



11/01/13

## Technical Report for

**A.G. Wassenaar, Inc.**

**Baseline GW Sampling For Whiting**

**E13598.EC**

**Accutest Job Number: D51846**

**Sampling Date: 10/23/13**

### Report to:

**A.G. Wassenaar, Inc.  
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**ATTN: Jason Davidson**

**Total number of pages in report: 51**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read 'Scott Heideman'.

**Scott Heideman  
Laboratory Director**

**Client Service contact: Renea Jackson 303-425-6021**

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), TX (T104704511)

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Test results relate only to samples analyzed.

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Sample Summary

A.G. Wassenaar, Inc.

Job No: D51846

Baseline GW Sampling For Whiting  
Project No: E13598.EC

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D51846-1	10/23/13	12:30 JD	10/23/13	AQ	Ground Water	WPC-292483
D51846-1B	10/23/13	12:30 JD	10/23/13	AQ	Ground Water	WPC-292483
D51846-1F	10/23/13	12:30 JD	10/23/13	AQ	Groundwater Filtered	WPC-292483
D51846-2	10/23/13	00:00 JD	10/23/13	AQ	Trip Blank Water	TRIP BLANK



## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** A.G. Wassenaar, Inc.

**Job No** D51846

**Site:** Baseline GW Sampling For Whiting

**Report Date** 11/1/2013 10:52:02 AM

On 10/23/2013, 1 sample(s), 1 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 5.7 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D51846 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ

**Batch ID:** V7V1304

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51849-11DUP, D51849-14MS were used as the QC samples indicated.

### Volatiles by GC By Method RSK175 MOD

**Matrix** AQ

**Batch ID:** GFB432

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51846-1MS, D51846-1MSD were used as the QC samples indicated.

### Extractables by GC By Method SW846-8015B

**Matrix** AQ

**Batch ID:** OP8805

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D48576-31MS, D48576-31MSD were used as the QC samples indicated.

### Metals By Method EPA 200.7

**Matrix** AQ

**Batch ID:** MP11493

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51858-1MS, D51858-1MSD were used as the QC samples for the metals analysis.

### Metals By Method EPA 200.8

**Matrix** AQ

**Batch ID:** MP11492

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51855-1FAMS, D51855-1FAMSD were used as the QC samples for the metals analysis.

Friday, November 01, 2013

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### Wet Chemistry By Method EPA 300.0/SW846 9056

**Matrix** AQ

**Batch ID:** GP11235

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51846-1MS, D51846-1MSD were used as the QC samples for the Bromide, Chloride, Fluoride, Nitrogen, Nitrate, Nitrogen, Nitrite, Sulfate, Bromide analysis.

### Wet Chemistry By Method HACH IRB-BART

**Matrix** AQ

**Batch ID:** MB266

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

### Wet Chemistry By Method HACH SLYM-BART

**Matrix** AQ

**Batch ID:** MB267

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

### Wet Chemistry By Method HACH SRB-BART

**Matrix** AQ

**Batch ID:** MB268

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

### Wet Chemistry By Method HACH8190/SM4500P-B/E

**Matrix** AQ

**Batch ID:** GP11256

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51802-3MS, D51802-3MSD, D51802-3DUP were used as the QC samples for the Phosphorus, Total analysis.
- GP11256-D1 for Phosphorus, Total: High RPD acceptable due to low sample and duplicate concentration.

### Wet Chemistry By Method SM 2320B-2011

**Matrix** AQ

**Batch ID:** GN22442

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51629-1DUP, D51629-1MS, D51629-1MSD were used as the QC samples for the Alkalinity, Total as CaCO<sub>3</sub> analysis.

**Matrix** AQ

**Batch ID:** GN22443

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

**Matrix** AQ

**Batch ID:** GN22444

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

**Wet Chemistry By Method SM 2510B-2011****Matrix** AQ**Batch ID:** GP11265

- Sample(s) D51845-1DUP were used as the QC samples for the Specific Conductivity analysis.

**Wet Chemistry By Method SM 2540C-2011****Matrix** AQ**Batch ID:** GN22466

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51803-1DUP were used as the QC samples for the Solids, Total Dissolved analysis.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

## Summary of Hits

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**Job Number:** D51846  
**Account:** A.G. Wassenaar, Inc.  
**Project:** Baseline GW Sampling For Whiting  
**Collected:** 10/23/13



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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### D51846-1 WPC-292483

Toluene	1.3 J	2.0	1.0	ug/l	SW846 8260B
Methane	0.0252	0.00080	0.00040	mg/l	RSK175 MOD
Alkalinity, Bicarbonate as CaCO3	183	5.0		mg/l	SM 2320B-2011
Alkalinity, Total as CaCO3	183	5.0		mg/l	SM 2320B-2011
Bromide	0.14	0.050		mg/l	EPA 300.0/SW846 9056
Chloride	8.1	0.50		mg/l	EPA 300.0/SW846 9056
Fluoride	0.69	0.10		mg/l	EPA 300.0/SW846 9056
Phosphorus, Total	0.16	0.010		mg/l	HACH8190/SM4500P-B/E
Solids, Total Dissolved	252	10		mg/l	SM 2540C-2011
Specific Conductivity	413	1.0		umhos/cm	SM 2510B-2011
Sulfate	30.4	2.5		mg/l	EPA 300.0/SW846 9056
pH	8.08			su	SM4500HB+ -2011/9040C

### D51846-1B WPC-292483

Iron Reducing Bacteria	9000	25		CFU/ml	HACH IRB-BART
Slime Forming Bacteria	66500	500		CFU/ml	HACH SLYM-BART
Sulfate Reducing Bacteria	5000	200		CFU/ml	HACH SRB-BART

### D51846-1F WPC-292483

Barium	50.9	10		ug/l	EPA 200.7
Boron	130	50		ug/l	EPA 200.7
Calcium	11000	400		ug/l	EPA 200.7
Iron	30.8	10		ug/l	EPA 200.7
Magnesium	2360	200		ug/l	EPA 200.7
Manganese	18.4	5.0		ug/l	EPA 200.7
Potassium	4120	1000		ug/l	EPA 200.7
Sodium	80700	400		ug/l	EPA 200.7
Strontium	189	5.0		ug/l	EPA 200.7

### D51846-2 TRIP BLANK

No hits reported in this sample.

Sample Results

Report of Analysis



## Report of Analysis

<b>Client Sample ID:</b>	WPC-292483	<b>Date Sampled:</b>	10/23/13
<b>Lab Sample ID:</b>	D51846-1	<b>Date Received:</b>	10/23/13
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Baseline GW Sampling For Whiting		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7V23696.D	1	10/28/13	JL	n/a	n/a	V7V1304
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics+ GRO

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	1.3	2.0	1.0	ug/l	J
100-41-4	Ethylbenzene	ND	2.0	0.25	ug/l	
1330-20-7	Xylene (total)	ND	3.0	2.0	ug/l	
	TPH-GRO (C6-C10)	ND	200	200	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	94%		62-130%
2037-26-5	Toluene-D8	96%		70-130%
460-00-4	4-Bromofluorobenzene	92%		69-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	WPC-292483	<b>Date Sampled:</b>	10/23/13
<b>Lab Sample ID:</b>	D51846-1	<b>Date Received:</b>	10/23/13
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	RSK175 MOD		
<b>Project:</b>	Baseline GW Sampling For Whiting		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FB09776.D	1	10/25/13	SM	n/a	n/a	GFB432
Run #2							

Run #	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	39.0 ml	4.0 ml	500 ul	21.0 Deg. C
Run #2				

## Methane, Ethane and Propane

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	0.0252	0.00080	0.00040	mg/l	
74-84-0	Ethane	ND	0.0016	0.00080	mg/l	
74-98-6	Propane	ND	0.022	0.011	mg/l	

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

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<b>Client Sample ID:</b>	WPC-292483	<b>Date Sampled:</b>	10/23/13
<b>Lab Sample ID:</b>	D51846-1	<b>Date Received:</b>	10/23/13
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846-8015B SW846 3510C		
<b>Project:</b>	Baseline GW Sampling For Whiting		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH014351.D	1	10/26/13	TU	10/24/13	OP8805	GFH747
Run #2							

	Initial Volume	Final Volume
Run #1	1060 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.19	0.17	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	40%		20-140%		

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> WPC-292483	<b>Date Sampled:</b> 10/23/13
<b>Lab Sample ID:</b> D51846-1	<b>Date Received:</b> 10/23/13
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Baseline GW Sampling For Whiting	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate as CaC	183	5.0	mg/l	1	10/25/13	BF	SM 2320B-2011
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	10/25/13	BF	SM 2320B-2011
Alkalinity, Total as CaCO <sub>3</sub>	183	5.0	mg/l	1	10/25/13	BF	SM 2320B-2011
Bromide	0.14	0.050	mg/l	1	10/24/13 10:31	SK	EPA 300.0/SW846 9056
Chloride	8.1	0.50	mg/l	1	10/24/13 10:31	SK	EPA 300.0/SW846 9056
Fluoride	0.69	0.10	mg/l	1	10/24/13 10:31	SK	EPA 300.0/SW846 9056
Nitrogen, Nitrate	< 0.010	0.010	mg/l	1	10/24/13 10:31	SK	EPA 300.0/SW846 9056
Nitrogen, Nitrite	< 0.0040	0.0040	mg/l	1	10/24/13 10:31	SK	EPA 300.0/SW846 9056
Phosphorus, Total	0.16	0.010	mg/l	1	10/28/13	BF	HACH8190/SM4500P-B/E
Solids, Total Dissolved	252	10	mg/l	1	10/29/13	KB	SM 2540C-2011
Specific Conductivity	413	1.0	umhos/cm	1	10/29/13	KB	SM 2510B-2011
Sulfate	30.4	2.5	mg/l	5	10/24/13 11:09	SK	EPA 300.0/SW846 9056
pH	8.08		su	1	10/24/13 08:20	AK	SM4500HB+ -2011/9040C

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	WPC-292483	<b>Date Sampled:</b>	10/23/13
<b>Lab Sample ID:</b>	D51846-1B	<b>Date Received:</b>	10/23/13
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Project:</b>	Baseline GW Sampling For Whiting		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Iron Reducing Bacteria	9000	25	CFU/ml	1	10/24/13	MM	HACH IRB-BART
Slime Forming Bacteria	66500	500	CFU/ml	1	10/24/13	MM	HACH SLYM-BART
Sulfate Reducing Bacteria	5000	200	CFU/ml	1	10/24/13	MM	HACH SRB-BART

RL = Reporting Limit

## Report of Analysis

**Client Sample ID:** WPC-292483**Lab Sample ID:** D51846-1F**Matrix:** AQ - Groundwater Filtered**Project:** Baseline GW Sampling For Whiting**Date Sampled:** 10/23/13**Date Received:** 10/23/13**Percent Solids:** n/a**Dissolved Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Barium	50.9	10	ug/l	1	10/25/13	10/28/13 JM	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>5</sup>
Boron	130	50	ug/l	1	10/25/13	10/28/13 JM	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>5</sup>
Calcium	11000	400	ug/l	1	10/25/13	10/28/13 JM	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>5</sup>
Iron	30.8	10	ug/l	1	10/25/13	10/28/13 JM	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>5</sup>
Magnesium	2360	200	ug/l	1	10/25/13	10/28/13 JM	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>5</sup>
Manganese	18.4	5.0	ug/l	1	10/25/13	10/28/13 JM	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>5</sup>
Potassium	4120	1000	ug/l	1	10/25/13	10/29/13 JM	EPA 200.7 <sup>3</sup>	EPA 200.7 <sup>5</sup>
Selenium	< 0.80	0.80	ug/l	2	10/25/13	10/25/13 JB	EPA 200.8 <sup>1</sup>	EPA 200.8 <sup>4</sup>
Sodium	80700	400	ug/l	1	10/25/13	10/28/13 JM	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>5</sup>
Strontium	189	5.0	ug/l	1	10/25/13	10/28/13 JM	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>5</sup>

(1) Instrument QC Batch: MA4111

(2) Instrument QC Batch: MA4116

(3) Instrument QC Batch: MA4126

(4) Prep QC Batch: MP11492

(5) Prep QC Batch: MP11493

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b>	TRIP BLANK	<b>Date Sampled:</b>	10/23/13
<b>Lab Sample ID:</b>	D51846-2	<b>Date Received:</b>	10/23/13
<b>Matrix:</b>	AQ - Trip Blank Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	Baseline GW Sampling For Whiting		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7V23695.D	1	10/28/13	JL	n/a	n/a	V7V1304
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

## Purgeable Aromatics+ GRO

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.25	ug/l	
1330-20-7	Xylene (total)	ND	3.0	2.0	ug/l	
	TPH-GRO (C6-C10)	ND	200	200	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	94%		62-130%
2037-26-5	Toluene-D8	96%		70-130%
460-00-4	4-Bromofluorobenzene	92%		69-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody





# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D51846

Client: AG WASSENAAR INC.

Immediate Client Services Action Required: No

Date / Time Received: 10/23/2013 3:30:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: BASELINE GW SAMPLING FOR WHITING

Airbill #'s: HD

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:			Infrared gun
3. Cooler media:			Ice (bag)

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Trip Blank listed on COC:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:			Intact

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume rec'd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

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## GC/MS Volatiles

### QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

**Job Number:** D51846

**Account:** AGWCODN A.G. Wassenaar, Inc.

**Project:** Baseline GW Sampling For Whiting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V1304-MB	7V23679.D	1	10/28/13	JL	n/a	n/a	V7V1304

The QC reported here applies to the following samples:

Method: SW846 8260B

D51846-1, D51846-2

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.25	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	2.0	ug/l	
	TPH-GRO (C6-C10)	ND	200	200	ug/l	

CAS No.	Surrogate Recoveries	Limits
17060-07-0	1,2-Dichloroethane-D4	90% 62-130%
2037-26-5	Toluene-D8	97% 70-130%
460-00-4	4-Bromofluorobenzene	95% 69-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D51846

**Account:** AGWCODN A.G. Wassenaar, Inc.

**Project:** Baseline GW Sampling For Whiting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V1304-BS	7V23680.D	1	10/28/13	JL	n/a	n/a	V7V1304

The QC reported here applies to the following samples:

Method: SW846 8260B

D51846-1, D51846-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	45.2	90	70-130
100-41-4	Ethylbenzene	50	47.6	95	70-130
108-88-3	Toluene	50	45.9	92	70-130
1330-20-7	Xylene (total)	150	149	99	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	92%	62-130%
2037-26-5	Toluene-D8	97%	70-130%
460-00-4	4-Bromofluorobenzene	99%	69-130%

\* = Outside of Control Limits.

## Blank Spike Summary

Page 1 of 1

**Job Number:** D51846

**Account:** AGWCODN A.G. Wassenaar, Inc.

**Project:** Baseline GW Sampling For Whiting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V1304-BS	7V23681.D	1	10/28/13	JL	n/a	n/a	V7V1304

The QC reported here applies to the following samples:

Method: SW846 8260B

D51846-1, D51846-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
	TPH-GRO (C6-C10)	2200	2240	102	39-144

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	90%	62-130%
2037-26-5	Toluene-D8	99%	70-130%
460-00-4	4-Bromofluorobenzene	97%	69-130%

\* = Outside of Control Limits.

## Matrix Spike Summary

Page 1 of 1

**Job Number:** D51846

**Account:** AGWCODN A.G. Wassenaar, Inc.

**Project:** Baseline GW Sampling For Whiting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D51849-14MS	7V23682.D	25	10/28/13	JL	n/a	n/a	V7V1304
D51849-14	7V23684.D	25	10/28/13	JL	n/a	n/a	V7V1304

The QC reported here applies to the following samples:

Method: SW846 8260B

D51846-1, D51846-2

CAS No.	Compound	D51849-14 ug/l	Spike Q	ug/l	MS ug/l	MS %	Limits
71-43-2	Benzene	1960		1250	3110	92	62-130
100-41-4	Ethylbenzene	1240		1250	2450	97	63-130
108-88-3	Toluene	652		1250	1810	93	60-130
1330-20-7	Xylene (total)	3700		3750	7360	98	67-130

CAS No.	Surrogate Recoveries	MS	D51849-14	Limits
17060-07-0	1,2-Dichloroethane-D4	94%	93%	62-130%
2037-26-5	Toluene-D8	98%	98%	70-130%
460-00-4	4-Bromofluorobenzene	99%	96%	69-130%

\* = Outside of Control Limits.

## Matrix Spike Summary

Page 1 of 1

**Job Number:** D51846

**Account:** AGWCODN A.G. Wassenaar, Inc.

**Project:** Baseline GW Sampling For Whiting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D51849-14MS	7V23683.D	25	10/28/13	JL	n/a	n/a	V7V1304
D51849-14	7V23684.D	25	10/28/13	JL	n/a	n/a	V7V1304

The QC reported here applies to the following samples:

Method: SW846 8260B

D51846-1, D51846-2

CAS No.	Compound	D51849-14 ug/l	Spike Q	ug/l	MS ug/l	MS %	Limits
	TPH-GRO (C6-C10)	20300		55000	73500	97	19-168

CAS No.	Surrogate Recoveries	MS	D51849-14	Limits
17060-07-0	1,2-Dichloroethane-D4	89%	93%	62-130%
2037-26-5	Toluene-D8	98%	98%	70-130%
460-00-4	4-Bromofluorobenzene	96%	96%	69-130%

\* = Outside of Control Limits.



## Duplicate Summary

Page 1 of 1

**Job Number:** D51846  
**Account:** AGWCODN A.G. Wassenaar, Inc.  
**Project:** Baseline GW Sampling For Whiting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D51849-11DUP	7V23686.D	1	10/28/13	JL	n/a	n/a	V7V1304
D51849-11	7V23685.D	1	10/28/13	JL	n/a	n/a	V7V1304

The QC reported here applies to the following samples:

Method: SW846 8260B

D51846-1, D51846-2

CAS No.	Compound	D51849-11 ug/l	DUP Q	ug/l	Q	RPD	Limits
71-43-2	Benzene	ND		ND		nc	30
100-41-4	Ethylbenzene	ND		ND		nc	30
108-88-3	Toluene	ND		ND		nc	30
1330-20-7	Xylene (total)	ND		ND		nc	30
	TPH-GRO (C6-C10)	ND		ND		nc	30

CAS No.	Surrogate Recoveries	DUP	D51849-11	Limits
17060-07-0	1,2-Dichloroethane-D4	93%	92%	62-130%
2037-26-5	Toluene-D8	97%	96%	70-130%
460-00-4	4-Bromofluorobenzene	95%	95%	69-130%

\* = Outside of Control Limits.

## GC Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

**Job Number:** D51846

**Account:** AGWCODN A.G. Wassenaar, Inc.

**Project:** Baseline GW Sampling For Whiting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GFB432-MB	FB09774.D	1	10/25/13	SM	n/a	n/a	GFB432

The QC reported here applies to the following samples:

Method: RSK175 MOD

D51846-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.00080	0.00040	mg/l	
74-84-0	Ethane	ND	0.0016	0.00080	mg/l	
74-98-6	Propane	ND	0.022	0.011	mg/l	

## Blank Spike Summary

Page 1 of 1

**Job Number:** D51846

**Account:** AGWCODN A.G. Wassenaar, Inc.

**Project:** Baseline GW Sampling For Whiting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GFB432-BS	FB09775.D	10	10/25/13	SM	n/a	n/a	GFB432

The QC reported here applies to the following samples:

Method: RSK175 MOD

D51846-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
74-82-8	Methane	0.51	0.589	115	70-130
74-84-0	Ethane	0.956	0.905	95	70-130
74-98-6	Propane	1.4	1.42	101	67-130

\* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D51846  
Account: AGWCODN A.G. Wassenaar, Inc.  
Project: Baseline GW Sampling For Whiting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D51846-1MS	FB09777.D	10	10/25/13	SM	n/a	n/a	GFB432
D51846-1MSD	FB09778.D	10	10/25/13	SM	n/a	n/a	GFB432
D51846-1	FB09776.D	1	10/25/13	SM	n/a	n/a	GFB432

The QC reported here applies to the following samples: Method: RSK175 MOD

D51846-1

CAS No.	Compound	D51846-1 mg/l	Q	Spike mg/l	MS mg/l	MS %	MSD mg/l	MSD %	RPD	Limits Rec/RPD
74-82-8	Methane	0.0252		0.51	0.568	106	0.591	111	4	51-155/30
74-84-0	Ethane	ND		0.956	0.840	88	0.875	92	4	58-130/30
74-98-6	Propane	ND		1.4	1.33	95	1.38	98	4	46-130/30

\* = Outside of Control Limits.

## GC Semi-volatiles

### QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

## Method Blank Summary

Page 1 of 1

**Job Number:** D51846  
**Account:** AGWCODN A.G. Wassenaar, Inc.  
**Project:** Baseline GW Sampling For Whiting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8805-MB	FH014339.D	1	10/25/13	TU	10/24/13	OP8805	GFH747

The QC reported here applies to the following samples:

Method: SW846-8015B

D51846-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.20	0.18	mg/l	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	27% 20-140%

8.1.1

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## Blank Spike Summary

Page 1 of 1

**Job Number:** D51846

**Account:** AGWCODN A.G. Wassenaar, Inc.

**Project:** Baseline GW Sampling For Whiting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8805-BS	FH014341.D	1	10/25/13	TU	10/24/13	OP8805	GFH747

The QC reported here applies to the following samples:

Method: SW846-8015B

D51846-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-DRO (C10-C28)	20	11.6	58	36-140

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	51%	20-140%

\* = Outside of Control Limits.



# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D51846  
**Account:** AGWCODN A.G. Wassenaar, Inc.  
**Project:** Baseline GW Sampling For Whiting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8805-MS	FH014343.D	1	10/25/13	TU	10/24/13	OP8805	GFH747
OP8805-MSD	FH014345.D	1	10/26/13	TU	10/24/13	OP8805	GFH747
D48576-31	FH014347.D	1	10/26/13	TU	10/24/13	OP8805	GFH747

The QC reported here applies to the following samples:

Method: SW846-8015B

D51846-1

CAS No.	Compound	D48576-31 mg/l	Spike Q	MS mg/l	MS %	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND	20	13.4	67	12.4	62	8	28-140/30

CAS No.	Surrogate Recoveries	MS	MSD	D48576-31	Limits
84-15-1	o-Terphenyl	70%	67%	68%	20-140%

\* = Outside of Control Limits.

## Metals Analysis

### QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D51846  
Account: AGWCODN - A.G. Wassenaar, Inc.  
Project: Baseline GW Sampling For Whiting

QC Batch ID: MP11492  
Matrix Type: AQUEOUS

Methods: EPA 200.8  
Units: ug/l

Prep Date: 10/25/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.1	2		
Antimony	0.40	.0022	.011		
Arsenic	0.20	.017	.044		
Barium	2.0	.016	.079		
Beryllium	0.20	.016	.069		
Boron	40	.49	2.1		
Cadmium	0.10	.036	.042		
Calcium	400	5.6	12		
Chromium	2.0	.053	.053		
Cobalt	0.20	.0049	.015		
Copper	2.0	.06	.13		
Iron	10	3.5	4.6		
Lead	0.50	.0079	.008		
Magnesium	100	1.3	1.3		
Manganese	1.0	.12	.13		
Molybdenum	1.0	.049	.029		
Nickel	2.0	.0088	.027		
Phosphorus	60	2.6	4.3		
Potassium	200	2.9	2.9		
Selenium	0.40	.06	.21	0.039	<0.40
Silver	0.10	.0019	.008		
Sodium	500	4.9	4.9		
Strontium	20	.01	.015		
Thallium	0.20	.0024	.005		
Tin	10	.063	1.3		
Titanium	2.0	.059	.092		
Uranium	0.20	.0017	.002		
Vanadium	1.0	.037	.2		
Zinc	10	.21	.96		

Associated samples MP11492: D51846-1F

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51846  
 Account: AGWCODN - A.G. Wassenaar, Inc.  
 Project: Baseline GW Sampling For Whiting

QC Batch ID: MP11492  
 Matrix Type: AQUEOUS

Methods: EPA 200.8  
 Units: ug/l

Prep Date: 10/25/13

Metal	D51855-1FA Original MS	Spikelot ICPAL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Boron	anr			
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron	anr			
Lead	anr			
Magnesium				
Manganese	anr			
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium				
Selenium	10.7	198	200	93.7 70-130
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP11492: D51846-1F

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits  
 (N) Matrix Spike Rec. outside of QC limits  
 (anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51846  
 Account: AGWCODN - A.G. Wassenaar, Inc.  
 Project: Baseline GW Sampling For Whiting

QC Batch ID: MP11492  
 Matrix Type: AQUEOUS

Methods: EPA 200.8  
 Units: ug/l

Prep Date: 10/25/13

Metal	D51855-1FA Original MSD		Spikelot ICPALL2 % Rec		MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium						
Beryllium						
Boron	anr					
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt						
Copper	anr					
Iron	anr					
Lead	anr					
Magnesium						
Manganese	anr					
Molybdenum	anr					
Nickel	anr					
Phosphorus						
Potassium						
Selenium	10.7	195	200	92.2	1.5	20
Silver	anr					
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	anr					

Associated samples MP11492: D51846-1F

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits  
 (N) Matrix Spike Rec. outside of QC limits  
 (anr) Analyte not requested

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51846

Account: AGWCODN - A.G. Wassenaar, Inc.

Project: Baseline GW Sampling For Whiting

QC Batch ID: MP11492

Methods: EPA 200.8

Matrix Type: AQUEOUS

Units: ug/l

Prep Date:

10/25/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Boron	anr			
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron	anr			
Lead	anr			
Magnesium				
Manganese	anr			
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium				
Selenium	192	200	96.0	85-115
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP11492: D51846-1F

Results &lt; IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(anr) Analyte not requested

9.1.3

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BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D51846  
Account: AGWCODN - A.G. Wassenaar, Inc.  
Project: Baseline GW Sampling For Whiting

QC Batch ID: MP11493  
Matrix Type: AQUEOUS

Methods: EPA 200.7  
Units: ug/l

Prep Date: 10/25/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	11	11		
Antimony	30	2.1	21		
Arsenic	25	3.8	9		
Barium	10	.2	1.4	-0.10	<10
Beryllium	10	.9	1.7		
Boron	50	.8	6.6	0.40	<50
Cadmium	10	.2	.36		
Calcium	400	2.4	66	1.8	<400
Chromium	10	.3	1.4		
Cobalt	5.0	.5	.51		
Copper	10	.8	1.5		
Iron	10	1.5	3.2	2.1	<10
Lead	50	2.1	4.1		
Lithium	5.0	.4	1.9		
Magnesium	200	6.8	29	6.6	<200
Manganese	5.0	.5	.29	0.0	<5.0
Molybdenum	10	.4	1.1		
Nickel	30	.5	.87		
Phosphorus	100	15	24		
Potassium	1000	99	230	-27	<1000
Selenium	50	7.1	9.3		
Silicon	50	4.7	5.6		
Silver	30	.3	.4		
Sodium	400	7.3	36	18.8	<400
Strontium	5.0	.01	.12	0.0	<5.0
Thallium	10	1.8	4.9		
Tin	50	12	13		
Titanium	10	.1	.43		
Uranium	50	2.9	3.9		
Vanadium	10	.4	.39		
Zinc	30	.4	1.9		

Associated samples MP11493: D51846-1F

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D51846  
Account: AGWCODN - A.G. Wassenaar, Inc.  
Project: Baseline GW Sampling For Whiting

QC Batch ID: MP11493  
Matrix Type: AQUEOUS

Methods: EPA 200.7  
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51846  
 Account: AGWCODN - A.G. Wassenaar, Inc.  
 Project: Baseline GW Sampling For Whiting

QC Batch ID: MP11493  
 Matrix Type: AQUEOUS

Methods: EPA 200.7  
 Units: ug/l

Prep Date: 10/25/13

Metal	D51858-1 Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	19.9	2020	2000	100.0	70-130
Beryllium					
Boron	471	1530	1000	105.9	70-130
Cadmium					
Calcium	251000	265000	25000	72.0	70-130
Chromium					
Cobalt					
Copper					
Iron	5170	10100	5000	98.6	70-130
Lead					
Lithium					
Magnesium	57000	81200	25000	94.0	70-130
Manganese	5140	5500	500	72.0	70-130
Molybdenum					
Nickel					
Phosphorus					
Potassium	3160	31700	25000	115.5	70-130
Selenium					
Silicon					
Silver					
Sodium	295000	326000	25000	80.0	70-130
Strontium	722	1200	500	95.6	70-130
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP11493: D51846-1F

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51846  
Account: AGWCODN - A.G. Wassenaar, Inc.  
Project: Baseline GW Sampling For Whiting

QC Batch ID: MP11493  
Matrix Type: AQUEOUS

Methods: EPA 200.7  
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested

9.2.2

9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51846  
 Account: AGWCODN - A.G. Wassenaar, Inc.  
 Project: Baseline GW Sampling For Whiting

QC Batch ID: MP11493  
 Matrix Type: AQUEOUS

Methods: EPA 200.7  
 Units: ug/l

Prep Date: 10/25/13

Metal	D51858-1 Original	MSD	Spikelot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium	19.9	2030	2000	100.5	0.5	20
Beryllium						
Boron	471	1540	1000	106.9	0.7	20
Cadmium						
Calcium	251000	265000	25000	72.0	0.0	20
Chromium						
Cobalt						
Copper						
Iron	5170	9920	5000	95.0	1.8	20
Lead						
Lithium						
Magnesium	57000	80800	25000	92.4	0.5	20
Manganese	5140	5490	500	70.0	0.2	20
Molybdenum						
Nickel						
Phosphorus						
Potassium	3160	31600	25000	115.1	0.3	20
Selenium						
Silicon						
Silver						
Sodium	295000	328000	25000	88.0	0.6	20
Strontium	722	1200	500	95.6	0.0	20
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP11493: D51846-1F

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51846  
Account: AGWCODN - A.G. Wassenaar, Inc.  
Project: Baseline GW Sampling For Whiting

QC Batch ID: MP11493  
Matrix Type: AQUEOUS

Methods: EPA 200.7  
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested

9.2.2

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## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51846

Account: AGWCODN - A.G. Wassenaar, Inc.

Project: Baseline GW Sampling For Whiting

QC Batch ID: MP11493

Methods: EPA 200.7

Matrix Type: AQUEOUS

Units: ug/l

Prep Date: 10/25/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	1990	2000	99.5	85-115
Beryllium				
Boron	1050	1000	105.0	85-115
Cadmium				
Calcium	26100	25000	104.4	85-115
Chromium				
Cobalt				
Copper				
Iron	4730	5000	94.6	85-115
Lead				
Lithium				
Magnesium	24900	25000	99.6	85-115
Manganese	499	500	99.8	85-115
Molybdenum				
Nickel				
Phosphorus				
Potassium	25500	25000	102.0	85-115
Selenium				
Silicon				
Silver				
Sodium	25000	25000	100.0	85-115
Strontium	492	500	98.4	85-115
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP11493: D51846-1F

Results &lt; IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51846  
Account: AGWCODN - A.G. Wassenaar, Inc.  
Project: Baseline GW Sampling For Whiting

QC Batch ID: MP11493  
Matrix Type: AQUEOUS

Methods: EPA 200.7  
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

## General Chemistry

### QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D51846  
Account: AGWCODN - A.G. Wassenaar, Inc.  
Project: Baseline GW Sampling For Whiting

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Bicarbonate as CaC	GN22443	5.0	0.0	mg/l	100	95.2	95.2	90-110%
Alkalinity, Carbonate	GN22444	5.0	0.0	mg/l	100	95.2	95.2	80-120%
Alkalinity, Total as CaCO3	GN22442	5.0	0.0	mg/l	100	95.2	95.2	90-110%
Bromide	GP11235/GN22426	0.050	0.00	mg/l	20	19.7	98.5	90-110%
Chloride	GP11235/GN22426	0.50	0.00	mg/l	20	19.8	99.0	90-110%
Fluoride	GP11235/GN22426	0.10	0.00	mg/l	10	9.79	97.9	90-110%
Iron Reducing Bacteria	MB266	25	<25	CFU/ml				
Nitrogen, Nitrate	GP11235/GN22426	0.010	0.00	mg/l	4.52	4.41	97.6	90-110%
Nitrogen, Nitrite	GP11235/GN22426	0.0040	0.00	mg/l	6.09	6.26	102.8	90-110%
Phosphorus, Total	GP11256/GN22462	0.010	0.0	mg/l	0.304	0.30	98.9	80-120%
Slime Forming Bacteria	MB267	500	<500	CFU/ml				
Solids, Total Dissolved	GN22466	10	0.0	mg/l	400	394	98.5	90-110%
Specific Conductivity	GP11265/GN22475			umhos/cm	99.7	96.9	97.2	90-110%
Sulfate	GP11235/GN22426	0.50	0.00	mg/l	30	30.1	100.3	90-110%
Sulfate Reducing Bacteria	MB268	200	<200	CFU/ml				
pH	GN22422			su	8.00	8.00	100.0	99.3-100.7%

Associated Samples:

Batch MB266: D51846-1B  
Batch MB267: D51846-1B  
Batch MB268: D51846-1B  
Batch GN22422: D51846-1  
Batch GN22442: D51846-1  
Batch GN22443: D51846-1  
Batch GN22444: D51846-1  
Batch GN22466: D51846-1  
Batch GP11235: D51846-1  
Batch GP11256: D51846-1  
Batch GP11265: D51846-1

(\*) Outside of QC limits

10.1  
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DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D51846  
Account: AGWCODN - A.G. Wassenaar, Inc.  
Project: Baseline GW Sampling For Whiting

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO <sub>3</sub>	GN22442	D51629-1	mg/l	123	116	5.3	0-20%
Phosphorus, Total	GP11256/GN22462	D51802-3	mg/l	0.0	0.0	-200.0(a)	0-20%
Solids, Total Dissolved	GN22466	D51803-1	mg/l	3790	3780	0.3	0-20%
Specific Conductivity	GP11265/GN22475	D51845-1	umhos/cm	2830	2830	0.0	0-20%

Associated Samples:

Batch GN22442: D51846-1

Batch GN22466: D51846-1

Batch GP11256: D51846-1

Batch GP11265: D51846-1

(\*) Outside of QC limits

(a) High RPD acceptable due to low sample and duplicate concentration.

MATRIX SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D51846  
Account: AGWCODN - A.G. Wassenaar, Inc.  
Project: Baseline GW Sampling For Whiting

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO <sub>3</sub>	GN22442	D51629-1	mg/l	123	100	208	85.7	80-120%
Bromide	GP11235/GN22426	D51846-1	mg/l	0.14	2.5	2.7	102.4	80-120%
Bromide	GP11235/GN22426	D51846-1	mg/l	0.15	2.5	2.7	102.4	80-120%
Chloride	GP11235/GN22426	D51846-1	mg/l	8.6	10	18.7	106.0	80-120%
Chloride	GP11235/GN22426	D51846-1	mg/l	8.1	10	18.7	106.0	80-120%
Fluoride	GP11235/GN22426	D51846-1	mg/l	0.69	2.5	3.2	100.4	80-120%
Fluoride	GP11235/GN22426	D51846-1	mg/l	0.77	2.5	3.2	100.4	80-120%
Nitrogen, Nitrate	GP11235/GN22426	D51846-1	mg/l	0.0064	0.565	0.58	101.5	80-120%
Nitrogen, Nitrate	GP11235/GN22426	D51846-1	mg/l	0.0	0.565	0.58	101.5	80-120%
Nitrogen, Nitrite	GP11235/GN22426	D51846-1	mg/l	0.0	0.305	0.32	105.1	80-120%
Nitrogen, Nitrite	GP11235/GN22426	D51846-1	mg/l	0.026	0.305	0.32	105.1	80-120%
Phosphorus, Total	GP11256/GN22462	D51802-3	mg/l	0.0	0.40	0.41	102.5	80-120%
Sulfate	GP11235/GN22426	D51846-1	mg/l	31.1	50	83.5	106.2	80-120%
Sulfate	GP11235/GN22426	D51846-1	mg/l	30.4	50	83.5	106.2	80-120%

Associated Samples:

Batch GN22442: D51846-1

Batch GP11235: D51846-1

Batch GP11256: D51846-1

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

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MATRIX SPIKE DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D51846  
Account: AGWCODN - A.G. Wassenaar, Inc.  
Project: Baseline GW Sampling For Whiting

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Alkalinity, Total as CaCO <sub>3</sub>	GN22442	D51629-1	mg/l	123	100	208	0.1	20%
Bromide	GP11235/GN22426	D51846-1	mg/l	0.14	2.5	2.7	0.0	20%
Bromide	GP11235/GN22426	D51846-1	mg/l	0.15	2.5	2.7	0.0	20%
Chloride	GP11235/GN22426	D51846-1	mg/l	8.6	10	18.6	1.0	20%
Chloride	GP11235/GN22426	D51846-1	mg/l	8.1	10	18.6	1.0	20%
Fluoride	GP11235/GN22426	D51846-1	mg/l	0.69	2.5	3.2	0.0	20%
Fluoride	GP11235/GN22426	D51846-1	mg/l	0.77	2.5	3.2	0.0	20%
Nitrogen, Nitrate	GP11235/GN22426	D51846-1	mg/l	0.0064	0.565	0.58	0.0	20%
Nitrogen, Nitrate	GP11235/GN22426	D51846-1	mg/l	0.0	0.565	0.58	0.0	20%
Nitrogen, Nitrite	GP11235/GN22426	D51846-1	mg/l	0.0	0.305	0.32	0.0	20%
Nitrogen, Nitrite	GP11235/GN22426	D51846-1	mg/l	0.026	0.305	0.32	0.0	20%
Phosphorus, Total	GP11256/GN22462	D51802-3	mg/l	0.0	0.40	0.410	0.0	20%
Sulfate	GP11235/GN22426	D51846-1	mg/l	31.1	50	83.1	0.5	20%
Sulfate	GP11235/GN22426	D51846-1	mg/l	30.4	50	83.1	0.5	20%

Associated Samples:

Batch GN22442: D51846-1

Batch GP11235: D51846-1

Batch GP11256: D51846-1

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits