene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Phenol	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	2.00
Pyrene	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Pyridine	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00
Squalene	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	2.00
Terpinol	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.00

Results in µg/L. QL – Quantitation Limit.

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Table B14. Blank results for GRO and DRO analyses in Phase V (Region 8 laboratory, Golden, CO) and blank results for 2-butoxyethanol and glycol ethers in Phase V sampling (Region 3 laboratory, Fort Meade, MD).

	FieldBlk01	FieldBlk02	FieldBlk03	FieldBlk04	EquipBlk01	EquipBlk02	EquipBlk03	EquipBlk04	QL
Date	4/16/12	4/18/12	4/22/12	4/24/12	4/16/12	4/18/12	4/22/12	4/24/12	
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Gasoline Range Organics	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	22.4	20.0
Diesel Range Organics	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	20.0
2-Butoxyethanol	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--	<5.0	5.0
Diethylene Glycol	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--	<5.0	5.0
Triethylene Glycol	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	--	<10.0	10.0
Tetraethylene Glycol	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	--	<10.0	10.0

Results in µg/L. QL - Quantitation Limit. - No sample.

Table B15. Blank results for methanol, propylene glycol, and ethylene glycol (ALS Environmental, Holland, MI).

	FieldBlk01	FieldBlk02	FieldBlk03	FieldBlk04	EquipBlk01	EquipBlk02	EquipBlk04	QL
Date	4/16/12	4/18/12	4/22/12	4/24/12	4/16/12	4/18/12	4/24/12	
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Methanol	<5000	<5000	<5000	<5000	<5000	<5000	<5000	5000
Propylene Glycol	<5000	<5000	<5000	<5000	<5000	<5000	<5000	5000
Ethylene Glycol	<5000	<5000	<5000	<5000	<5000	<5000	<5000	5000

Results in µg/L. QL - Quantitation Limit.

Table B16. Blank results for ethoxylates, alkylphenols, and acrylamide (EPA ORD/NERL Las Vegas).

	FieldBlk01	FieldBlk02	FieldBlk03	FieldBlk04	EquipBlk01	EquipBlk02	EquipBlk03	EquipBlk04	QL
Date	4/16/12	4/18/12	4/22/12	4/24/12	4/16/12	4/18/12	4/22/12	4/24/12	
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
Nonylphenol ethoxylate	0.37	0.09	0.07	0.09	0.17	0.09	0.07	0.16	0.2
Nonylphenol	0.42	0.06	<0.05	0.07	0.05	0.06	0.07	<0.05	0.05
Octylphenol	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Ethoxylated alcohol C12	0.30	0.24	<0.05	0.08	0.10	0.44	0.12	0.05	0.05
Ethoxylated alcohol C13	0.58	<0.05	0.05	0.06	0.15	<0.05	0.17	0.09	0.05
Ethoxylated alcohol C14	0.38	0.65	0.06	0.24	0.14	1.16	0.12	0.11	0.05
Ethoxylated alcohol C15	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	0.07	<0.05	0.05
Acrylamide	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.2

Table B17. Blank results for Methylene Blue Active Substances (TestAmerica, Savannah, GA).

	FieldBlk01	FieldBlk02	FieldBlk03	FieldBlk04	EquipBlk01	EquipBlk02	EquipBlk04		QL
Date	4/16/12	4/18/12	4/22/12	4/24/12	4/16/12	4/18/12	4/24/12		
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L
Methylene Blue Active Substances (MBAS)	*	<0.20	<0.20	<0.20	*	<0.20	<0.20		0.20

QL - Quantitation Limit. *- samples lost during shipment. Units are in mg/L as linear alkyl benzene sulfonate (LAS, molecular weight = 340).

B5. Duplicate Samples

Field duplicate samples were collected to measure the reproducibility and precision of field sampling and analytical procedures. Field duplicates were collected for wells PGDW20 and EPAMW01, or for 2 of the 9 wells sampled in Phase V. The relative percent difference was calculated to compare concentration differences between the primary (sample 1) and duplicate sample (sample 2) using the following equation:

RPD(%) = |[2*(sample1-sample2)/((sample1+sample2)]*100|.

RPDs were calculated when constituents in both the primary sample and duplicate sample were above method QLs. Constituents are flagged if RPDs are >30% and if analyte concentrations are >5◊ the QL. RPDs for a majority of the constituents were less than or equal to 10% (81% of the comparisons), and indicated very good precision for most inorganic and organic analytes. Benzoic acid and acetate had RPDs >30% and concentrations >5◊ the QL for samples EPAMW01-0412 and EPAMW01d-0412. Samples with detections of these analytes are flagged accordingly as estimated values.

Analyses of dissolved trace metals by ICP-MS (CLP results) are in poor agreement between the primary sample and duplicate sample for PGDW20-0412, for all metals analyzed (As, Cd, Cr, Cu, Ni, Pb, Sb, Se, and Tl). ICP-MS results for total metals are in reasonable agreement for the PGDW20-0412/PGDW20d-0412 pair, and these results are consistent with dissolved metals concentrations detected in a field duplicate, PGDW20d-0412. Thus, the high levels of metals detected in PGDW20-0412 are likely due to contamination in the laboratory. Consequently, dissolved metals results for sample PGDW20-0412 are rejected. (Note: the trace metal data reported for Phase V were analyzed through EPA's Contract Laboratory Program (CLP). The original trace metal analysis of these samples, conducted by Shaw Environmental, did not show this discrepancy. See section B9 for additional details.). A laboratory duplicate analysis of total metals in sample PGDW30-0412 exceeded QC criteria listed in Table B37 for Cr, Pb, and Ni. Concentration data (totals) for these elements are flagged with the * data qualifier where appropriate (Table B31).

Results of selected duplicate analyses (major constituents, critical analytes) are presented in Tables B18 and B19.

B6. Laboratory Notes

Tables B20-B29 provide QA/QC requirements for laboratory analyses conducted as part of the Phase V investigation. Table B30 summarizes laboratory QA/QC narratives regarding sample analysis, such as laboratory duplicate analysis, laboratory blank analysis, matrix spike results, calibration, and continuing calibration checks. Impacts on data quality of any issues noted in the QA narratives are also presented in Table B30. Data qualifiers are listed in Table B31. Many of the specific QA/QC observations noted in the Audit of Data Quality are summarized in Table B30.

B.7 Double-lab Comparison of VOCs

Shaw Environmental and EPA Region 8 analyzed samples for volatile organic compounds using EPA methods (Table B1). Shaw Environmental used EPA Method 5021A plus 8260C (GC-MS, equilibrium headspace analysis). The EPA Region 8 laboratory used EPA Method 5035 plus 8260C (GC-MS, closed-system purge-and-trap). A comparison is made of data for overlapping analytes for two samples collected from MW02 (EPAMW02-0412-1 and EPAMW02-0412-2). These two samples are not field duplicates; they were collected at different stages of well purging. For these two samples, detections were reported by both laboratories for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, acetone, benzene, ethylbenzene, m,p-xylene, naphthalene, o-xylene, and toluene. Results from the two labs are provided in Table B32 and graphically represented in Figure B1. RPD values for the majority of the constituents are below or equal to 12% (83% of comparisons). Acetone shows the highest deviation, but is within 40% in both comparisons. These results show very good agreement and demonstrate accurate identification and quantitation of volatile organic compounds in groundwater from MW02.

B8. Performance Evaluation Samples

A series of performance evaluation (PE) samples were submitted by the EPA Ground Water and Ecosystems Restoration Division QA Manager to selected

laboratories conducting critical analyses to support the Phase V effort at Pavillion. Samples were submitted to the EPA Region 8 laboratory for DRO/GRO, semivolatile, and volatile organic compounds; Shaw Environmental for VOCs, tert-butyl alcohol, and potassium; EPA General Parameters laboratory for chloride; and, to the USGS/TestAmerica contract laboratory for GRO/DRO, gasoline additives, semivolatile and volatile organic compounds, and inorganic compounds. PE Samples were delivered to these labs at about the same time samples arrived from the field. In most cases, the PE samples were run in the same laboratory batches as the field samples. Results of the blind PE tests are presented in Tables B33 to B36. These tables show the results of 233 tests; 100% of the reported values fell within the acceptance range. These blind PE sample results demonstrate the high quality of analytical data reported here.

Table B18. Field duplicate data for selected major ions, DOC, and DIC in groundwater samples collected during Phase V.

Sample	Date	Na	K	Ca	Mg	Ba	Sr	Si	Cl	SO4	F	NO3	DOC	DIC
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PGDW20-0412	4/16/2012	490	1.64	57.9	5.93	0.008	0.86	5.69	32.3	1130	0.94	0.073	0.632	14.9
PGDW20d-0412	4/16/2012	493	1.27	58.3	5.95	0.009	0.87	5.68	32.3	1240	1.03	BQL 0.045	0.627	14.8
RPD (%)		0.4	25.4	0.7	0.3	3.6	1.0	0.2	0.0	9.3	8.8	NC	0.8	0.7
EPAMW01-0412	4/30/2012	276	17.3	9.87	0.139	0.021	0.32	10.5	19.4	390	2.29	0.120	5.63	15.2
EPAMW01d-0412	4/30/2012	277	17.2	9.91	0.152	0.021	0.31	10.5	20.9	388	2.33	BQL 0.045	5.75	15.2
RPD (%)		0.4	0.6	0.4	8.9	1.4	3.2	0.0	7.4	0.5	1.7	NC	2.1	0.0

RPD is the calculated relative percent difference: RPD = |[2*(sample1-sample2)/((sample1+sample2)]*100 |. NC - not calculated. BQL - below quantitation level. Units are mg/L. RPD is calculated if both the primary and duplicate samples show analyte concentrations above the method quantitation limit (QL).

Table B19. Field duplicate data for methane and selected dissolved organic compounds in groundwater samples collected during Phase V sampling.

Sample	Date	Methane	Benzene	Toluene	m,p-Xylenes	Isopropyl alcohol	Tert-butyl alcohol	Phenol	Diethylene Glycol	Triethylene Glycol	Acetone	DRO	GRO
		mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
PGDW20-0412	4/16/2012	0.111	<0.06	<0.03	<0.08	<11.4	<1.72	<2.0	<5.0	<10.0	<1.0	<20	<20
PGDW20d-0412	4/16/2012	0.108	<0.06	<0.03	<0.08	<11.4	<1.72	<2.0	<5.0	<10.0	<1.0	<20	<20
RPD (%)		2.7	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
EPAMW01-0412	4/30/2012	17.3	<0.06	BQL 0.262	<0.08	BQL 69.8	<1.72	8.09	53.9	11.5	155	528	484
EPAMW01 d-0412	4/30/2012	17.3	<0.06	BQL 0.259	<0.08	BQL 69.2	<1.72	8.42	53.9	11.6	133	539	476
RPD (%)		0.0	NC	NC	NC	NC	NC	4.0	0.0	0.9	15.3	2.1	1.7

RPD is the calculated relative percent difference: RPD = |[2*(sample1-sample2)/((sample1+sample2)]*100 |. NC - not calculated. Methane is from the dissolved gas analysis. Benzene, toluene, m,p-xylenes, isopropyl alcohol, and tert-butyl alcohol are from RSKSOP259v1 (alcohols, aromatics, and chlorinated hydrocarbons). Phenol is from EPA Method 8270D (semi-volatile organic compounds). Diethylene and triethylene glycol are from the Region 3 HPLC-MS-MS method. Acetone is from EPA Method 5035 plus 8260C (volatile organic compounds). RPD is calculated if both the primary and duplicate samples show analyte concentrations above the method quantitation limit (QL).

Table B20. QA/QC requirements for analysis of metals and major ions.

Measurement	Analysis Method	Blanks (Frequency)	Calibration Checks (Frequency)	Second Source (Frequency)	Duplicates (Frequency)	Matrix Spikes (Frequency)
Metals * ICP-OES	RSKSOP-213v4 (EPA Methods 200.7 and 6020)	<QL for 80% of metals; (Beginning and end of each sample queue, 10-15 samples)	90-110% of known value (Beginning and end of each sample queue, 10-15 samples)	PE sample acceptance limits or 90-110% of known value (Immediately after first calibration check)	RPD<10 for 80% of metals; for results <5x QL, difference of ≤QL (Every 15 samples)	90-110% Rec. for 80% of metals w/ no individual exceeding 50-150% Rec. (one per sample set, 10-15 samples)
Metals ICP-MS**	RSKSOP-257v3 (EPA Methods 200.7 and 6020)	<QL for 80% of metals; none>10xMDL (Beginning and end of each sample queue, 10-15 samples)	90-110% of known value (Beginning and end of each sample queue, 10-15 samples)	PE sample acceptance limits or 90-110% of known value (Immediately after first calibration check)	RPD<10 for 80% of metals; for results <5xQL, difference of <QL (Every 15 samples)	90-110% Rec. for 80% of metals w/ no individual exceeding 70-130% (one per sample set, 10-15 samples)
SO_4, Cl, F, Br	RSKSOP-276v3 (EPA Method 6500)	<MDL (Beginning and end of each sample queue)	90-110% Rec. (Beginning, end, and every 10 samples)	PE sample acceptance limits (One per sample set)	RPD<10 (every 15 samples)	80-120% Rec. (one per every 20 samples)
NO_3 + NO_2, NH_4	RSKSOP-214v5 (EPA Method 350.1 and 353.2)	<½ lowest calib. std. (Beginning and end of each sample queue)	90-110% Rec. (Beginning, end, and every 10 samples)	PE sample acceptance limits (One per sample set)	RPD<10 (every 10 samples)	80-120% Rec. (one per every 20 samples)

*Note: Modifications made to criteria for RSKSOP-21 3v4 (ICP-OES) as follows. Blank frequency changed to every 10 samples. Digestion blanks frequency changed to every 20 samples. Calibration checks run every 10 samples. Duplicate RPD acceptance increased to ≤15% for 100% of metals ≥50 QL (every 10 samples). For digestions, duplicate RPD acceptance changed to ≤20% for 100% of metals ≥50 QL (every 20 samples). Matrix spike acceptance e xpanded to 80-120% recovery for 100% of metals (every 20 samples). Pre-digestion recovery expanded to 75-125% recovery for 100% of metals; post-digestion analyzed if pre-digestion exceeds limits. **The ICP-MS data using this method were not included in this report. See section B9 for discussion. See Table B37 for EPA CLP QC criteria.

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Table B21. QA/QC requirements for analysis of dissolved gases, DIC/DOC, VOCs, low molecular weight acids and stable isotopes of water.

Measurement	Analysis Method	Blanks (Frequency)	Calibration Checks (Frequency)	Second Source (Frequency)	Duplicates (Frequency)	Matrix Spikes (Frequency)
Dissolved gases	RSKSOP-194v4 &-175v5 (No EPA Method)	≤MDL (He/Ar blank, first and last in sample queue; water blank before samples)	85-115% of known value (After helium/Ar blank at beginning of analysis queue, before helium/Ar blank at end of sample set, and every 15 samples)	85-115% of known value; after first calibration check	RPD≤20; every 15 samples	NA
DIC/DOC	RSKSOP- 330v0 (EPA Method 9060A)	<MDL (Beginning and end of sample set)	90-100% of known value (Beginning and end of sample set and every 10 samples)	PE sample reported acceptance limits. Others: 90-100% recovery (one per sample set)	RPD<10; every 10 samples	80-120% recovery
Alcohols, aromatics, and chlorinated hydrocarbons*	RSKSOP-259v1 (EPA Method 5021A plus 8260C)	<MDL (Beginning and end of each sample set)	80-120% recovery (Beginning, end, and every 20 samples)	80-120% of known value; at beginning	RPD<25; every 20 samples	70-130% recovery; every 20 samples
Low Molecular Weight Acids	RSKSOP-112v6 (No EPA Method)	<MDL (Beginning of a sample queue; every 10 samples; and end of sample queue)	85-115% recovery; prior to sample analysis; every 10 samples; end of sample queue	85-115% recovery; prior to sample analysis	<15 RPD; every 20 samples through a sample queue	80-120% recovery; every 20 samples through a sample queue
O, H stable isotopes of water**	RSKSOP-334v0 (No EPA Method)	NA	Difference of calibrated/true < 1.5‰ for δ^2H & <0.3‰ for δ^{18}O (Beginning, end, and every 20 samples)	Working stds calibrated against IAEA stds.† (Beginning, end, and every tenth sample)	Difference ≤ 1.5‰ for δ^2H and <0.3‰ for δ^{18}O (Beginning and end of sample set and every twenty samples)	NA

*Surrogate compounds spiked at 100 µg/L: p-bromofluorobenzene and 1,2-dichlorobenzene-d4, 85-115% recovery. **Additional checks: internal reproducibility prior to each sample set, std dev ≤1‰ for δ^2H and ≤0.2‰ for δ^{18}O. †International Atomic Energy Agency (VSMOW, GISP, and SLAP). Corrective actions are outlined in the SOPs. MDL = Method Detection Limit. QL = Quantitation Limit. PE = Performance Evaluation.

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Table B22. Region 8 laboratory QA/QC requirements for semi-volatiles, GRO, DRO.

QC Type	Semivolatiles	DRO	GRO	Frequency
Method Blanks	<RL Preparation or Method Blank, one with each set of extraction groups. Calibration Blanks are also analyzed	<RL Preparation or Method Blank	<RL Preparation or Method Blank and IBL	At least one per sample set
Surrogate Spikes	Limits based upon DoD statistical study (rounded to 0 or 5) for the target compound analyses.	60-140% of expected value	70-130% of expected value	Every field and QC sample
Internal Standards Verification	Every sample, EICP area within -50% to +100% of last ICV or first CCV.	NA	NA	Every field and QC sample
Initial multilevel calibration	ICAL: minimum of 6 levels (0.25 - 12.5 µg/L) , one is at the MRL (0.50 µg/L), prior to sample analysis (not daily) RSD≤20%, r^2≥0.990	ICAL: 10-500 µg/L RSD<=20% or r^2≥0.990	ICAL: .25-12.5 ug/L for gasoline (different range for other compounds) RSD<=20% or r^2≥0.990	As required (not daily if pass ICV)
Initial and Continuing Calibration Checks	80-120% of expected value	80-120% of expected value	80-120% of expected value	At beginning of sample set, every tenth sample, and end of sample set
Second Source Standards	ICV1 70-130% of expected value	ICV1 80-120% of expected value	ICVs 80-120% of expected value	Each time calibration performed
Laboratory Control Samples (LCS)	Statistical Limits from DoD LCS Study (rounded to 0 or 5) or if SRM is used based on those certified limits	Use an SRM: Values of all analytes in the LCS should be within the limits determined by the supplier. Otherwise 70-130% of expected value	Use and SRM: Values of all analytes in the LCS should be within the limits determined by the supplier. Otherwise 70-130% of expected value	One per analytical batch or every 20 samples, whichever is greater
Matrix Spikes (MS)	Same as LCS	Same as LCS	70-130% of expected value	One per sample set or every 20 samples, whichever is more frequent
MS/MSD	% Recovery same as MS RPD≤30	% Recovery same as MS RPD≤25	% Recovery same as MS RPD≤25	One per sample set or every 20 samples, whichever is more frequent
Reporting Limits*	0.1 µg/L (generally)[1]for target compounds HF special compounds are higher	20 µg/L[1]	20 µg/L[2]	NA

[1]Based on 1000 mL sample to 1 mL extract. [2]Based on a 5 mL purge.

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Table B23. Isotech Laboratory QA/QC requirements for $\delta^{13}C$ of DIC (Dissolved Inorganic Carbon).

QC Type	Performance Criteria	Frequency
Mass Spec Calibration Check	Difference of calibrated/true ≤0.5‰	One at beginning of day, and one after samples are analyzed.
Mass Spec Zero Enrichment Check	0 ± 0.1‰	Once a day
Lab Duplicates	≤1‰	1 per every 5 samples**

Working standards calibrated against IAEA (International Atomic Energy Agency) standard LSVEC and NBS-19; referenced to $\delta^{13}C$ of the Peedee belemnite (NIST material). **If < 5 samples are submitted, run a duplicate regardless of total number.

Table B24. Isotech Laboratory QA/QC requirements for $\delta^{13}C$ of dissolved methane (and >C1) and δD of dissolved methane.

QC Type	Performance Criteria	Frequency
Mass Spec Calibration Check	Difference of calibrated/true ≤0.5‰ for $\delta^{13}C$ and ≤3‰ for δD	One at beginning of day and after samples are analyzed for $\delta^{13}C$*; one at beginning of day and every tenth sample for δD**
Mass Spec Zero Enrichment Check	0±0.1‰ for $\delta^{13}C$ and 0 ±1 ‰ for δD	Once a day for $\delta^{13}C$ and every tenth sample for δD
Lab Duplicates	≤1‰ for $\delta^{13}C$ and ≤3‰ for δD	1 per every 10 samples***
Preparation System Check/Reference Standards	≤1 ‰ for $\delta^{13}C$ and ≤3‰ for δD	One per every 10 samples

*Working standards calibrated against IAEA (International Atomic Energy Agency) standard LSVEC and NBS-19; referenced to δ13C of the PeeDee belemnite (NIST material). **Working standards calibrated against VSMOW, SLAP, and GISP; referenced to VSMOW. ***If < 10 samples are submitted, run a duplicate regardless of total number.

Table B25. QA/QC requirements for LC/MS/MS analysis of glycols.

QC Type	Performance Criteria	Frequency
Method Blanks	<RL	One per every 20 samples
Solvent Blanks	<RL	One per every 10 samples
Initial and Continuing Calibration Checks	80-120% of expected value	At beginning of sample set, after every tenth sample, and end of sample set
Second Source Standards	80-120% of expected value	Each time calibration performed
Laboratory Control Samples (LCS)	80-120% of expected value	One per analytical batch or every 20 samples, whichever is greater
Matrix Spikes (MS)	70-130% of expected value	One per sample set or every 20 samples, whichever is more frequent
MS/MSD	RPD≤25	One per sample set or every 20 samples, whichever is more frequent

RL = Reporting Limit. Corrective Actions: If re-analysis was not possible (such as lack of sample volume), data were qualified with a determination about the impact on the sample data.

Table B26. Isotech Laboratory QA/QC requirements for tritium.

QC Type	Performance Criteria	Frequency
Calibration Check	Accuracy criteria based on 1 sigma limits of existing data	Dead water blank in every set or minimum of 1 per 12 samples; calibrated with NIST 4361C, 1 per every 12 samples
Lab Duplicates	Precision based on 1 sigma limits of existing data	1 per every 10 samples
Preparation System Check/Reference Standards	Accuracy criteria based on 1 sigma limits of existing data	One per every 12 samples, checks against prepared dilutions of NIST 4361C

Table B27. ALS Environmental QA/QC requirements for methanol, ethylene glycol, and propylene glycol.

Blanks (frequency)	Calibration Checks (frequency)	Second Source (frequency)	Duplicates (frequency)	Matrix Spikes
<½QL (1 per batch of 20 or less samples)	85-115% of known value (after calibration, every 20 samples, end)	85-115% of known value (Each new calibration)	RPD≤50 For MS/MSD pair (every 20 samples or less)	50-150% recovery (One per 20 samples, or less)

Table B28. TestAmerica QA/QC requirements for MBAS.

Blanks (frequency)	Calibration Checks (frequency)	Second Source (frequency)	Duplicates (frequency)	Matrix Spikes
Method Blank, 1 per batch, result <0.5 RL of 0.2 mg/L	At beginning and at end and after every 10 samples, 90-110%	After initial calibration, 90-110% of known value	RPD<10	80-120% recovery (one per 20 or every set)

The holding time for this analysis is 2 days.

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Table B29. ORD/NERL laboratory QA/QC requirements for ethoxylated alcohols, alkylphenols, and acrylamide.

QC Check	Frequency	Precision	Accuracy	Corrective Action
5-point calibration	Prior to sample analysis	<30%	$R^2 > 0.99$	No samples will be run until calibration passes criteria.
Laboratory blank	One per batch of samples[a]	<50%	< PQL[b]	Inspect the system and reanalyze the blank. Samples must be bracketed by acceptable QC or they will be invalidated.
Instrument blank	In between samples	<50%	< PQL[b]	Inspect the system and reanalyze the blank. Samples must be bracketed by acceptable QC or they will be invalidated.
Laboratory control sample	One per batch of samples[a]	<30%	>70%	Check the system and reanalyze the standard. Re-prepare the standard if necessary. Recalibrate the instrument if the criteria cannot be met. Samples must be bracketed by acceptable QC or they will be invalidated.
Laboratory fortified matrix	One per batch of samples[a]	<30%	>70% recovery	Review data to determine whether matrix interference is present. If so, narrate interference and flag recovery. If no interference is evident, verify the instrument is functioning properly by running a lab blank. Reanalyze recollected sample to verify recovery. Samples must be bracketed by acceptable QC or they will be invalidated.
Laboratory replicates	One per batch of samples[a]	<30%	>70% recovery	Inspect the system, narrate discrepancy. Samples must be bracketed by acceptable QC or they will be invalidated.
Continuing calibration verification	One at beginning of each 8-hr analytical day, one at beginning of each batch of samples[a], and one at end of analytical day	<30%	>70% recovery	Inspect system and perform maintenance as needed. If system still fails CCV, perform a new 5-point calibration curve. Samples must be bracketed by acceptable QC or they will be invalidated.
Laboratory fortified blank	One per batch of samples[a]	<30%	>70% recovery	Inspect the system and reanalyze the standard. Re-prepare the standard if necessary. Re-calibrate the instrument if the criteria cannot be met. Samples must be bracketed by acceptable QC or they will be invalidated.
Minimum detection limit	Each chemical	TBD for each HF chemical	TBD for each HF chemical	TBD for each HF chemical.

[a]Batch of samples not to exceed 20. [b]PQL=practical quantitation limit, 5 times the MDL.

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Table B30. QA/QC narrative associated with laboratory analysis of Phase V samples.

Analysis/Lab	QC Narrative	Impact on Data
Dissolved gases/Shaw Environmental	EPAMW02 -0412-2 arrived with 15 mm bubble; EPAMW01-0412 arrived with 6 mm bubble; EPAMW01d-0412 arrived with 7 mm bubble; EPAMW01-0412-10 arrived with 12 mm bubble; TripBlk03 arrived with 7 mm bubble; TripBlk04 arrived with 6 mm bubble; TripBlk01 arrived with 10 mm bubble; FieldBlk01 arrived with 5mm bubble; PGDW50 arrived with 6 mm bubble.	Detections below the QL are flagged as J. Bubbles in samples from EPAMW01 and EPAMW02 are from gas exsolution and pressure change. Trip Blank bubbles result from pressure changes and filling and sealing sample vials in lab prior to deployment in the field. Bubbles are included in the headspace generation and analysis; therefore, there is no impact on data quality.
Metals (filtered)/Shaw Environmental & CLP	ICP-OES: Performance Evaluation (PE) sample was run for K in same sample set. PE result met acceptance criteria (measured value = 25.6 mg K/L; certified value 26.6 mg/L; acceptance limits = 21.9 - 31.7 mg/L). The ICP-OES dissolved metals analysis of filtered samples took place over two analytical runs. For both analytical runs, the analytes Ag, Al, B, Ba, K, Na, P, S, and Si were not included in the initial calibration verification (ICV) check. However, the analytes were included in a second source standard that was analyzed right after the calibration standards and prior to analysis of any other QC checks or any samples. The percent recoveries of all analytes in the second source standard for both runs were acceptable according to the QA criteria of 90 – 110% of known value. The percent recoveries for the nine analytes in question ranged from 93.6 – 103% recovery, indicating that the analytical method was in control for these analytes at the beginning of the sample analyses. The percent recoveries for these nine analytes in the ending CCVs ranged from 91.5 – 101% recovery, indicating that the analytical method was in control for these analytes at the end of the sample analysis. For the second run, eleven samples were analyzed, and then CCVs for the nine analytes in question were analyzed at the end of the sample analysis. The percent recoveries for these nine analytes in the ending CCVs ranged from 93.6 – 99.3% recovery, indicating that the analytical method was in control for these analytes at the end of the sample analysis. All laboratory blanks were <QL for all analytes, QC checks for analysis of laboratory duplicates were acceptable for all analytes, and matrix spikes were acceptable for all analytes except for Si, which had a high percent recovery, possibly due to the fact that the spiking concentration was too low compared to the concentration found in the spiked sample. Matrix spike recoveries for Na were unable to be calculated for either analytical run because the spiking concentration was less than 20% of the concentration found in the spiked sample. For the first analytical run, the matrix spike for S had an acceptable 85.0% recovery, but for the second analytical run, the matrix spike recovery for S was unable to be calculated because the spiking concentration was less than 20% of the concentration found in the spiked sample. Shaw ICP-MS: Samples analyzed initially with a report date of 5/14/12 were not analyzed using the CCT-KED, ICS (Interference Check Standards), LLICV (Low Level Initial Calibration Verification), or LCS (Laboratory Control Sample).	ICP-OES: Detections below the QL have the J data qualifier applied. All of the dissolved metals results for Ag, Al, B, Ba, K, Na, P, S, and Si have the J data qualifier applied due to incomplete calibration check frequency. All of the dissolved metals results for Si have the J+ data qualifier applied due to high % recovery in a matrix spike. CLP ICP-MS: CLP ICP-MS data (dissolved) for sample PGDW20 were rejected due to sample contamination. High dissolved concentrations of metals in this sample were not indicated in total concentrations or in previous ICP-MS analyses.

	CLP ICP-MS: The samples were reanalyzed through the EPA Superfund Analytical Services Contract Laboratory Program (EPA CLP). Samples were sent for analysis under the EPA CLP Inorganic Statement of Work ISMO1.3, Exhibit D – Part B, "Analytical Methods for Inductively Coupled Plasma – Mass Spectrometry". Reanalysis included the metals As, Cd, Cu, Cr, Pb, Ni, Se, Sb, and Tl.	
Metals (unfiltered)/Shaw Environmental & CLP	ICP-OES: The analytes Ag, Al, B, Ba, K, Na, P, S, and Si were not included in the QC standard that was designated as the initial calibration verification (ICV) check. However, the analytes were included in a QA standard designated as a second source standard that is analyzed right after the calibration standards and prior to analysis of any other QC checks or any samples. The percent recoveries of all analytes in the second source standard for both runs were acceptable according to the QA criteria of 90 – 110% of known value. The percent recoveries for the nine analytes in question ranged from 94.8 – 103% recovery, indicating that the analytical method was in control for these analytes at the beginning of the sample analyses. Twenty-seven samples were analyzed, and then CCVs for the nine analytes in question were analyzed at the end of the sample analysis. The percent recoveries for these nine analytes in the ending CCVs ranged from 97.0 – 109% recovery, indicating that the analytical method was in control for these analytes at the end of the sample analysis. All laboratory blanks were <QL for all analytes, Duplicate QC checks were acceptable for all analytes, and pre- and post-digestion matrix spikes were acceptable for all analytes except for Ag, Na, S, and Si (further discussed below). All of the unfiltered samples, plus several QC check samples (i.e. a digestion duplicate, a pre-digestion matrix spike, and a digestion blank) are put through the RSKSOP179 Rev. 3 digestion procedure. RSKSOP179 Rev. 3 is similar to EPA Method 3015A with the following notable deviations: no laboratory control sample (analytes spiked into an appropriate blank matrix) is digested, and the total digestion time is 40 minutes instead of the 20 minutes recommended by EPA Method 3015A. The longer total digestion time has the potential to result in more complete digestion of the sample and, hence, influence the results with potentially a high bias compared to 3015A performed with the standard, shorter digestion time. Shaw ICP-MS: Hg analyzed using mass 201 due to possible interferences from $^{186}W^{15}O$. Total lead and thorium were above the quantitation limits (QL) in the digestion blank. Lead was 0.274 µg/L and thorium was 0.076 µg/L. Samples analyzed initially with a report date of 5/14/12 were not analyzed using the CCT-KED, ICS (Interference Check Standards), LLICV (Low Level Initial Calibration Verification), or LCS (Laboratory Control Sample).	ICP-OES: Detections below the QL have the J data qualifier applied. All of the total metals results for Ag, Al, B, Ba, K, Na, P, S, and Si have the J data qualifier applied due to incomplete calibration check frequency. All of the total metals results for Ag have the J- data qualifier applied due to low % recovery in a pre-digestion matrix spike. All of the total metals results for Si have the J+ data qualifier applied due to high % recovery in a pre-digestion matrix spike.

	CLP ICP-MS: The samples were reanalyzed through the EPA Superfund Analytical Services Contract Laboratory Program (EPA CLP). Samples were sent for analysis under the EPA CLP Inorganic Statement of Work ISMO1.3, Exhibit D – Part B, "Analytical Methods for Inductively Coupled Plasma – Mass Spectrometry". Reanalysis included the metals As, Cd, Cu, Cr, Pb, Ni, Se, Sb, and Tl.	
Anions/EPA ORD/NRMRL	Sample analysis required dilutions for bromide, chloride, sulfate, and fluoride (up 51x).	Fluoride detections below the QL have the J data qualifier applied.
$NO_3 + NO_2$, NH_4/EPA ORD/NRMRL		Nitrate+nitrite and ammonium detections below the QL have the J data qualifier applied.
DIC/EPA ORD/NRMRL		Inorganic carbon detections below the QL have the J data qualifier applied.
DOC/EPA ORD/NRMRL		Organic carbon detections below the QL have the J data qualifier applied.
Alcohols, aromatic, and chlorinated hydrocarbons)/Shaw Environmental	Sample analysis required dilutions for TBA and acetone. Low matrix spike recovery for n-propanol noted; matrix effect indicated. Mass spectral interferences noted for isobutanol, n-butanol, MTBE, TAME, acetone, chloroform, and ethanol due to co-eluting hydrocarbons.	Detections below the QL have the J data qualifier. The J- data qualifier is used for n-propanol, the analyte may be biased low.
Volatile Organic Compounds/Region 8	EPAMW02-0412-1 and EPAMW02-0412-2 were analyzed after dilution. Pentachloroethane did not produce acceptable calibration curves. Initial calibrations were not immediately verified by a second source calibration standard.	Pentachloroethane data are not reported. All VOC data are flagged as estimated because laboratory QA/QC acceptance criteria were not met (J). These data are qualified but are considered to be reliable based on comparisons between USGS results and Shaw results from EPAMW02. The J flag was applied to all data >QL to be consistent with the lab report.
Semi-Volatile Organic Compounds /Region 8	The extract for sample EPAMW02-0412-1 was dark yellow and foamy. Some samples were diluted prior to analysis. Various calibration acceptance criteria were not met for some analytes. The matrix spikes included with the data have several analytes that were either high recovery (2,4 dimethylphenol, 2-butoxyethanol, carbazole) or low recovery (4-chloroaniline, 4-nitroaniline, terpinol in sample EPAMW02-0412-1).	Some samples flagged with J for estimated value, laboratory calibration criteria not met. Some samples are flagged with J for estimated value, laboratory QA/QC acceptance criteria not met. J+ or J- data qualifiers were appropriately applied to analytes not meeting matrix spike acceptance criteria.
Low Molecular Weight Acids/Shaw Environmental	Isobutyrate in matrix spike co-eluted with large peak; caused low matrix spike recoveries. The field duplicate pair for EPAMW01-0412 had RPDs above the 30% limit for acetate and formate. Note that the lab dup for this same sample was below 15%, so this is likely due to true differences between the field samples; therefore, only the results for acetate and formate in source sample EPAMW01-0412/duplicate need to be qualified as *. Trisodium phosphate was used as the preservative for sample EPAMW02-0412-2.	Isobutyrate data are not reported. EPAMW01-0412/duplicate is flagged with the * data qualifier. Sample EPAMW02-0412-2 had a baseline problem (dipping and rising), but identification and integration of analyte peaks do not appear to be affected.
O, H stable isotopes of water/ Shaw Environmental	All method quality objectives were met for the reproducibility test, laboratory duplicate analyses, QC check standard, and calibration curve linearity. Two samples failed the replicate injection test (standard deviation of the 3 analyses averaged for the reported isotope ratio). The replicate injections of the oxygen isotopes for sample PGDW20d-0412 just exceeded the limits. The difference was 0.11‰ for $\delta^{18}O$, above the criteria of ≤0.1‰. The laboratory report identified this issue and it is believed that rounding is part of the cause for this failure.	Sample PGDW20d-0412 is flagged with the J data qualifier.

δ^{13}C DIC/Isotech	Samples EPAMW02-0412-1 and EPAMW02-0412-2 did not have enough dissolved inorganic carbon for isotopic discrimination.	No data problems are suspected.
δ^{13}C and δD of methane/Isotech	δ^{13}C of methane determined for samples PGDW05, PGDW20, PGDW23, PGDW30, EPAMW01, and EPAMW02. δD of methane determined for samples PGDW23, PGDW30, EPAMW01, and EPAMW02. One laboratory duplicate analysis of sample EPAMW02-0412-1 exceeded the QAPP precision limits of <3‰ for δD. The original and duplicate results were -204.6‰ and -208.3‰, respectively, with a difference of 3.7‰. Isotech re-analyzed and reported this sample on 7/17/12 and precision was within acceptance limits.	No data problems are suspected.
Tritium/Isotech	All samples <0.80 TU.	No data problems are suspected.
DRO/Region 8		No data problems are suspected.
GRO/Region 8	EPAMW02-0412-1 and EPAMW02-0412-2 had high surrogate recovery due to hydrocarbon interference.	Surrogate recovery was obviously affected by hydrocarbon interference. No data problems are suspected.
Glycols/Region 3	Sample analysis required dilution for diethylene glycol in sample EPAMW02-0412-1. Data for 2-butoxyethanol and glycols are reported for detections below QLs but above MDLs. Matrix spike yielded low result for EPAMW02-0412-1. For continuing calibration verification (CCV) / blank spikes (BS), the following issues were found in the respective analysis runs: 4-20-21/2012 resulted in 0% recovery for TeG, and 22% for TriG in the low BS 5 ppb; 5/1-2/2012 resulted in 0% recovery for both TriG and TeG in the low BS at 5 ppb; 5/2-3/2012 resulted in 35% recovery for TriG and 34% recovery for TeG in the low BS at 10 ppb, for the low BS at 5 ppb 58% DiG, 0% TriG/TeG and 52% 2-Bu recovery. Note the quantification limit was raised from 5 to 10 ppb for TeG and TriG based on the low blank spike recoveries for the 5 ppb level. Non-detect results for all 4 analytes in samples analyzed on 5/2/2012 and 5/3/2012 are qualified because of the BSs (10 and 5 ppb) that are at the QL and had low recovery, below the 80% lower limit. Matrix Spike 1 and its duplicate (MS1/MSD1) were below the 70-130% limits for all 4 analytes and the RPD was above 25% for 2-Bu and TriG. The laboratory addressed these issues by including an "A" qualifier next to the spiked sample results. MS1/MSD1 were made from source sample PGDW30-0412 (analyzed 4/20-21/2012).	The method was modified from SW846/ASTM D773-11 to allow for quantification of glycols at lower detection limits. All sample results with detection greater than QL have had the J qualifier applied because the method is still under development. EPAMW02-0412-1 detection of diethylene glycol is flagged with the J qualifier because the concentration exceeded the high calibration point. Samples analyzed on 4/20 and 4/21 are qualified as J- due to the low MS recoveries.
Methanol, propylene glycol, ethylene glycol/ALS Environmental	All samples were below QLs.	No data problems are suspected.
Acrylamide, alkylphenols, ethoxylated alcohols, ethoxylated alkyphenols/EPA ORD/NERL	Certified standards were not available for C12-15 ethoxylated alcohols. A technical mixture (Shell, 25-9) was used for calibration of these analytes. Technical mixtures were also used for nonylphenol ethoxylate and octylphenol ethoxylate. Lab report noted lab blank issues and low spike recoveries. Extraction logs indicate that extraction holding times were missed for several samples. No laboratory-fortified blank was analyzed on 4/30 (ethoxylates). However, multiple matrix spike samples were analyzed on this date along with the required calibration checks. Matrix spike recoveries were low for alkylphenols and ethoxylates. Based upon the multiple instances of low recoveries of the fortified blanks and matrix spikes, the laboratory stated the quantitation values for the ethoxylated alcohols should not be considered more than estimates of the actual values.	Methods modified from ASTM D 7458-09 and USGS Method O1433-01 for ethoxylated alcohols and ethoxylated alkylphenols (methods in development). Acrylamide analyzed by EPA Method 8032A and 8316. Multiple QA/QC factors impact these samples including significant lab and field blank contamination (B), matrix spike failures (J-), missed extraction holding times (H), and calibration control issues (J). Data for ethoxylates are flagged as R. Alkylphenol data are retained with qualifiers. All sample results with detection greater than QL have had the J qualifier applied because the method is still under development.

MBAS/TestAmerica	All samples below QLs. No second source standard was included in the analyses. Laboratory control samples were analyzed, but it is unclear how these differ from the calibration standards. In addition, there is no information in the data reports on the calibration check standards. The run logs indicate that a continuing calibration verification standard was run prior to, and bracketing the samples as required, but the recovery for MBAS in these standards was not reported. Matrix spike recoveries were reported and are within the QAPP limits of 80-120%.	All reported values are below the QL.

Table B31. Data qualifiers.

Qualifier	Definition
U	The analyte was analyzed for, but was not detected above the reported quantitation limit (QL).
J	The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the QL).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
B	The analyte is found in a blank sample above the QL and the concentration found in the sample is less than 10 times the concentration found in the blank.
H	The sample was prepared or analyzed beyond the specified holding time. Sample results may be biased low.
*	Relative percent difference of a field or lab duplicate is outside acceptance criteria.
R	The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and/or meet quality control criteria. Sample results are not reported. The analytes may or may not be present in the sample.
NA	Data not reported or collected.

Table B32. Volatile organic compounds reported by Shaw Environmental and EPA Region 8 laboratories for samples EPAMW02-0412-1 and EPAMW02-0412-2.

	EPAMW02-0412-1			EPAMW02-0412-2		
Compound	Shaw	EPA R8	RPD	Shaw	EPA R8	RPD
	µg/L	µg/L	%	µg/L	µg/L	%
1,2,4-TMB	74.9	77 (J)	2.8	137	148 (J)	7.7
1,3,5-TMB	39.5	39.5 (J)	0.0	71.4	74 (J)	3.6
Acetone	1460	982 (J)	39.1	231	157 (J)	38.1
Benzene	166	175 (J)	5.3	232	247 (J)	6.3
Ethylbenzene	61.1	57 (J)	6.9	101	89.6 (J)	12.0
m,p-Xylene	549	578 (J)	5.1	894	973 (J)	8.5
Naphthalene	4.89	7.19 (J)	38.1	7.49	7.2 (J)	3.9
o-Xylene	161	164 (J)	1.8	245	253 (J)	3.2
Toluene	402	437 (J)	8.3	607	677 (J)	10.9

Note: J flags for Region 8 data are because a second source verification standard was not run immediately after the samples (see Table B30).

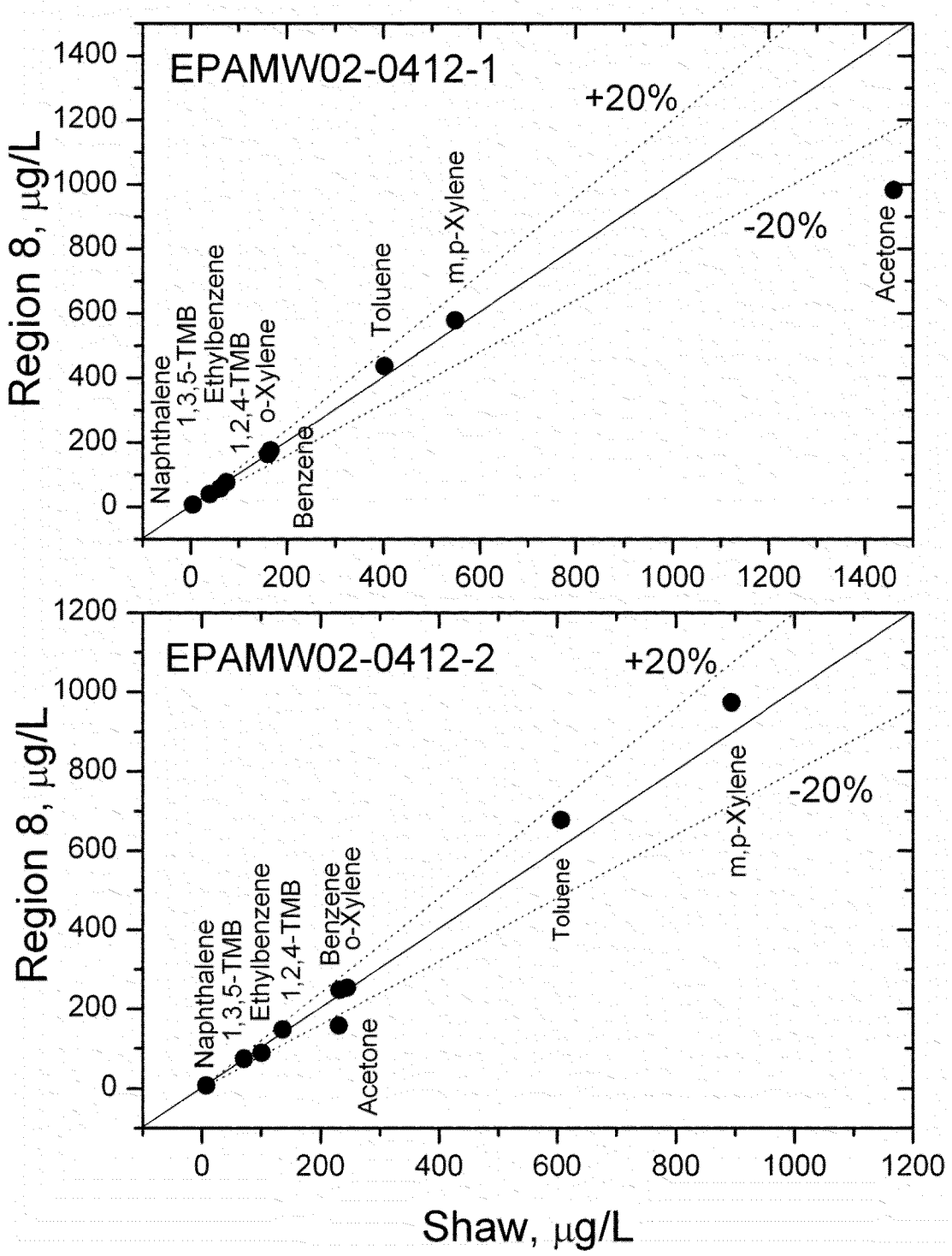

Figure B1. Comparison of volatile organic compound concentrations determined at two laboratories.

Table B33. Performance Evaluation sample results returned by EPA Region 8 laboratory for Gasoline Range Organics, Diesel Range Organics, Semivolatile Organic Compounds, and Volatile Organic Compounds.

Gasoline Range Organics by GC PID/FID (Lot #P192-762). Region 8 – EPA Method 8021B and 8015D (SOP ORGM-506v10)				
Analyte	**Reported Value, µg/L**	**Certified Value, µg/L**	**Acceptance Range**	**Performance Evaluation**
Gasoline Range Organics (GRO)	2540	2370	921-4180	Acceptable
Benzene in GRO	28.5	25.3	10.9-42.4	Acceptable
Ethylbenzene in GRO	81.9	76.1	43.9-105	Acceptable
Toluene in GRO	201	224	118-293	Acceptable
Xylene, total in GRO[A]	249	224	128-302	Acceptable
Diesel Range Organics (Lot #P192-764). Region 8 – EPA Method 8015D (SOP ORGM-508-508v10)				
Analyte	**Reported Value, µg/L**	**Certified Value, µg/L**	**Acceptance Range**	**Performance Evaluation**
Diesel Range Organics (DRO)	2690	2960	714-3830	Acceptable
Semivolatiles base/neutrals by GC/MS (Lot #P186-711 &712). Region 8 – EPA Method 8270D (SOP ORGM-515)				
Analyte	**Reported Value, µg/L**	**Certified Value, µg/L**	**Acceptance Range**	**Performance Evaluation**
Acenaphthene	67.7	76.7	30.8 - 91.9	Acceptable
Benzo(b)fluoranthene	27.5	28.7	9.38 - 40.2	Acceptable
Benzo(k)fluoranthene	57.6	60.8	14.6 - 89.3	Acceptable
Benzo(g,h,i)perylene	18.2	25.4	5.35 - 38.1	Acceptable
4-Bromophenyl-phenylether	26.7	28.6	10.8 - 40.2	Acceptable
Butylbenzylphthalate	118	123	23.7 - 175	Acceptable
bis(2-Chloroethoxy)methane	43.1	49.5	19.3 - 60.0	Acceptable
bis(2-Chloroethyl)ether	161	175	46.0 - 211	Acceptable
bis(2-Chloroisopropyl)ether	36.5	37.6	11.2 - 49.4	Acceptable
2-Chloronaphthalene	27.4	29.8	8.47 - 37.3	Acceptable
4-Chlorophenyl-phenylether	115	120	44.9 - 149	Acceptable
Chrysene	31.3	34.7	14.6 - 47.6	Acceptable
Dibenzofuran	29.0	32.1	12.5 - 43.6	Acceptable
Di-n-butylphthalate	82.9	88.4	29.2 - 117	Acceptable
1,2-Dichlorobenzene	75.0	93.8	11.2 - 113	Acceptable
1,3-Dichlorobenzene	111	142	17.0 - 164	Acceptable
Diethylphthalate	117	122	22.6 - 167	Acceptable
Dimethylphthalate	135	132	13.2 - 190	Acceptable
Di-n-octylphthalate	146	141	27.6 - 207	Acceptable
bis(2-Ethylhexyl)phthalate	74.3	81.4	24.3 - 113	Acceptable
Fluoranthene	56.2	57.4	26.2 - 71.9	Acceptable
Fluorene	62.5	66.2	27.4 - 81.3	Acceptable
Hexachlorocyclopentadiene	118	179	17.9 - 230	Acceptable
Hexachloroethane	92.8	116	12.2 - 136	Acceptable
Isophorone	93.0	105	41.1 - 135	Acceptable
2-Methylnaphthalene	49.5	53.4	8.89 - 67.8	Acceptable
Naphthalene	99.3	114	30.1 - 135	Acceptable

Nitrobenzene	53.8	56.0	18.1 - 69.8	Acceptable
N-Nitroso-di-n-propylamine	86.1	89.2	25.8 - 115	Acceptable
Pyrene	40.1	41.1	13.3 - 59.4	Acceptable
Benzoic acid	<30.0	<30	-	Acceptable
4-Chloro-3-methylphenol	150	160	63.1 - 206	Acceptable
2-Chlorophenol	156	176	49.4 - 220	Acceptable
2,4-Dichlorophenol	117	137	44.6 - 168	Acceptable
2,4,Dimethylphenol	159	173	39.0 - 226	Acceptable
4,6-Dinitro-2-methylphenol	128	152	53.9 - 217	Acceptable
2,4-Dinitrophenol	79.5	121	12.1 - 170	Acceptable
2-Methylphenol	153	152	28.6 - 187	Acceptable
4-Methylphenol [B]	103	104	10.4 - 135	Acceptable
2-Nitrophenol	60.4	72.2	20.3 - 91.9	Acceptable
4-Nitrophenol	77.2	108	10.8 - 146	Acceptable
Pentachlorophenol	57.7	69.7	15.8 - 96.3	Acceptable
Phenol	163	177	17.7 - 237	Acceptable
2,3,4,6-Tetrachlorophenol	89.7	98.2	22.1 - 132	Acceptable
2,4,5-Trichlorophenol	56.0	64.4	24.3 - 85.1	Acceptable
2,4,6-Trichlorophenol	50.5	54.2	17.3 - 70.9	Acceptable
Volatiles by GC/MS (Lot #P186-710), Region 8 – EPA Method 8260C (SOP ORGM-501) [C]				
Analyte	**Reported Value, µg/L**	**Certified Value, µg/L**	**Acceptance Range**	**Performance Evaluation**
Benzene	20.2	20.0	13.6 - 26.4	Acceptable
Bromodichloromethane	20.8	20.1	13.8 - 27.0	Acceptable
Bromoform	30.2	30.2	18.6 - 41.2	Acceptable
2-Butanone (MEK)	138	110	32.0 - 172	Acceptable
t-Butyl methyl ether (MTBE)	44.2	43.7	27.1 - 62.1	Acceptable
Carbon tetrachloride	34.2	31.8	17.7 - 43.7	Acceptable
Chlorobenzene	88.0	84.7	61.1 - 106	Acceptable
Chlorodibromomethane	119	107	73.5 - 142	Acceptable
Chloroform	64.6	63.0	43.6 - 81.0	Acceptable
1,2-Dichlorobenzene	78.3	80.7	56.2 - 104	Acceptable
1,3-Dichlorobenzene	67.6	71.0	48.2 - 90.4	Acceptable
1,4-Dichlorobenzene	66.9	68.0	46.1 - 85.2	Acceptable
1,2-Dichloroethane	22.6	22.7	15.7 - 30.7	Acceptable
c-1,2-Dichloroethene	26.6	26.0	17.9 - 34.8	Acceptable
c-1,3-Dichloropropylene	45.0	45.0	31.5 - 58.5	Acceptable
Ethylbenzene	47.6	43.0	29.5 - 54.9	Acceptable
Methylene chloride	87.4	90.5	55.5 - 125	Acceptable
4-Methyl-2-pentanone (MIBK)	81.7	78.0	36.0 - 117	Acceptable
Naphthalene	29.8	32.8	11.1 - 42.6	Acceptable
1,1,2,2-Tetrachloroethane	50.0	55.7	31.8 - 82.5	Acceptable
Tetrachloroethylene	27.5	45.9	25.3 - 60.1	Acceptable
Toluene	36.6	35.5	24.7 - 44.9	Acceptable
1,2,4-Trichlorobenzene	68.1	70.5	14.6 - 86.0	Acceptable
1,1,1-Trichloroethane	28.4	27.3	17.2 - 36.5	Acceptable
1,1,2-Trichloroethane	35.0	35.8	25.0 - 47.3	Acceptable
Trichloroethylene	72.4	69.9	44.4 - 91.1	Acceptable
Trichlorofluoromethane	<1.25	<5.0	-	Acceptable

1,2,3-Trichloropropane (TCP)	<1.25	<5.0	-	Acceptable
Vinyl Acetate	<1.25	<5.0	-	Acceptable
Vinyl Chloride	<1.25	<5.0	-	Acceptable
o-Xylene	20.4	18.9	13.4 - 23.4	Acceptable
Total Xylenes	93.7	85.6	48.6 - 116	Acceptable

A. m,p-xylene and o-xylene analyzed separately, value indicates total xylene. B. Analyzed as 3&4 methylphenol. C. All values in the volatile organic compound scan are qualified as estimated (J) because initial calibrations were not immediately verified by a second source calibration standard. The table only shows results where analytes in the lab method matched analytes in the blind sample, i.e., other compounds were present in the PE sample but they were not included in the method SOP or were not requested for analysis.

Table B34. Performance Evaluation sample results returned by Shaw Environmental for Volatile Organic Compounds, Gasoline Additives, and Minerals.

Volatiles by GC/MS (Lot #P186-710). Shaw Environmental – EPA Method 5021A and 8260C (RSKSOP259v1)				
Analyte	**Reported Value, µg/L**	**Certified Value, µg/L**	**Acceptance Range**	**Performance Evaluation**
Benzene	18.5	20.0	13.6 - 26.4	Acceptable
Carbon tetrachloride	20.5	31.8	17.7 - 43.7	Acceptable
Chlorobenzene	89.8	84.7	61.1 - 106	Acceptable
1,2-Dichlorobenzene	74.7	80.7	56.2 - 104	Acceptable
1,4-Dichlorobenzene	67.1	68.0	46.1 - 85.2	Acceptable
1,2-Dichloroethane	24.9	22.7	15.7 - 30.7	Acceptable
1,1-Dichloroethene	<0.07	<5.0	-	Acceptable
c-1,2-Dichloroethene	24.6	26.0	17.9 - 34.8	Acceptable
t-1,2-Dichloroethene	<0.05	<5.0	-	Acceptable
Ethylbenzene	40.4	43.0	29.5 - 54.9	Acceptable
Methylene chloride	89.6	90.5	55.5 - 125	Acceptable
Tetrachloroethylene	32.9	45.9	25.3 - 60.1	Acceptable
Toluene	32.5	35.5	24.7 - 44.9	Acceptable
1,1,1-Trichloroethane	21.0	27.3	17.2 - 36.5	Acceptable
1,1,2-Trichloroethane	33.5	35.8	25.0 - 47.3	Acceptable
Trichloroethylene	66.8	69.9	44.4 - 91.1	Acceptable
Vinyl Chloride	<0.14	<5.0	-	Acceptable
o-Xylene	18.6	18.9	13.4 - 23.4	Acceptable
Total Xylenes	84.3	85.6	48.6 - 116	Acceptable
Gasoline Additives by GC/MS (Lot #S183-909)[A]. Shaw Environmental – EPA Method 5021A and 8260C (RSKSOP259v1)				
Analyte	**Reported Value, µg/L**	**Certified Value, µg/L**	**Acceptance Range**	**Performance Evaluation**
t-Butyl Alcohol	50.8	46.6	28.0 - 65.2	Acceptable
Minerals by ICP-OES (Lot #P202-506)[B]. EPA Method 200.7 (RSKSOP-213v4).				
Analyte	**Reported Value, mg/L**	**Certified Value, mg/L**	**Acceptance Range**	**Performance Evaluation**
Potassium	25.6	26.6	21.9 - 31.7	Acceptable

A. Only tert-butyl alcohol was requested for evaluation. B. Only potassium was requested for evaluation. ND – not detected. The table only shows results where analytes in the lab method matched analytes in the blind sample, i.e., other compounds were present in the PE sample but they were not included in the method SOP or were not requested for analysis.

Table B35. Performance Evaluation sample results returned by EPA General Parameters Lab for chloride.

Minerals (Lot# P202-506)[A]. EPA General Parameters Lab – EPA Method 6500 (RSKSOP-276v4)				
Analyte	**Reported Value, mg/L**	**Certified Value, mg/L**	**Acceptance Range**	**Performance Evaluation**
Chloride	34.7	36.0	30.2 - 42.5	Acceptable

A. Only chloride was requested for evaluation.

Table B36. Performance Evaluation sample results returned by USGS/TestAmerica for Gasoline Range Organics, Diesel Range Organics, Gasoline Additives, Semivolatile Organic Compounds, and Inorganic Compounds.

Gasoline Range Organics by GC PID/FID (Lot #P192-762). USGS/TestAmerica - EPA Method 8015B

Analyte	Reported Value, µg/L	Certified Value, µg/L	Acceptance Range	Performance Evaluation
Gasoline Range Organics (GRO)	2900	2370	921 - 4180	Acceptable

Diesel Range Organics (Lot #P192-764). USGS/TestAmerica - EPA Method 8015B

Analyte	Reported Value, µg/L	Certified Value, µg/L	Acceptance Range	Performance Evaluation
Diesel Range Organics (DRO)	2400	2960	714 - 3830	Acceptable

Gasoline Additives by GC/MS (Lot #S183-909)[A]. USGS/TestAmerica – EPA Method 8260B

Analyte	Reported Value, µg/L	Certified Value, µg/L	Acceptance Range	Performance Evaluation
t-Amyl methyl ether	33	36.8	22.1 - 51.5	Acceptable
t-Butyl Alcohol	52	46.6	28.0 - 65.2	Acceptable
t-Butyl ethyl ether	12	15.3	9.18 - 21.4	Acceptable
t-Butyl methyl ether	12	13.9	8.34 - 19.5	Acceptable
Diisopropyl ether	40	40.0	24.0 - 56.0	Acceptable
Trichlorofluoromethane (Freon 11)	25	21.9	13.1 - 30.7	Acceptable

Semivolatiles base/neutrals and acids by GC/MS (Lot #P186-711&712). USGS/TestAmerica – EPA Method 8270C

Analyte	Reported Value, µg/L	Certified Value, µg/L	Acceptance Range	Performance Evaluation
Acenaphthene[B]	62	76.7	30.8 - 91.9	Acceptable
Acenaphthylene[B]	ND	<10	-	Acceptable
Aniline	ND	<10	-	Acceptable
Anthracene[B]	ND	<10	-	Acceptable
Benzo(a)anthracene[B]	0.27	<10	-	Acceptable
Benzo(b)fluoranthene[B]	24	28.7	9.38 - 40.2	Acceptable
Benzo(k)fluoranthene[B]	53	60.8	14.6 - 89.3	Acceptable
Benzo(g,h,i)perylene[B]	21	25.4	5.35 - 38.1	Acceptable
Benzo(a)pyrene[B]	0.15	<10	-	Acceptable
Benzyl alcohol	0.55	<10	-	Acceptable
4-Bromophenyl-phenylether	19	28.6	10.8 - 40.2	Acceptable
Butylbenzylphthalate	110	123	23.7 - 175	Acceptable
Carbazole	ND	<10	-	Acceptable
4-Chloroaniline	ND	<10	-	Acceptable
bis(2-Chloroethoxy)methane	41	49.5	19.3 - 60.0	Acceptable
bis(2-Chloroethyl)ether	150	175	46.0 - 211	Acceptable
bis(2-Chloroisopropyl)ether	33	37.6	11.2 - 49.4	Acceptable
2-Chloronaphthalene	12	29.8	8.47 - 37.3	Acceptable
4-Chlorophenyl-phenylether	82	120	44.9 - 149	Acceptable
Chrysene[B]	29	34.7	14.6 - 47.6	Acceptable
Dibenz(a,h)anthracene[B]	ND	<10	-	Acceptable
Dibenzofuran	18	32.1	12.5 - 43.6	Acceptable

Di-n-butylphthalate	73	88.4	29.2 - 117	Acceptable
3,3'-Dichlorobenzidine	ND	<10	-	Acceptable
Diethylphthalate	110	122	22.6 - 167	Acceptable
Dimethylphthalate	130	132	13.2 - 190	Acceptable
2,4-Dinitrotoluene	ND	<10	-	Acceptable
2,6-Dinitrotoluene	ND	<10	-	Acceptable
Di-n-octylphthalate	150	141	27.6 - 207	Acceptable
bis(2-Ethylhexyl)phthalate	75	81.4	24.3 - 113	Acceptable
Fluoranthene [B]	47	57.4	26.2 - 71.9	Acceptable
Fluorene [B]	58	66.2	27.4 - 81.3	Acceptable
Hexachlorobenzene	ND	<10	-	Acceptable
Hexachlorocyclopentadiene	18	179	17.9 - 230	Acceptable
Hexachloroethane	13	116	12.2 - 136	Acceptable
Indeno(1,2,3-cd)pyrene [B]	ND	<10	-	Acceptable
Isophorone	89	105	41.1 - 135	Acceptable
2-Methylnaphthalene [B]	38	53.4	8.89 - 67.8	Acceptable
Naphthalene	34	114	30.1 - 135	Acceptable
2-Nitroaniline	ND	<10	-	Acceptable
3-Nitroaniline	ND	<10	-	Acceptable
4-Nitroaniline	ND	<10	-	Acceptable
Nitrobenzene	47	56.0	18.1 - 69.8	Acceptable
N-Nitrosodiethylamine	ND	<10	-	Acceptable
N-Nitroso-di-n-propylamine	80	89.2	25.8 - 115	Acceptable
Phenanthrene [B]	ND	<10	-	Acceptable
Pyrene [B]	31	41.1	13.3 - 59.4	Acceptable
Pyridine	ND	<10	-	Acceptable
Benzoic acid	ND	<30	-	Acceptable
4-Chloro-3-methylphenol	160	160	63.1 - 206	Acceptable
2-Chlorophenol	150	176	49.4 - 220	Acceptable
2,4-Dichlorophenol	130	137	44.6 - 168	Acceptable
2,4,Dimethylphenol	150	173	39.0 - 226	Acceptable
4,6-Dinitro-2-methylphenol	160	152	53.9 - 217	Acceptable
2,4-Dinitrophenol	110	121	12.1 - 170	Acceptable
2-Methylphenol	150	152	28.6 - 187	Acceptable
4-Methylphenol [C]	92	104	10.4 - 135	Acceptable
2-Nitrophenol	62	72.2	20.3 - 91.9	Acceptable
4-Nitrophenol	130	108	10.8 - 146	Acceptable
Pentachlorophenol	63	69.7	15.8 - 96.3	Acceptable
Phenol	170	177	17.7 - 237	Acceptable
2,3,4,6-Tetrachlorophenol	98	98.2	22.1 - 132	Acceptable
2,4,5-Trichlorophenol	62	64.4	24.3 - 85.1	Acceptable
2,4,6-Trichlorophenol	51	54.2	17.3 - 70.9	Acceptable

Volatiles by GC/MS (Lot #P186-710). USGS/TestAmerica – EPA Method 8260B.

Analyte	Reported Value, µg/L	Certified Value, µg/L	Acceptance Range	Performance Evaluation
Acetone	ND	<5.0	-	Acceptable
Acrylonitrile	ND	<5.0	-	Acceptable
Benzene	18	20.0	13.6 - 26.4	Acceptable
Bromodichloromethane	23	20.1	13.8 - 27.0	Acceptable

Bromoform	36	30.2	18.6 - 41.2	Acceptable
Bromomethane	ND	<5.0	-	Acceptable
2-Butanone (MEK)	110	110	32.0 - 172	Acceptable
t-Butyl methyl ether (MTBE)	42	43.7	27.1 - 62.1	Acceptable
Carbon disulfide	ND	<5.0	-	Acceptable
Carbon tetrachloride	36	31.8	17.7 - 43.7	Acceptable
Chlorobenzene	75	84.7	61.1 - 106	Acceptable
Chlorodibromomethane	120	107	73.5 - 142	Acceptable
Chloroethane	ND	<5.0	-	Acceptable
Chloroform	64	63.0	43.6 - 81.0	Acceptable
Chloromethane	ND	<5.0	-	Acceptable
1,2-Dibromo-3-chloropropane	ND	<5.0	-	Acceptable
1,2-Dibromoethane (EDB)	ND	<5.0	-	Acceptable
1,2-Dichlorobenzene	70	80.7	56.2 - 104	Acceptable
1,3-Dichlorobenzene	60	71.0	48.2 - 90.4	Acceptable
1,4-Dichlorobenzene	60	68.0	46.1 - 85.2	Acceptable
Dichlorodifluoromethane (Freon 12)	ND	<5.0	-	Acceptable
1,1-Dichloroethane	ND	<5.0	-	Acceptable
1,2-Dichloroethane	27	22.7	15.7 - 30.7	Acceptable
1,1-Dichloroethene	0.58	<5.0	-	Acceptable
c-1,2-Dichloroethene	24	26.0	17.9 - 34.8	Acceptable
t-1,2-Dichloroethene	ND	<5.0	-	Acceptable
1,2-Dichloropropane	ND	<5.0	-	Acceptable
c-1,3-Dichloropropylene	39	45.0	31.5 - 58.5	Acceptable
t-1,3-Dichloropropylene	ND	<5.0	-	Acceptable
Ethylbenzene	40	43.0	29.5 - 54.9	Acceptable
Hexachlorobutadiene	ND	<5.0	-	Acceptable
2-Hexanone	ND	<5.0	-	Acceptable
Methylene chloride	92	90.5	55.5 - 125	Acceptable
4-Methyl-2-pentanone (MIBK)	83	78.0	36.0 - 117	Acceptable
Naphthalene	30	32.8	11.1 - 42.6	Acceptable
Styrene	ND	<5.0	-	Acceptable
1,1,1,2-Tetrachloroethane	ND	<5.0	-	Acceptable
1,1,2,2-Tetrachloroethane	53	55.7	31.8 - 82.5	Acceptable
Tetrachloroethylene	42	45.9	25.3 - 60.1	Acceptable
Toluene	33	35.5	24.7 - 44.9	Acceptable
1,2,4-Trichlorobenzene	62	70.5	14.6 - 86.0	Acceptable
1,1,1-Trichloroethane	28	27.3	17.2 - 36.5	Acceptable
1,1,2-Trichloroethane	36	35.8	25.0 - 47.3	Acceptable
Trichloroethylene	64	69.9	44.4 - 91.1	Acceptable
Trichlorofluoromethane	ND	<5.0	-	Acceptable
1,2,3-Trichloropropane (TCP)	ND	<5.0	-	Acceptable
Vinyl Chloride	ND	<5.0	-	Acceptable
o-Xylene	18	18.9	13.4 - 23.4	Acceptable
Total Xylenes	81	85.6	48.6 - 116	Acceptable

Minerals (Lot# P202-506)[D], USGS/TestAmerica – EPA Method 6010B				
Analyte	**Reported Value, mg/L**	**Certified Value, mg/L**	**Acceptance Range**	**Performance Evaluation**
Potassium	26	26.6	21.9 - 31.7	Acceptable
Sodium	44	42.5	36.1 - 48.9	Acceptable

Minerals (Lot# P202-506)[E], USGS/TestAmerica				
Analyte	**Reported Value, mg/L**	**Certified Value, mg/L**	**Acceptance Range**	**Performance Evaluation**
Chloride	37	36.0	30.2 - 42.5	Acceptable
Sulfate	27	28.0	22.3 - 33.0	Acceptable
Fluoride	1.9	1.82	1.47 - 2.17	Acceptable
Total Dissolved Solids	210	196	177 - 249	Acceptable

A. Only tert-butyl alcohol was requested for evaluation. B. EPA Method 8270C-SIM was used with sample dilution of 20x. C. Analyzed as 3&4 methylphenol. D. Only potassium was requested for analysis. E. Only chloride was requested for analysis. ND - not detected. The table only shows results where analytes in the lab method matched analytes in the blind sample, i.e., other compounds were present in the PE sample but they were not included in the method SOP or were not requested for analysis.

Table B37. Contract Laboratory Program QC checks for ICP-MS.

QC Type or Operation	Acceptance Criterion	Frequency
Instrument Calibration	The acceptance criterion for the initial calibration correlation coefficient is r≥0.998.	Each time instrument is turned on or set up, after ICV or CCV failure, and after major instrument adjustment. The lowest non-blank standard shall be set at the CRQL for all analytes.
Initial Calibration Verification	90-110% Recovery; RSD≤5% for all replicate integrations	Following each instrument calibration for each mass used.
Initial Calibration Blank	≤CRQL	Following each instrument calibration, immediately after the ICV.
Continuing Calibration Verification	90-110% Recovery; RSD≤5% for all replicate integrations	For each mass used, at a frequency of at least after every 10 analytical runs, at the beginning of each day, and at the beginning and end of each run.
Low Level (at CRQL) Calibration Verification	70-130% Recovery	The Laboratory shall re-analyze the low-level (at CRQL) calibration standard at the end of each run.
Continuing Calibration Blank	≤CRQL	At a frequency of at least after every 10 analytical runs, at the beginning of each day, and at the beginning and end of each run. Performed immediately after the last CCV.

Interference Check Sample	±20% of the analyte's true value or ±2 times the CRQL of the analyte's true value, whichever is greater.	At the beginning of the run after the ICB but before the CCV.
Serial Dilution for ICP	If the analyte concentration is sufficiently high (minimally a factor of 50 above the MDL in the original sample), the serial dilution (a five-fold dilution) shall then agree within 10% of the original determination after correction for dilution.	For each matrix type or for each SDG, whichever is more frequent.
Preparation Blank	≤CRQL	For each SDG or each sample preparation and analysis procedure per batch of prepared samples, whichever is more frequent.
Laboratory Control Sample	70-130% Recovery	For each SDG or each sample preparation and analysis procedure per batch of prepared samples, whichever is more frequent.
Spike Sample	75-125% Recovery	For each matrix type or for each SDG, whichever is more frequent.
Post-Digestion Spike	75-125% Recovery	Each time Spike Sample Recovery is outside QC limits.
Duplicate Sample Analysis	RPD<20 for sample values ≥5x CRQL; for sample values <5xCRQL, control limit = CRQL	For each matrix type or for each SDG, whichever is more frequent.
ICP-MS Tune	Mass calibration must be within 0.1 amu over the range of 6 to 210 amu, or the percent Relative Standard Deviation (%RSD) of all the integrations of the absolute signals of the analytes must be ≤5.0%.	Prior to calibration.
Internal Standards	The absolute response of any one internal standard must not deviate more than 60-125% from the original response in the calibration blank.	Internal standards shall be present in all samples, standards, and blanks (except the tuning solution) at identical levels.
Determination of Method Detection Limits		Prior to contract award, annually thereafter, and after major instrument adjustment.

B9. QAPP Additions and Deviations

An Addendum to the QAPP, Revision No. 6, was prepared and finalized in September, 2012, to document changes in the sampling and analysis as well as the evaluation of the data. These additions and deviations to the QAPP are presented here.

Time-Series Analysis - An important addition was made to the sampling approach for MW01 following the preparation and approval of version 6 of the QAPP. This addition was documented in an email (4/12/2012) from a Principal Investigator to the QA Manger overseeing this project. The email text is provided below.

The following is a change to the sampling strategy for MW01. The sampling methodology below supersedes the presentation in the QAPP titled "Ground-Water Investigation in Pavillion, Wyoming" (v6, 2/17/2012, QA ID NO. G-14478).

The USGS-EPA technical workgroup, upon consensus agreement, determined that samples were to be collected at MW01 after attainment of stabilization parameters and after purging one borehole volume. Subsequently, a letter from WYDEQ to USGS provided direction for USGS to additionally remove three casing (now borehole, based on current USGS Sampling and Analysis Plan) volumes prior to sampling at MW01. Thus, two sample collection events, at 1 and 3 borehole volumes, respectively, are currently planned. There should be no expectation that the exact same concentration of various analytes will be observed at both sampling points due to laboratory variability and oscillatory behavior frequently observed in published studies on time series testing during purging. When there is oscillatory behavior, two samples cannot define a trend. Also purge volume may impact observed sample concentrations. Consequently, it is necessary for EPA to conduct a time-series analysis at MW01 to fully characterize expected variability in concentration during purging. Time-series analysis typically involves collection of at least 10 samples over time.

The following approach will be followed by EPA during the April 2012 sampling of MW01.

1) A sample will be collected after purging 1 borehole volume (approx. 410 gallons) and after stabilization of field parameters. This is similar to the approach used during the Phase IV sampling event and the approach was agreed on by the USGS-EPA technical workgroup. This sample will be collected in duplicate (labeled EPAMW01-0412 and EPAMW01d-0412).

2) Samples will be collected after approx. every 90 gallons of continuous purging for dissolved metals (filtered), anions (filtered), water isotopes (filtered), RSKSOP259 (alcohols and volatile organics), and GRO. An identical sampling approach will be utilized as described in the QAPPv6 (same bottles, preservation, storage). Sequential samples will be labeled with -x, e.g., EPAMW01-0412-2 or EPAMW01-04 12-5, for the second and fifth sample collected in series, respectively. This series of samples is intended to provide reasonable time-dependent data for major and minor elements as well as organic compounds of interest (e.g., GRO and isopropanol). The water isotope data will useful in evaluating whether significantly different water sources are pulled into the screened during interval during the prolonged purging.

3) After approximately every 270 gallons, in additi on to the samples noted in 2) above, samples for glycols, MBAS, ethoxylated compounds, DRO, and SVOCs will be colle cted for analysis. Again see QAPPv6 for sample collection details. These samples are needed to track time-dependent (volume-dependent) behavior of critical organic analytes.

4) Finally after approx. 3 borehole volumes and stabilization of parameters, a final complete sample set will be collected. This sample will be labeled EPAMW01-0412-10.

After each sample is collected, the time will be noted and water volume pumped will be noted in order to corre late the sampling point with geochemical parameters recorded in the purge log and recorded water levels in the well.

Overall this approach was followed in the field, except the order of samples had to be changed in order to deal with unexpected delays in collecting the first sample.

VOC Preservation - On 3/29/2012, the QAM was notified of a QAPP deviation regarding preservation of Volatile Organic Compound samples collected for the Region 8 laboratory. The QAPP stated that trisodium phosphate would be used as a sample preservative. Based on input from the laboratory, it was decided to use HCl to preserve samples to pH<2 because it was determined that one or more analytes would be affected by base hydrolysis, and because the lab's existing calibration and QC was based on the HCl preservative. Results presented in Section B.7 of this Appendix suggest that the method of preservation had no impact on the analytical results.

Blank Sample Collection - During the course of the field sampling, a deviation occurred from the guidelines outlined in the QAPP. The QAPP stated that field and equipment blanks would be collected on each day of sampling (Table B2). Sampling occurred on seven days from April 16 to April 24. Collecting

blanks on each sampling day would have resulted in an unnecessarily large number of blank samples submitted for analysis. Consequently, field blanks were collected on the 16th, 18th, 22nd, and 24th of April. Samples collected on April 17th (PGDW23 and PGDW30) were evaluated for blank contamination using blank samples from April 16th. Samples collected on April 19 and April 20 (PGDW20 and PGPW02) were evaluated for blank contamination using blank samples from April 18th. Importantly, blank samples were collected on each occasion that MW01 and MW02 were sampled. Also, Trip Blanks were included in all sample shipments to the analytical laboratories in accordance with original QAPP guidelines (Table B2).

Trace Metal Analysis by ICP-MS - Analysis of the original ICP-MS results for Phase V found that the laboratory did not analyze interference check solutions (ICSs) as described in EPA Method 6020A. These ICSs would have enabled the laboratory to evaluate the analytical method's ability to appropriately handle known potential interferences and other matrix effects. In ICP-MS analysis, the ICS is used to verify that interference levels are corrected by the data system within quality control limits. Because of the importance of this missing quality control check, it was necessary to reject the data from the original analysis.

The samples were analyzed through the EPA Superfund Analytical Services Contract Laboratory Program (EPA CLP). Samples were sent for analysis under the EPA CLP Inorganic Statement of Work ISMO1.3, Exhibit D - Part B, "Analytical Methods for Inductively Coupled Plasma - Mass Spectrometry", with some minor requested modifications. The contract laboratory was requested to analyze water/aqueous samples for Cd, Cr, As, Cu, Pb, Ni, Se, Tl and Sb by ICP-MS. The reanalysis did not include Hg, Th, or U. Mercury was excluded because the sample holding time was exceeded. Th and U were excluded because the specialized low-level quantitation request for these elements could not be accommodated in the necessary timeframe. Table B37 summarizes the acceptance criteria and frequency for the QC checks conducted during the course of sample reanalysis by ICP-MS.

Other items addressed in the QAPP Addendum were data qualifiers, application of data qualifiers to samples impacted by lab, field, equipment, and trip blanks, and revisions to QC criteria for metals analysis by ICP-OES (Table B20).

B10. Field QA/QC

Field measurements in Phase V consisted of YSI Model 556 flow-cell readings for temperature, specific conductance, pH, oxidation-reduction potential, and dissolved oxygen. YSI electrodes were calibrated in the morning. Performance checks were conducted at mid-day and at the end of each day. NIST-traceable 1413 µS/cm specific conductance standard was used for calibration and performance checks. In one case, YSI confidence solution was used to check the electrodes. NIST-traceable buffer solutions (7.00 and 10.01) were used for pH calibration and performance checks. Prior to and after sampling the deep monitoring wells, a pH 12.46 buffer solution was used as an electrode performance check. Orion ORP standard was used for calibration and performance checks of redox potential measurements. Dissolved oxygen sensors were calibrated with air, and low-oxygen measurement performance was tested with a zero-oxygen solution (sodium sulfite). Table B38 provides the results of mid-day and end-of-the-day performance checks. Prior to field deployment, the electrode assembly and meter had been serviced. On 4/22/2012, the conductivity electrode was slightly out of calibration at the end of the day. This affects the specific conductance value recorded for EPAMW02-0412-2; the value is flagged as estimated. In all other cases performance checks were within acceptance limits (Table B38).

B11. Data Qualifiers

Data qualifiers are listed in Table B31. Many factors can impact the quality of data reported for environmental samples, including factors related to sample collection in the field, transport of samples to laboratories, and the work conducted by various analytical laboratories. The list of qualifiers in Table B31 is based on the Data Qualifier Definitions presented in the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Superfund Organic Methods Data Review (USEPA/540/R-01, 2008), with the addition of data qualifiers H and B which are necessary for communicating issues that occur during analysis in laboratories not bound by the CLP statement of work. The R qualifier is used in

Table B38. Field QC data for YSI electrode measurements.

Standard Solution for Mid-day and End-of-the-day Electrode Performance Checks Standard Solution	Electrode Reading	Acceptance Range
4/16/2012 Mid-day		
pH 7.00	7.12	6.80-7.20
Specific Conductance 7630-7970 µS/cm	7970 µS/cm	7630-7970
pH 12.46	12.49	12.26-12.66
4/16/2012 End-of -day		
pH 10.01	10.05	9.81-10.21
pH 12.46	12.40	12.26-12.66
Specific Conductance 1413 µS/cm	1400 µS/cm	1342-1484
Zero-oxygen	0.05 mg/L	0.00-0.10
4/17/2012 Mid-day		
pH 7.00	7.02	6.80-7.20
Specific Conductance 1413 µS/cm	1390 µS/cm	1342-1484
4/17/2012 End-of -day		
pH 10.01	9.98	9.81-10.21
Specific Conductance 1413 µS/cm	1382 µS/cm	1342-1484
4/18/2012 Mid-day		
pH 12.46	12.49	12.26-12.66
Specific Conductance 1413 µS/cm	1390 µS/cm	1342-1484
4/18/2012 End-of -day		
pH 10.01	9.97	9.81-10.21
pH 12.46	12.42	12.26-12.66
Specific Conductance 1413 µS/cm	1380 µS/cm	1342-1484
Zero-oxygen	0.01 mg/L	0.00-0.10
4/19/2012 Mid-day (completed sampling)		
pH 7.00	7.03	6.80-7.20
Specific Conductance 1413 µS/cm	1398 µS/cm	1342-1484
Zero-oxygen	0.02 mg/L	0.00-0.10
4/20/2012 Mid-day		
pH 12.46	12.43	12.26-12.66
Specific Conductance 1413 µS/cm	1390 µS/cm	1342-1484
4/20/2012 End-of -day		
pH 10.01	9.99	9.81-10.21
Specific Conductance 1413 µS/cm	1387 µS/cm	1342-1484

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4/22/2012 Initial calibration checks		
pH 10.01	10.01	9.81-10.21
pH 12.46	12.41	12.26-12.66
Specific Conductance 1413 µS/cm	1410 µS/cm	1342-1484
Zero-oxygen	0.01 mg/L	0.00-0.10
4/22/2012 End-of -day		
pH 12.46	12.35	12.26-12.66
Specific Conductance 1413 µS/cm	1490 µS/cm	1342-1484
Zero-oxygen	0.00 mg/L	0.00-0.10
4/24/2012 Initial calibration checks		
pH 10.01	10.01	9.81-10.21
pH 12.46	12.41	12.26-12.66
Specific Conductance 1413 µS/cm	1410 µS/cm	1342-1484
Zero-oxygen	0.01 mg/L	0.00-0.10
4/24/2012 End-of -day		
pH 12.46	12.61	12.26-12.66
Specific Conductance 1413 µS/cm	1370 µS/cm	1342-1484
Zero-oxygen	0.02 mg/L	0.00-0.10

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cases where it is determined that data need to be rejected. Data rejection can occur for many reasons that must be explained in QA/QC narratives. In this data set, formate concentration data are rejected because of sample container contamination. Data for ethoxylated alcohols are rejected because of lab and field blank contamination as well as other laboratory QA/QC issues (see Table B29). Trace metal data by ICP-MS (dissolved, CLP data) were rejected for sample PGDW20-0412 because of obvious contamination.

B12. Tentatively Identified Compounds (TICs)

The Region 8 laboratory reported tentatively identified compounds (TICs) from VOC and SVOC analyses. Twenty-one VOC TICs and thirty-seven SVOC TICs were identified in samples and blanks (Tables B39 and B40). To be identified as a TIC, a peak had to have an area at least 10% as large as the area of the nearest internal standard and a match quality greater than 80. The TIC match quality is based on the number and ratio of the major fragmentation ions. A perfect match has a value of 99. Although the TIC report is essentially a qualitative report, an estimated concentration is calculated based on a response factor of 1.00 and the area of the nearest internal standard. The search for TICs includes the whole chromatogram from approximately 3.0 to 32.0 minutes (for VOCs) and 3.0 to 41.0 minutes for SVOCs, respectfully. TICs are compounds that can be detected, but, without the analysis of standards, cannot be confirmed or reliably quantified. Oftentimes TICs are representative of a class of compounds rather than indicating a specific compound. Only the top TIC is reported for each peak.

B13. Audits of Data Quality (ADQ)

An Audit of Data Quality (ADQ) was performed per EPA's National Risk Management Research Laboratory (NRMRL) SOP, Performing Audits of Data Quality (ADQs), to verify that requirements of the Quality Assurance Project Plan (QAPP) were properly implemented for the analysis of samples submitted to laboratories identified in the QAPP associated with this project. The ADQ was performed by Neptune and Company, Inc. and reviewed by NRMRL QA staff. NRMRL QA staff provided the ADQ results to the project Principal Investigators for response and assisted in the implementation of corrective actions. The ADQ process is an important element of Category I (highest of four levels in EPA) Quality Assurance Projects, which this study has operated under for all aspects of groundwater collection and analysis.

Complete data packages were provided to the auditors for the Pavillion Wyoming April 2012 sampling event. A complete data package consists of the following: sample information, method information, data summary, laboratory reports, raw data including QC results, and data qualifiers. The QAPP was used to identify data quality indicator requirements and goals, and a checklist was prepared based on the types of data collected.

The data packages were reviewed against the checklist by tracing a representative set of the data in detail from raw data and instrument readouts through data transcription or transference through data manipulation (either manually or electronically by commercial or customized software) through data reduction to summary data, data calculations, and final reported data. All calibration and QA/QC data were reviewed for all available data packages. Auditors also reviewed the data summary spreadsheet prepared by the Principal Investigator to determine if data had been accurately transcribed from lab summary reports and appropriately qualified based on lab and field QC results.

The critical analytes, as identified in the QAPP, are Gasoline Range Organics (GRO); Diesel Range Organics (DRO); Semivolatile Organic Compounds (SVOCs); Volatile Organic Compounds (VOCs, also known as VOAs) of ethanol, isopropyl alcohol, tert butyl alcohol, naphthalene, benzene, toluene, ethylbenzene, and xylene; and the major ions potassium and chloride. Also included in the ADQ were the following analytes: dissolved inorganic and organic carbon; dissolved gases by GC; stable oxygen and hydrogen isotopes of water; low molecular weight acids by HPLC; stable carbon isotope ratio of dissolved inorganic carbon, stable carbon and hydrogen isotope ratios of dissolved methane; tritium; MBAS (methylene blue active substances), glycols; ethoxylated alcohols and alklyphenols; acrylamide; methanol, ethylene glycol, and propylene glycol.

The findings of an ADQ can consist of the following categories: finding (a deficiency that has or may have

a significant effect on the quality of the reported results; a corrective action response is required), or observation (a deficiency that does not have a significant effect on the quality of the reported results; a corrective action response is required). The ADQ noted a series of 14 observations, most of which resulted in the addition of data qualifiers to a data summary spreadsheet (corrective action), or specific additions to this Appendix on QA/QC. Many ADQ observations are included to Table B30 (QA/QC narrative associated with laboratory analysis of Phase V samples).

A separate ADQ was performed by NRMRL QA Managers on the reanalysis of total and dissolved metals by ICP-MS by the EPA Contract Laboratory Program. A Data Assessment was conducted on these data by the EPA CLP Sample Management Office. See Section B9 for a description of metals analysis by ICP-MS. The ADQ noted a series of 6 observations relating to data qualifiers, reports issued by the CLP lab, and data transcription errors.

Table B39. Tentatively identified compounds (TICs) for VOCs.

Well	Compound	Amount, µg/L
PGDW05-0412	2-Methyl-adamantane	3.39
	cis-1,4- dimethyl-adamantane	1.37
	6-Methylene-spiro[4.5]decane	0.74
PGDW20-0412	2-Methyladamantane	0.67
PGDW20d-0412	2-Methyladamantane	0.67
PGDW30-0412	1,4-Dimethyladamantane,1.alpha	2.33
EPAMW02-0412-1	2-Methyl-butane	5.83
	Pentane	2.07
	Methyl-cyclohexane	4.34
	2-Ethyl-1-hexanol	2.18
	Isobutane	92
	Cyclohexane	25.6
	1-Ethyl-3-methyl-benzene	68.6
	1-Ethyl-4-methyl-benzene	18.2
EPAMW02-0412-2	Isobutane	240
	2-Methyl-butane	66.4
	Pentane	27.0
	Cyclohexane	73.6
	Methyl-cyclohexane	44.4
	1-Ethyl-2-methyl-benzene	101.4
	Acetic acid, 2-ethylhexyl ester	24.2
	1-Ethyl-4-methyl-benzene	18.2
EPAMW01-0412	2-Methyl-butane	46.0
	Pentane	27.5
	2-Methyl-pentane	12.4
	Hexane	7.00
	Methyl-cyclopentane	32.3
	Cyclohexane	82.3
	Isopropylcyclobutane	2.96
	Methyl-cyclohexane	65.2

EPAMW01d-0412	2-Methyl-butane	44.4
	Pentane	26.7
	2-Methyl-pentane	12.2
	Hexane	6.8
	Methyl-cyclopentane	31.9
	Cyclohexane	81.4
	Isopropylcyclobutane	3.07
	Methyl-cyclohexane	64.53
	2-Ethyl-1-hexanol	5.06
EPAMW01-0412-10	2-Methyl-butane	39.3
	Pentane	20.8
	Hexane	5.06
	Methyl-cyclopentane	21.2
	Cyclohexane	52.1
	1,2-Dimethyl-cis-cyclopentane	2.65
	Methyl-cyclohexane	43.2

Table B40. Tentatively identified compounds (TICs) for SVOCs.

Well	Compound	Amount, µg/L
PGDW05-0412	2-Methyl-adamantane	0.84
	Substituted adamantane, isomers	0.56
	Cyclic octaatomic sulfur	1.32
PGDW20-0412	1-Adamantanecarboxlic acid chloride	0.71
	Cyclic octaatomic sulfur	0.87
PGDW20d-0412	2-Methyladamantane	0.57
	Cyclic octaatomic sulfur	0.65
PGDW30-0412	Substituted adamantane, isomers	0.56
EPAMW02-0412-1	Toluene	114
	2-Hexanol, 2-methyl-	13.5
	Ethylbenzene	28.8
	o-Xylene	75.5
	1-Ethyl-3-methyl-benzene	24.4
	1,2,3-Trimethyl-benzene	24.8
	1-Ethyl-2-methyl-benzene	18.2
	1,2,4-Trimethyl-benzene	68.3
	3,5-Dimethyl phenol	11.6
	Ricinoleic acid	76.5
EPAMW02-0412-2	2-Methyl-2-pentanol	38.9
	Toluene	142
	Ethylbenzene	41.2
	o-Xylene	112
	1-Ethyl-3-methyl-benzene	46.7
	1,2,3-Trimethyl-benzene + isomers	136
	3,5-Dimethyl benzoic acid	10.9
	Ricinoleic acid	89.2

EPAMW01-0412	2-Ethyl-hexanoic acid	1.8
	Benzothiazole	0.80
	Benzeneacetic acid	5.9
	Nonanoic acid	0.85
	Indolizine	1.3
	Phthalic anhydride	1.5
	5-Hexyldihydro-2(2H)-furanone	0.91
	Dodecanoic acid	2.3
	Azelaic acid	0.77
	Tridecanoic acid	0.90
	2-Mercaptobenzothiazole	1.4
	Cyclic octaatomic sulfur	1.3
EPAMW01d-0412	2-Ethyl-hexanoic acid	1.9
	Benzeneacetic acid	5.6
	Nonanoic acid	0.82
	Indole	1.4
	5-Hexyldihydro-2(2H)-furanone	0.86
	Dodecanoic acid	2.0
	Tetradecanoic acid	0.64
	n-Hexadecanoic acid	1.4
	2-Mercaptobenzothiazole	1.4
	Cyclic octaatomic sulfur	1.1
	Octadecanoic acid	1.1
	9-Octadecenoic acid, 12-hydroxy-	15.7

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EPAMW01-0412-4	2-Octanone	1.4
	1-Hexanol, 2-ethyl	135
	2-Ethyl-hexanoic acid	2.4
	Benzeneacetic acid	8.8
	Nonanoic acid	1.1
	p-Tert-butyl-phenol	1.7
	Phthalic anhydride	6.1
	5-Hexyldihydro-2(2H)-furanone	1.2
	2-Mercaptobenzothiazole	2.6
	Cyclic octaatomic sulfur	1.0
	9-Octadecenoic acid, 12-hydroxy-	40
	1-Phenanthrenecarboxylic-acid	1.1
EPAMW01-0412-7	Benzeneacetic acid	1.4
	Phthalic anhydride	1.5
	5-Hexyldihydro-2(3H)-furanone	0.72
	Dodecanoic acid	1.6
	Azelaic acid	0.67
	Tetradecanoic acid	0.54
	2-Mercaptobenzothiazole	1.4
	Cyclic octaatomic sulfur	1.4
	Ricinoleic acid	10.0
EPAMW01-0412-10	Benzeneacetic acid	4.3
	Phthalic anhydride	4.3
	5-Hexyldihydro-2(3H)-furanone	0.53
	Dodecanoic acid	1.2
	2-Mercaptobenzothiazole	0.88
	Cyclic octaatomic sulfur	1.7
	Ricinoleic acid	3.6

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EquipBlk1	2-Undecanone	0.53
EquipBlk3	2-Undecanone	0.57
EquipBlk4	2-Undecanone	1.5
	1-Methyl-2-pyrrolidinone	2.5
	2-Nonanone	1.1
FieldBlk3	2-Undecanone	0.50

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Section C

DIRECTOR APPROVED
August 30, 2012

Transmittal of Contract Laboratory Results and Evaluation of Laboratory-Specific Quality Control Measures, U.S. Environmental Protection Agency Monitoring Well MW02, Pavillion, Wyoming, 2012

Administrative Report Prepared for the U.S. Environmental Protection Agency

Compiled by Gary L. Cottrell and Donna N. Myers

U.S. Department of the Interior
U.S. Geological Survey

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The following abbreviations are used in this report:

AQA	Analytical Quality Associates, Inc.
CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verification
CoC	Chain-of-custody
CRI	Check Standard
CRQL	Contract Required Quantitation Limit
DLCK	Dilution Check Standard
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
ISA	Interference Check Sample Solution A
ISB	Interference Check Sample Solution AB
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MCAWW	Methods for chemical analysis of water and wastes
MDL	Method Detection Limit
MRL	Minimum Reporting Level
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Non-detect
NELAP	National Environmental Laboratory Accreditation Program
NWQL	National Water Quality Laboratory
QA	Quality assurance
QC	Quality control
RCRA	Resource Conservation and Recovery Act
RL	Reporting Level
RPD	Relative percent deviation
SM	Standard methods for the examination of water and wastewater
SW846	Test methods for evaluating solid waste, physical/chemical methods, third edition, November 1986 and its updates
TAL	TestAmerica Laboratory, Inc.
TAL AUS	TestAmerica Austin
TAL DEN	TestAmerica Denver
TAL PIT	TestAmerica Pittsburgh
TAL SAV	TestAmerica Savannah
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey

Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

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DIRECTOR APPROVED
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Transmittal of Contract Laboratory Results and Evaluation of Laboratory-Specific Quality Control Measures, U.S. Environmental Protection Agency Monitoring Well MW02, Pavillion, Wyoming, 2012

Administrative Report Prepared for the U.S. Environmental Protection Agency

Compiled by Gary L. Cottrell and Donna N. Myers

Introduction

The U.S. Environmental Protection Agency (USEPA) installed and sampled two deep monitoring wells (MW01 and MW02) near Pavillion, Wyo., as part of a larger investigation of groundwater contamination in the area. The previous phases of the investigation were completed from 2009 to 2011. A USEPA draft report entitled, "Investigation of ground water contamination near Pavillion, Wyo.," (2011a) provides findings from the 2009 to 2011 sample collection and analysis activities at MW01 and MW02 and other wells. A scientific peer panel was organized by the USEPA to review its draft report (USEPA, 2011b). This activity is planned to take place in late 2012.

In February 2012, a technical team was formed, comprised of representatives of the U.S. Geological Survey (USGS), USEPA, the State of Wyoming, the Wind River Environmental Quality Commission, and the Northern Shoshone Business Council. The latter two agencies are Tribal representatives from the Wind River Indian Reservation. The team's purpose was to reach consensus on groundwater sampling, methods of chemical analysis, and quality assurance (QA) and quality control (QC) practices to be used by the USGS to report results of water-quality sampling from wells MW01 and MW02.

The USEPA returned to the Pavillion area in April, 2012, to continue its groundwater investigation by sampling MW01 and MW02—this time in partnership with the USGS, Wyoming Department of Environmental Quality, and the Tribal representatives from the Wind River Indian Reservation.

Although the USGS and USEPA collected and analyzed samples taken from MW01 on April 24, 2012, the USGS did not collect samples from MW02 during a sampling event on April 22 for reasons related to low-yield wells detailed elsewhere (Wright and McMahon, in press). To provide comparison results for the 2011 USEPA sample collection and analysis, the USEPA collected replicate sample aliquots from MW02 on April 22 and sent them to both the USEPA laboratories and to the USGS contract laboratory, TestAmerica Laboratory, Inc. (TAL). The aliquots for TAL were sent to the TAL

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in Arvada, Colorado, with the exception of the aliquots for methylene blue active substance analysis. After arrival at the TAL in Arvada, glycols and methanol aliquots were sent to TAL in Austin, Texas, and the dissolved gases (propane) aliquots to TAL in Pittsburgh, Pennsylvania. Due to the 48-hour holding time, the methylene blue active substance aliquots were sent directly to the TAL in Savannah, Georgia, where that analysis was performed. The sample aliquots sent to TAL were analyzed for selected chemical compounds as identified in table 1. The TAL sample results were reviewed and evaluated for laboratory-specific QC measures by the USGS, and a data validation review was completed by Analytical Quality Associates, Inc. (AQA) in Albuquerque, New Mexico. This report contains the TAL results and laboratory-specific QC measures for MW02 sampled on April 22, 2012.

Table 1. Test methods used to analyze sample aliquots collected from U.S. Environmental Protection Agency monitoring well MW02, Pavillion, Wyo., on April 22, 2012.

[GC/MS, gas chromatography/mass spectrometry; DEN, Denver, Colo.; SW846, "Test methods for evaluating solid waste, physical/chemical methods," Third ed., November 1986 and updates; SIM-GC/MS, selected ion monitor-gas chromatography/mass spectrometry; GC, gas chromatography; RSK, "Sample prep and calculations for dissolved gas analysis in water samples using a GC headspace equilibrium technique," RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Laboratory; ICP, inductively coupled plasma; ICP–MS, inductively coupled plasma–mass spectrometry; CVAA, cold vapor atomic absorption; MCAWW, "Methods for chemical analysis of water and wastes," EPA-600/4-79-020, March 1983 and subsequent revisions; EPA, U.S. Environmental Protection Agency; SM, "Standard methods for the examination of water and wastewater;" AUS, Austin, Tex.; PIT, Pittsburgh, Pa.; SAV, Savannah, Ga.]

Method description	Location	Method	Preparation method
Volatile organic compounds (GC/MS)	DEN[1]	SW846 8260B	SW846 5030B
Semivolatile organic compounds (SIM-GC/MS)	DEN	SW846 8270C	SW846 3520C
Semivolatile organic compounds (GC/MS)	DEN	SW846 8270C SIM	SW846 3510C
Gasoline range organics (GC)	DEN	SW846 8015B	SW846 5030B
Dissolved gases (ethane, ethylene, methane) (GC)	DEN	RSK-175	RSK-175
Diesel range organics (GC)	DEN	SW846 8015B	SW846 3510C
Metals (ICP) dissolved	DEN	SW846 6010B	SW846 3005A
Metals (ICP) total	DEN	SW846 6010B	SW846 3010A
Metals (ICP–MS) dissolved	DEN	SW846 6020	SW846 3005A
Metals (ICP–MS) total	DEN	SW846 6020	SW846 3020A
Mercury (CVAA) dissolved and total	DEN	SW846 7470A	SW846 7470A
Nitrogen, ammonia	DEN	MCAWW 350.1	
Nitrogen, nitrate and nitrite	DEN	MCAWW 353.2	
Phosphorus, total (low level)	DEN	EPA 365.1	MCAWW 365.2/365.3/365
Phosphorus, total (low level)	DEN	EPA 365.1	MCAWW 365.2/365.3/365
Anions, ion chromatography	DEN	SW846 9056	
Organic carbon, dissolved	DEN	SW846 9060	
Organic carbon, total	DEN	SW846 9060	
Solids, total dissolved	DEN	SM 2540C	
Glycols and methanol	AUS[2]	SW846 8015	
Dissolved gases (propane) (GC)	PIT[3]	RSK-175	
Methylene blue active substance surfactants	SAV[4]	EPA 425.1	

[1] The location identified as DEN is TestAmerica Denver, 4955 Yarrow Street, Arvada, Colo. 80002, 303-736-0100.

[2] The 8015B glycols and methanol analysis presented in this report was performed at TestAmerica Austin, 14050 Summit Drive, Suite A100, Austin, Tex. 78728, 512-244-0855.

[3] The requested RSK-175 (Propane) analysis presented in this report was performed at TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, Pa. 15238, 412-963-7058.

[4] The requested 425.1 methylene blue active substances surfactants analysis presented in this report was performed at TestAmerica Savannah, 5102 La Roche Avenue, Savannah, Ga. 31404, 912-354-7858.

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The samples collected by the USGS from MW01 on April 24, 2012, and analyzed by TAL are being reported separately by P.R. Wright and others (unpub. data, 2012).

Purpose and Scope

The purpose of this report is to provide an independent set of laboratory results analyzed by TAL and quality-assured by the USGS and AQA for sample aliquots collected by the USEPA from deep monitoring well MW02 on April 22, 2012. These results provide additional information to the USEPA for comparison purposes for its investigation in Pavillion, Wyoming. The USGS is a non-regulatory agency with a long history of providing scientific data and information to inform and assist in local, state, and national policy decisions.

Results may be compared between the USEPA and TAL laboratories, because the list of chemical compounds and analytical chemistry methods used by the USEPA and TAL laboratories were, wherever possible, well coordinated to provide comparable approaches to sample analysis, QA, and QC (table 1). In some cases, such as alkylphenols and various isotopic analyses, the USGS contract laboratory did not have a matching capability and those tests were not performed by TAL. In the analysis of glycols, the USEPA and TAL methods were not fully comparable. The objective of analyzing replicate sample aliquots by both USEPA and TAL laboratories is to provide a set of quality-assured and independently analyzed results to support the investigation of the chemical composition of groundwater collected from MW02.

The USGS National Water Quality Laboratory (NWQL) and TAL have similar methods, and each is accredited by the National Environmental Laboratory Accreditation Program (NELAP). A USGS contract laboratory was used instead of the NWQL since TAL uses regulatory methods that closely match those identified for use in the USEPA quality assurance project plan, available online at *http://www.epa.gov/region8/superfund/wy/pavillion/EPA_ReportOnPavillion_Dec-8-2011.pdf*. Furthermore, TAL was able to provide some analyses unavailable at the NWQL. The TAL's certifications are available on its home page at *http://www.testamericainc.com/*.

Analytical tests were performed for volatile organic compounds, semivolatile organic compounds, gasoline range organics, diesel range organics, glycols, dissolved organic carbon, total organic carbon, anions, metals, trace elements, and mercury by TAL using USEPA SW-846 methods (table 1). The publication EPA SW-846 is the official compendium of analytical and sampling methods that have been evaluated and approved for use in complying with the Resource Conservation and Recovery Act (RCRA) regulations (USEPA, n.d.). Additional analyses were performed by TAL for dissolved gases, nutrients, and methylene blue active substances using other standard USEPA methods.

Quality controls were in place at each step of the process to ensure data reliability starting with chain-of-custody (CoC) processing upon sample receipt at the laboratory and continuing through final customer (USEPA) review. Standard laboratory QA and (or) QC processes are routinely performed by TAL and include, but are not limited to, analysis of laboratory blanks, laboratory control samples, laboratory control sample duplicates, laboratory matrix spikes, and laboratory matrix spike duplicates

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(table 2). In addition, QA was performed during the review of the data package at the USGS NWQL and through AQA, an independent data validation company. The USEPA also submitted blind performance evaluation samples to TAL for this project.

Table 2. Quality assurance and (or) quality control procedures applied to the analysis and data review of sample aliquots collected from U.S. Environmental Protection Agency monitoring well MW02, Pavillion, Wyo., on April 22, 2012.

[QA/QC, quality assurance/quality control; RPD, relative percent deviation; RL, reporting level; USGS, U.S. Geological Survey; USEPA, U.S. Environmental Protection Agency]

QA/QC type	Purpose	Checking	Performed by
Chain-of-Custody	Ensure sample integrity	Sample integrity	Sample collector and analyzing laboratory
Sample receiving checklist	Verify sample condition	Sample condition	Analyzing laboratory
Laboratory matrix spikes	Determine matrix effects	Recovery and RPD	Analyzing laboratory
Laboratory control samples	Confirm instrument operation	Recovery and RPD	Analyzing laboratory
Laboratory blanks	Contamination check	Contamination	Analyzing laboratory
Surrogates	Check preparation efficiency	Recovery	Analyzing laboratory
Laboratory duplicates	Check reproducibility	Consistency	Analyzing laboratory
Method reporting level check	Ensure values near the RL	Run integrity	Analyzing laboratory
Serial dilution check	Ensure integrity of diluted results	Dilution integrity	Analyzing laboratory
Contract review	Ensure contract compliance	All of the above plus hold-time, and overall meets contract requirements	USGS laboratory
Data validation	Provide outside review	Entire data package	Third party contracted by the USGS
Performance evaluation samples	Check laboratory performance through blind check samples	Laboratory performance for the analytes of interest	USEPA laboratory (Ada, Okla.)
Final customer review	Logic check	Results are reasonable for the sampling location and conditions	USEPA

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Methods of Analysis

This project used the standard CoC record form (appendix 1). Sample aliquots were shipped overnight to the appropriate laboratory, primarily TAL Denver (Arvada, Colo.). Upon receipt, each cooler was checked for intact custody seals, correct temperature, and other criteria documented during login. The analyses requested, the location of the TestAmerica laboratory performing the analyses, and the methods used for analysis are presented in table 1. A summary of the QA and (or) QC procedures applied to the analysis and data review of the sample aliquot collected by USEPA is presented in the order of occurrence in table 2. All the steps are routinely performed under the TAL contract, with the exception of the data validation and performance evaluation samples. These additional quality processes were added to provide increased confidence in the laboratory procedures that produced the final analytical data.

Upon delivery of sample results to the NWQL, the data packet was reviewed for contract compliance. Items checked included hold-time compliance, matrix spike results, laboratory control sample results, and duplicate reproducibility. This data quality review determines if laboratory contract requirements have been met and provides an overview of potential problems with the determination and quality of the analytical results. A blank data-review worksheet, used for this review, is included in appendix 2.

The NWQL contract with AQA for data validation services requires the reviewer to (1) review and validate the reported analytical results collectively for the data package as a whole, including laboratory qualifiers; (2) summarize data and QC deficiencies and evaluate the impact on overall data quality; (3) assign appropriate data validation qualifiers, as necessary; and (4) prepare an analytical data validation report.

The USEPA submitted performance evaluation samples to TAL as additional assurance of the laboratory's ability to identify key compounds. The resulting data for the performance evaluation sample were reviewed by USEPA personnel.

Results

The sample aliquots were shipped and analyzed using CoC protocols. The CoC records and sample preservation were checked upon sample arrival at TAL, as documented in appendix 3. These records indicate (1) that CoC was maintained, (2) the samples were received in good condition, and (3) were at acceptable temperatures.

Based upon the results of the performance evaluation samples and the laboratory certifications provided, there are no laboratory-level qualifications to these results. Sample result-level qualifiers are included in the data files described in table 3 and have been summarized in appendix 4.

With over 400 individual sample results reported, there were 14 detections in the laboratory blank results. Only pyrene had a laboratory blank result greater than one-half of the minimum reporting level, and this pyrene blank result was less than the reporting level and the MW02 environmental sample result was a non-detect. The laboratory control sample results were all within acceptable limits. The laboratory was provided with additional sample volume that they spiked with the compounds of interest

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(matrix spike) for each analytical procedure. A duplicate matrix spike was analyzed for many of the methods as an additional QC measure. There were 31 matrix spike results flagged and eight of these were flagged because the spike amount was much smaller than the concentration of the analyte occurring in the sample (see qualifier code "4"). This number of qualifiers is in the range commonly seen when the samples are of a complex matrix.

Overall, the QC results for the laboratory blanks, laboratory control samples, laboratory matrix spikes, and laboratory control and matrix spike duplicates support that this analytical data set is of good quality and may be used with confidence when the associated qualifiers are included.

The completed worksheet documenting the review of TAL's data package by the NWQL's contracting officer's representative is included in appendix 5. Independent data validation performed by AQA confirmed these findings, as demonstrated in appendix 6. The performance evaluation samples were reviewed by USEPA, and this written communication, dated July 11, 2012, indicated that all results were within acceptable limits, and laboratory performance was therefore satisfactory.

The analytical data are of acceptable quality and are organized into five data files. They are contained on an accompanying compact disc and labeled as appendixes 7 through 11. For convenience, file names and descriptions are summarized in table 3. For easier navigation of the associated files, see appendix 12. This file contains page numbers for key areas of the data package, information on file contents, and definitions for commonly used abbreviations and qualifiers.

Table 3. Files of sample results obtained from the analysis of sample aliquots collected from U.S. Environmental Protection Agency monitoring well MW02, Pavillion, Wyo., on April 22, 2012.

[Files are presented as numbered appendixes. CSV, indicates a comma separated variable file; PDF, indicates a portable document format file]

Appendix	File name	File type	Contents
7	280-28076-1-Glycols and Methanol-QUA08	CSV	Glycol analytical results
8	280-28076-1_Qua08	CSV	Analytical results other than glycols
9	J28076-1 Std_Tal_L4_Package_Mini Final Report (1 of 3)	PDF	Laboratory report with supporting documentation
10	J28076-1 Std_Tal_L4_Package_Mini Final Report (2 of 3)	PDF	Laboratory report with supporting documentation
11	J28076-1 Std_Tal_L4_Package_Mini Final Report (3 of 3)	PDF	Laboratory report with supporting documentation

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References Cited

U.S. Environmental Protection Agency, n.d., Test methods for evaluating solid waste, physical/chemical methods: USEPA, publication EPA SW–846, available at *http://www.epa.gov/epawaste/hazard/testmethods/sw846/index.htm*.

U.S. Environmental Protection Agency, 2011a, Draft—Investigation of groundwater contamination near Pavillion, Wyoming: Ada, Okla., USEPA, Region 8, 121 p., available at *http://www.epa.gov/region8/superfund/wy/pavillion/EPA_ReportOnPavillion_Dec-8-2011.pdf*.

U.S. Environmental Protection Agency, 2011b, Draft report on Pavillion groundwater quality: Available at http://www.epa.gov/region8/superfund/wy/pavillion/.

Wright, P.R., and McMahon, P.B., in press, Sampling and analysis plan for the characterization of groundwater quality in two monitoring wells near Pavillion, Wyoming: U.S. Geological Survey Open-File Report 2012–1197.

Appendixes

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