

Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-300.0**

**MW-17-3**

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-04

File ID: H042717.seq-55

Sampled: 04/27/17 09:30

Prepared: 04/27/17 23:30

Analyzed: 04/28/17 07:01

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BID2789

Sequence: 1707490

Calibration: UNASSIGNED

Instrument: IC8

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	83	1		EPA-300.0
14797-55-8	Nitrate as N	9.4	1		EPA-300.0
14808-79-8	Sulfate	120	1		EPA-300.0

*gfb/17 9*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

MW-17-4

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-05

File ID: H042717.seq-56

Sampled: 04/27/17 13:00

Prepared: 04/27/17 23:30

Analyzed: 04/28/17 07:19

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BID2789

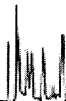
Sequence: 1707490

Calibration: UNASSIGNED

Instrument: IC8

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	12	1		EPA-300.0
14797-55-8	Nitrate as N	0.20	1		EPA-300.0
14808-79-8	Sulfate	22	1		EPA-300.0

*6/21/17*



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Project: JPL- GW Monitoring Wells  
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Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-300.0**

MW-17-5

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-06

File ID: H042717.seq-57

Sampled: 04/27/17 12:30

Prepared: 04/27/17 23:30

Analyzed: 04/28/17 07:37

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJD2789

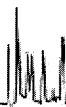
Sequence: 1707490

Calibration: UNASSIGNED

Instrument: IC8

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	9.7	1		EPA-300.0
14797-55-8	Nitrate as N	0.021	1	U	EPA-300.0
14808-79-8	Sulfate	19	1		EPA-300.0

*6/26/17 J*



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Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-300.0**

**EB-8-042717**

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-07

File ID: H042717.seq-59

Sampled: 04/27/17 15:00

Prepared: 04/27/17 23:30

Analyzed: 04/28/17 08:13

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJD2789

Sequence: 1707490

Calibration: UNASSIGNED

Instrument: IC8

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	0.077	1	U	EPA-300.0
14797-55-8	Nitrate as N	0.021	1	U	EPA-300.0
14808-79-8	Sulfate	0.13	1	U	EPA-300.0

*6/21/17 2*



Tidewater Inc.  
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Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-353.2**

MW-17-1

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-02

File ID: 170428 0916 NO2-039

Sampled: 04/27/17 14:35

Prepared: 04/28/17 09:16

Analyzed: 04/28/17 09:16

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE0299

Sequence: 1707715

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*6/21/17*



Tidewater Inc.  
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Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-17-2

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-03

File ID: 170428 0916 NO2-042

Sampled: 04/27/17 14:00

Prepared: 04/28/17 09:16

Analyzed: 04/28/17 09:20

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE0299

Sequence: 1707715

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.011	1	J	EPA-353.2

*6/28/17 9*



Tidewater Inc.  
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Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-353.2**

**MW-17-3**

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-04

File ID: 170428 0916 NO2-043

Sampled: 04/27/17 09:30

Prepared: 04/28/17 09:16

Analyzed: 04/28/17 09:20

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B/E0299

Sequence: 1707715

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.012	1	J	EPA-353.2

*6/29/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-353.2**

MW-17-4

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-05

File ID: 170428 0916 NO2-044

Sampled: 04/27/17 13:00

Prepared: 04/28/17 09:16

Analyzed: 04/28/17 09:20

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE0299

Sequence: 1707715

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.012	1	J	EPA-353.2

*6/28/17*





Tidewater Inc.  
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Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-353.2**

MW-17-5

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-06

File ID: 170428 0916 NO2-045

Sampled: 04/27/17 12:30

Prepared: 04/28/17 09:16

Analyzed: 04/28/17 09:20

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[E0299

Sequence: 1707715

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*6/21/17*



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Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-353.2**

**EB-8-042717**

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-07

File ID: 170428 0916 NO2-046

Sampled: 04/27/17 15:00

Prepared: 04/28/17 09:16

Analyzed: 04/28/17 09:20

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE0299

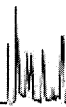
Sequence: 1707715

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*6/21/17*



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Reported: 5/26/2017 3:54:11PM  
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Project Number: 2Q17  
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-17-1

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-02

File ID: 170428 0824 CR6-010

Sampled: 04/27/17 14:35

Prepared: 04/28/17 08:24

Analyzed: 04/28/17 08:24

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJE0274

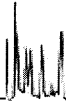
Sequence: 1707580

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*Handwritten signature/initials*



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Project Number: 2Q17  
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

**MW-17-2**

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-03

File ID: 170428 0824 CR6-011

Sampled: 04/27/17 14:00

Prepared: 04/28/17 08:24

Analyzed: 04/28/17 08:24

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[E0274

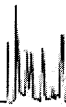
Sequence: 1707580

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*4/26/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

**MW-17-3**

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-04

File ID: 170428 0824 CR6-012

Sampled: 04/27/17 09:30

Prepared: 04/28/17 08:24

Analyzed: 04/28/17 08:24

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE0274

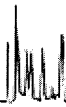
Sequence: 1707580

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*04/27/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-17-4

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-05

File ID: 170428 0824 CR6-023

Sampled: 04/27/17 13:00

Prepared: 04/28/17 08:24

Analyzed: 04/28/17 08:40

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[E]0274

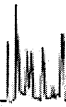
Sequence: 1707580

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0010	1	J U	EPA-7196

6/21/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-17-5

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-06

File ID: 170428 0824 CR6-024

Sampled: 04/27/17 12:30

Prepared: 04/28/17 08:24

Analyzed: 04/28/17 08:40

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[E0274

Sequence: 1707580

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00090	1	JY	EPA-7196

*Handwritten signature/initials*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

**EB-8-042717**

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-07

File ID: 170428 0824 CR6-025

Sampled: 04/27/17 15:00

Prepared: 04/28/17 08:24

Analyzed: 04/28/17 08:40

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE0274

Sequence: 1707580

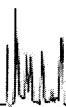
Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00078	1	J U	EPA-7196

*6/21/17 J*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

**MW-17-1**

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-02

File ID: F051517.seq-19.0000.txt

Sampled: 04/27/17 14:35

Prepared: 05/15/17 13:00

Analyzed: 05/15/17 16:03

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[E]1680

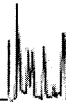
Sequence: 1708617

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

MW-17-2

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-03

File ID: F051517.seq-25.0000.txt

Sampled: 04/27/17 14:00

Prepared: 05/15/17 13:00

Analyzed: 05/15/17 17:24

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B/E1680

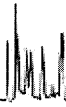
Sequence: 1708617

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*5/24/17 9*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-17-3

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-04

File ID: F051517.seq-26.0000.txt

Sampled: 04/27/17 09:30

Prepared: 05/15/17 13:00

Analyzed: 05/15/17 17:38

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE1680

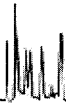
Sequence: 1708617

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	5.3	1		EPA-314.0

6/21/17 *Q*



Tidewater Inc.  
3761 Attucks Drive  
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Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-17-4

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-05

File ID: F051517.seq-27.0000.txt

Sampled: 04/27/17 13:00

Prepared: 05/15/17 13:00

Analyzed: 05/15/17 17:51

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE1680

Sequence: 1708617

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	1.0	1	J	EPA-314.0

6/21/17 8

Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-17-5

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-06

File ID: F051517.seq-28.0000.txt

Sampled: 04/27/17 12:30

Prepared: 05/15/17 13:00

Analyzed: 05/15/17 18:04

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE1680

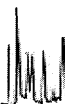
Sequence: 1708617

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*6/21/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

EB-8-042717

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-07

File ID: F051517.seq-29.0000.txt

Sampled: 04/27/17 15:00

Prepared: 05/15/17 13:00

Analyzed: 05/15/17 18:18

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE1680

Sequence: 1708617

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*5/26/17* *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-150.1**

MW-17-1

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-02

File ID: Tiamo050117-075

Sampled: 04/27/17 14:35

Prepared: 05/01/17 08:00

Analyzed: 05/01/17 15:17

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: B/E0057

Sequence: 1707565

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	7.81	1	J	EPA-150.1

6/21/17 *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-17-2

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-03

File ID: Tiamo050117-076

Sampled: 04/27/17 14:00

Prepared: 05/01/17 08:00

Analyzed: 05/01/17 15:23

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: B/E0057

Sequence: 1707565

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.13	1	<i>J</i>	EPA-150.1

*5/26/17 J*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-150.1**

MW-17-3

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-04

File ID: Tiamo050117-077

Sampled: 04/27/17 09:30

Prepared: 05/01/17 08:00

Analyzed: 05/01/17 15:29

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BIE0057

Sequence:

1707565

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.11	1	J	EPA-150.1

*6/21/17*

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 5/26/2017 3:54:11PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
--	---

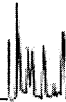
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-17-4

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11382</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711382-05</u>	File ID: <u>Tiamo050117-083</u>	
Sampled: <u>04/27/17 13:00</u>	Prepared: <u>05/01/17 08:00</u>	Analyzed: <u>05/01/17 15:51</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE0057</u>	Sequence: <u>1707565</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.40	1	5	EPA-150.1

*5/26/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-150.1**

MW-17-5

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-06

File ID: Tiamo050117-084

Sampled: 04/27/17 12:30

Prepared: 05/01/17 08:00

Analyzed: 05/01/17 16:03

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: B/E0057

Sequence: 1707565

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.30	1	5	EPA-150.1

*6/26/17*

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 5/26/2017 3:54:11PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
--	---

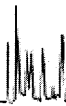
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

EB-8-042717

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11382</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711382-07</u>	File ID: <u>Tiamo050117-090</u>	
Sampled: <u>04/27/17 15:00</u>	Prepared: <u>05/01/17 08:00</u>	Analyzed: <u>05/01/17 16:29</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>B/E0058</u>	Sequence: <u>1707565</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	4.85	1	J	EPA-150.1

*5/27/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-160.1**

MW-17-1

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-02

File ID:

Sampled: 04/27/17 14:35

Prepared: 05/03/17 14:00

Analyzed: 05/03/17 14:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 100 ml / 100 ml

Batch: B/E0425

Sequence:

1708231

Calibration: UNASSIGNED

Instrument: MANUAL

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	340	2	D	EPA-160.1

*6/21/17*

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 5/26/2017 3:54:11PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
--	---

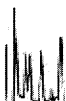
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-17-2
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11382</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711382-03</u>
File ID:	
Sampled: <u>04/27/17 14:00</u>	Prepared: <u>05/03/17 14:00</u>
Analyzed: <u>05/03/17 14:00</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Initial/Final: <u>100 ml / 100 ml</u>	
Batch: <u>B[E0425</u>	Sequence: <u>1708231</u>
Calibration: <u>UNASSIGNED</u>	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	440	2	D	EPA-160.1

*6/21/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-17-3

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-04

File ID:

Sampled: 04/27/17 09:30

Prepared: 05/03/17 14:00

Analyzed: 05/03/17 14:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 100 ml / 100 ml

Batch: B[E0425

Sequence:

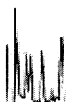
1708231

Calibration: UNASSIGNED

Instrument: MANUAL

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	620	3.33	D	EPA-160.1

*05/26/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 5/26/2017 3:54:11PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-17-4

Laboratory: BC Laboratories

SDG: 17-11382

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711382-05

File ID:

Sampled: 04/27/17 13:00

Prepared: 05/03/17 14:00

Analyzed: 05/03/17 14:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 100 ml / 100 ml

Batch: B/E0425

Sequence:

1708231

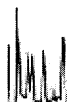
Calibration: UNASSIGNED

Instrument: MANUAL

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	230	2	D	EPA-160.1

*5/26/17*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 5/26/2017 3:54:11PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
--	---

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-17-5
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11382</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711382-06</u>	File ID:	
Sampled: <u>04/27/17 12:30</u>	Prepared: <u>05/03/17 14:00</u>	Analyzed: <u>05/03/17 14:00</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>100 ml / 100 ml</u>	
Batch: <u>B/E0425</u>	Sequence: <u>1708231</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	230	2	D	EPA-160.1

*6/26/17 5*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 5/26/2017 3:54:11PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
--	---

**INORGANIC ANALYSIS DATA SHEET**

**EPA-160.1**

**EB-8-042717**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11382</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711382-07</u>
Sampled: <u>04/27/17 15:00</u>	Prepared: <u>05/03/17 14:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E0425</u>	Sequence: <u>1708231</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	6.7	0.667	UD	EPA-160.1

*6/21/17 Q*

LDC #: 38820A6

**VALIDATION COMPLETENESS WORKSHEET**

Date: 06/16/17

SDG #: 17-11382

Level III

Page: 1 of 1

Laboratory: BC Laboratories, Inc.

Reviewer: ATL

2nd Reviewer: [Signature]

**METHOD: (Analyte)** Alkalinity (SM2320B), Chloride, Nitrate-N, Sulfate (EPA Method 300.0), Nitrite-N (EPA Method 353.2), Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), pH EPA Method 150.1), TDS (EPA Method 160.1)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, SW	
II.	Initial calibration	A	
III.	Calibration verification	A	
IV.	Laboratory Blanks	SW	
V.	Field blanks	SW	G=EB
VI.	Matrix Spike/Matrix Spike Duplicates	A	
VII.	Duplicate sample analysis	A	
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	N	
X.	Sample result verification	N	
XI.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	MW-17-1	1711382-02	Water	04/27/17
2	MW-17-2	1711382-03	Water	04/27/17
3	MW-17-3	1711382-04	Water	04/27/17
4	MW-17-4	1711382-05	Water	04/27/17
5	MW-17-5	1711382-06	Water	04/27/17
6	EB-8-042717	1711382-07	Water	04/27/17
7	MW-17-1MS	1711382-02MS	Water	04/27/17
8	MW-17-1MSD	1711382-02MSD	Water	04/27/17
9	MW-17-1DUP	1711382-02DUP	Water	04/27/17
10	EB-8-042717DUP	1711382-07DUP	Water	04/27/17
11				
12				
13				
14				
15				

Notes: \_\_\_\_\_





VALIDATION FINDINGS WORKSHEET

Blanks

METHOD: Inorganics, Method See Cover

Conc. units: mg/L

Associated Samples: All

Analyte	Blank ID	Blank ID	Blank Action Limit												
	PB (mg/L)	ICB/CCB (mg/L)		4	5	6									
Cr6+	0.000826		0.00413	0.0010	0.00090	0.00078									

Conc. units: mg/L

Associated Samples: 1,2,3

Analyte	Blank ID	Blank ID	Blank Action Limit												
	PB (mg/L)	ICB/CCB (mg/L)													
Cr6+		0.000934	0.00467												

Conc. units: mg/L

Associated Samples: 4,5,6

Analyte	Blank ID	Blank ID	Blank Action Limit												
	PB (mg/L)	ICB/CCB (mg/L)		4	5	6									
Cr6+		0.000814	0.00407	see above	see above	see above									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
 All contaminants within five times the method blank concentration were qualified as not detected, "U".

## VALIDATION FINDINGS WORKSHEET Field Blanks

**METHOD:** Inorganics, EPA Method See Cover  
**Blank units:** mg/L      **Associated sample units:** mg/L  
**Sampling date:** 04/27/17      Soil factor applied NA  
**Field blank type:** (circle one) Field Blank / Rinsate / Other: EB

Associated Samples: none      *+5a (X report)*

Analyte	Blank ID	Action Limit	Sample Identification							
	6		<del>4</del>	<del>5</del>						
Cr6+	0.00078	0.0039	<del>0.0010</del>	<del>0.00090</del>	<u>02</u>					

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
 Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Tidewater, Inc.  
3761 Attucks Drive  
Powell, OH 43065  
ATTN: Mr. David Conner

July 3, 2017

SUBJECT: NASA JPL, 2Q2017, Data Validation

Dear Mr. Conner,

Enclosed are the final validation reports for the fractions listed below. This SDG was received on June 13, 2017. Attachment 1 is a summary of the samples that were reviewed for each analysis.

### **LDC Project #38888:**

<b><u>SDG #</u></b>	<b><u>Fraction</u></b>
17-11226	Volatiles, Semivolatiles, Metals, Wet Chemistry

The data validation was performed under Level III & IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007, update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng  
Project Manager/Senior Chemist





## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 2Q2017

**LDC Report Date:** June 28, 2017

**Parameters:** Volatiles

**Validation Level:** Level III & IV

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-11226

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
TB-8-042617	1711226-01	Water	04/26/17
MW-4-1	1711226-02	Water	04/26/17
MW-4-2	1711226-03	Water	04/26/17
MW-4-3	1711226-04	Water	04/26/17
MW-4-4	1711226-05	Water	04/26/17
MW-4-5	1711226-06	Water	04/26/17
MW-21-1	1711226-07	Water	04/26/17
MW-21-2**	1711226-08**	Water	04/26/17
MW-21-3	1711226-09	Water	04/26/17
MW-21-5	1711226-10	Water	04/26/17
EB-7-042617	1711226-11	Water	04/26/17

\*\*Indicates sample underwent Level IV review

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method 524.2

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV evaluation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

## III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 20.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination ( $r^2$ ) were greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
04/14/17	Pentachloroethane	45.4	All samples in SDG 17-11226	UJ (all non-detects)	P

## IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
04/27/17	trans-1,4-Dichloro-2-butene Methyl iodide Pentachloroethane	39.7 59.2 96.9	All samples in SDG 17-11226	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	P

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

Sample TB-8-042617 was identified as a trip blank. No contaminants were found.

Sample EB-7-042617 was identified as an equipment blank. No contaminants were found.

## **VII. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VIII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **IX. Laboratory Control Samples**

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

## **X. Field Duplicates**

No field duplicates were identified in this SDG.

## **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

## **XII. Compound Quantitation**

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

## **XIII. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

#### **XIV. System Performance**

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

#### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due ICV and continuing calibration %D, data were qualified as estimated in eleven samples.

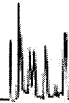
The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**NASA JPL, 2Q2017**  
**Volatiles - Data Qualification Summary - SDG 17-11226**

Sample	Compound	Flag	A or P	Reason
TB-8-042617 MW-4-1 MW-4-2 MW-4-3 MW-4-4 MW-4-5 MW-21-1 MW-21-2** MW-21-3 MW-21-5 EB-7-042617	Pentachloroethane	UJ (all non-detects)	P	Initial calibration verification (%D)
TB-8-042617 MW-4-1 MW-4-2 MW-4-3 MW-4-4 MW-4-5 MW-21-1 MW-21-2** MW-21-3 MW-21-5 EB-7-042617	trans-1,4-Dichloro-2-butene Methyl iodide Pentachloroethane	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	P	Continuing calibration (%D)

**NASA JPL, 2Q2017**  
**Volatiles - Laboratory Blank Data Qualification Summary - SDG 17-11226**

No Sample Data Qualified in this SDG



Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

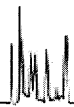
**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

TB-8-042617

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-01 File ID: 27APR49.D  
 Sampled: 04/26/17 06:30 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 02:22  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BID2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

TB-8-042617

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-01</u>	File ID: <u>27APR49.D</u>	
Sampled: <u>04/26/17 06:30</u>	Prepared: <u>04/27/17 07:00</u>	Analyzed: <u>04/28/17 02:22</u>	
Solids:	Preparation: <u>EPA 5030 Water MS</u>	Initial/Final: <u>25 ml / 25 ml</u>	
Batch: <u>B[D2631</u>	Sequence: <u>1707226</u>	Calibration: <u>1704006</u>	Instrument: <u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065

Reported: 6/7/2017 2:57:42PM  
 Project: JPL- GW Monitoring Wells  
 Project Number: 2Q17  
 Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

TB-8-042617

Laboratory: BC Laboratories      SDG: 17-11226  
 Client: Tidewater Inc.      Project: JPL- GW Monitoring Wells  
 Matrix: Water      Laboratory ID: 1711226-01      File ID: 27APR49.D  
 Sampled: 04/26/17 06:30      Prepared: 04/27/17 07:00      Analyzed: 04/28/17 02:22  
 Solids:      Preparation: EPA 5030 Water MS      Initial/Final: 25 ml / 25 ml  
 Batch: B[D2631      Sequence: 1707226      Calibration: 1704006      Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>UT</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>UT</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.650	106	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.040	100	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.4700	94.7	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	193426	6.58	197293	6.58	
Chlorobenzene-d5 (IS)	69775	9.62	73254	9.62	
1,4-Difluorobenzene (IS)	280866	7.39	293261	7.39	

\* Values outside of QC limits

*6/20/17 8*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

TB-8-042617

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11226</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711226-01</u>	File ID:	<u>27APR49.D</u>		
Sampled:	<u>04/26/17 06:30</u>	Prepared:	<u>04/27/17 07:00</u>	Analyzed:	<u>04/28/17 02:22</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BID2631</u>	Sequence:	<u>1707226</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*6/30/17* 8



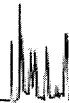
Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-4-1

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11226</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711226-02</u>	File ID:	<u>27APR50.D</u>		
Sampled:	<u>04/26/17 12:45</u>	Prepared:	<u>04/27/17 07:00</u>	Analyzed:	<u>04/28/17 02:45</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BID2631</u>	Sequence:	<u>1707226</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U



Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-4-1

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-02 File ID: 27APR50.D  
 Sampled: 04/26/17 12:45 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 02:45  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[D2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-4-1

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11226</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711226-02</u>	File ID:	<u>27APR50.D</u>		
Sampled:	<u>04/26/17 12:45</u>	Prepared:	<u>04/27/17 07:00</u>	Analyzed:	<u>04/28/17 02:45</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B/D2631</u>	Sequence:	<u>1707226</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>UT</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>UT</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	11.090	111	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.380	104	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.4100	94.1	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	185764	6.58	197293	6.58	
Chlorobenzene-d5 (IS)	65561	9.62	73254	9.62	
1,4-Difluorobenzene (IS)	263688	7.39	293261	7.39	

\* Values outside of QC limits



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-4-1

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11226</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711226-02</u>	File ID:	<u>27APR50.D</u>		
Sampled:	<u>04/26/17 12:45</u>	Prepared:	<u>04/27/17 07:00</u>	Analyzed:	<u>04/28/17 02:45</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BID2631</u>	Sequence:	<u>1707226</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-4-2

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11226</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711226-03</u>	File ID:	<u>27APR51.D</u>		
Sampled:	<u>04/26/17 08:30</u>	Prepared:	<u>04/27/17 07:00</u>	Analyzed:	<u>04/28/17 03:08</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BID2631</u>	Sequence:	<u>1707226</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.88	
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.27	J
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.21	J
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U





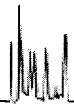
Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-4-2

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11226</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711226-03</u>	File ID:	<u>27APR51.D</u>		
Sampled:	<u>04/26/17 08:30</u>	Prepared:	<u>04/27/17 07:00</u>	Analyzed:	<u>04/28/17 03:08</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BID2631</u>	Sequence:	<u>1707226</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	1.3	
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	5.2	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U



Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-4-2

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-03 File ID: 27APR51.D  
 Sampled: 04/26/17 08:30 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 03:08  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[D2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>UT</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>UT</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.670	107	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.9000	99.0	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.4700	94.7	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	186740	6.58	197293	6.58	
Chlorobenzene-d5 (IS)	72040	9.62	73254	9.62	
1,4-Difluorobenzene (IS)	275099	7.39	293261	7.39	

\* Values outside of QC limits



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
EPA-524.2

MW-4-2

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11226</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711226-03</u>	File ID:	<u>27APR51.D</u>		
Sampled:	<u>04/26/17 08:30</u>	Prepared:	<u>04/27/17 07:00</u>	Analyzed:	<u>04/28/17 03:08</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B[D2631</u>	Sequence:	<u>1707226</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*6/30/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-4-3

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11226</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711226-04</u>	File ID:	<u>27APR52.D</u>		
Sampled:	<u>04/26/17 12:15</u>	Prepared:	<u>04/27/17 07:00</u>	Analyzed:	<u>04/28/17 03:31</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B[D]2631</u>	Sequence:	<u>1707226</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*6/28/17 9*



Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-4-3

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-04 File ID: 27APR52.D  
 Sampled: 04/26/17 12:15 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 03:31  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[D2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	J
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	1.1	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

*6/30/17*







Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

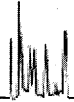
**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-4-4

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-05 File ID: 27APR53.D  
 Sampled: 04/26/17 11:50 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 03:54  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[D2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U





Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-4-4

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-05 File ID: 27APR53.D  
 Sampled: 04/26/17 11:50 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 03:54  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[D]2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.31	J
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	1.2	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

*6/30/17 8*



Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-4-4

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-05 File ID: 27APR53.D  
 Sampled: 04/26/17 11:50 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 03:54  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[D2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>US</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>US</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>US</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.800	108	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.300	103	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.0900	90.9	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	181950	6.58	197293	6.58	
Chlorobenzene-d5 (IS)	69530	9.61	73254	9.62	
1,4-Difluorobenzene (IS)	258044	7.39	293261	7.39	

\* Values outside of QC limits

*6/30/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
EPA-524.2

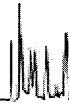
MW-4-4

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11226</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711226-05</u>	File ID:	<u>27APR53.D</u>		
Sampled:	<u>04/26/17 11:50</u>	Prepared:	<u>04/27/17 07:00</u>	Analyzed:	<u>04/28/17 03:54</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BID2631</u>	Sequence:	<u>1707226</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*6/30/17 Q*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-4-5

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11226</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711226-06</u>	File ID:	<u>27APR54.D</u>		
Sampled:	<u>04/26/17 11:25</u>	Prepared:	<u>04/27/17 07:00</u>	Analyzed:	<u>04/28/17 04:18</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B[D2631</u>	Sequence:	<u>1707226</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U



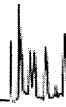
Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-4-5

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-06 File ID: 27APR54.D  
 Sampled: 04/26/17 11:25 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 04:18  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[D2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	J
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	1.2	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U



Tidewater Inc.  
 3761 Attucks Drive  
 Powell, OH 43065

Reported: 6/7/2017 2:57:42PM  
 Project: JPL- GW Monitoring Wells  
 Project Number: 2Q17  
 Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-4-5

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-06 File ID: 27APR54.D  
 Sampled: 04/26/17 11:25 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 04:18  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BID2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>UT</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>UT</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

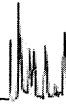
SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	11.770	118	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.8900	98.9	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.8600	98.6	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	176811	6.58	197293	6.58	
Chlorobenzene-d5 (IS)	66124	9.62	73254	9.62	
1,4-Difluorobenzene (IS)	261550	7.38	293261	7.39	

\* Values outside of QC limits

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Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

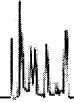
MW-21-1

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-07 File ID: 27APR55.D  
 Sampled: 04/26/17 15:50 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 04:41  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[D2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.72	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*6/30/17 8*





Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-21-1

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-07 File ID: 27APR55.D  
 Sampled: 04/26/17 15:50 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 04:41  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[D2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.30	J
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U



Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-21-1

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-07 File ID: 27APR55.D  
 Sampled: 04/26/17 15:50 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 04:41  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[D2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>US</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>US</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>US</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.850	108	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.350	104	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.610	106	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	178277	6.58	197293	6.58	
Chlorobenzene-d5 (IS)	60422	9.62	73254	9.62	
1,4-Difluorobenzene (IS)	246232	7.38	293261	7.39	

\* Values outside of QC limits



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-21-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-07</u>	File ID: <u>27APR55.D</u>	
Sampled: <u>04/26/17 15:50</u>	Prepared: <u>04/27/17 07:00</u>	Analyzed: <u>04/28/17 04:41</u>	
Solids:	Preparation: <u>EPA 5030 Water MS</u>	Initial/Final: <u>25 ml / 25 ml</u>	
Batch: <u>B[D2631</u>	Sequence: <u>1707226</u>	Calibration: <u>1704006</u>	Instrument: <u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*6/28/17*



Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-21-2

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-08 File ID: 27APR56.D  
 Sampled: 04/26/17 15:30 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 05:04  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[D2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.31	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U



Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-21-2

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-08 File ID: 27APR56.D  
 Sampled: 04/26/17 15:30 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 05:04  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[D]2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.63	
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

*6/30/17*



Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-21-2

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-08 File ID: 27APR56.D  
 Sampled: 04/26/17 15:30 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 05:04  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[D2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>UT</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>UT</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	11.850	118	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.050	100	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.240	102	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	169990	6.58	197293	6.58	
Chlorobenzene-d5 (IS)	62508	9.62	73254	9.62	
1,4-Difluorobenzene (IS)	256483	7.38	293261	7.39	

\* Values outside of QC limits



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
EPA-524.2

MW-21-2
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Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11226</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711226-08</u>	File ID:	<u>27APR56.D</u>		
Sampled:	<u>04/26/17 15:30</u>	Prepared:	<u>04/27/17 07:00</u>	Analyzed:	<u>04/28/17 05:04</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BJD2631</u>	Sequence:	<u>1707226</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*4/20/17*



Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

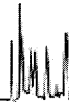
MW-21-3

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-09 File ID: 27APR57.D  
 Sampled: 04/26/17 15:10 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 05:27  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BJD2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.47	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.19	J
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*6/28/17 8*





Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-21-3

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-09 File ID: 27APR57.D  
 Sampled: 04/26/17 15:10 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 05:27  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BID2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.86	
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	1.0	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U



Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-21-3

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-09 File ID: 27APR57.D  
 Sampled: 04/26/17 15:10 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 05:27  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[D2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>UT</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>UT</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	11.910	119	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.8300	98.3	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.520	105	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	173511	6.58	197293	6.58	
Chlorobenzene-d5 (IS)	62561	9.62	73254	9.62	
1,4-Difluorobenzene (IS)	262044	7.39	293261	7.39	

\* Values outside of QC limits



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-21-3
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Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11226</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711226-09</u>	File ID:	<u>27APR57.D</u>		
Sampled:	<u>04/26/17 15:10</u>	Prepared:	<u>04/27/17 07:00</u>	Analyzed:	<u>04/28/17 05:27</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BID2631</u>	Sequence:	<u>1707226</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-21-5

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11226</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711226-10</u>	File ID:	<u>27APR58.D</u>		
Sampled:	<u>04/26/17 14:45</u>	Prepared:	<u>04/27/17 07:00</u>	Analyzed:	<u>04/28/17 05:50</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B[D2631</u>	Sequence:	<u>1707226</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	11	
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.18	J
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

6/30/17 9



Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

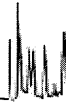
**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-21-5

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-10 File ID: 27APR58.D  
 Sampled: 04/26/17 14:45 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 05:50  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BID2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	2.0	
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.36	J
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

*4/30/17 Q*



Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-21-5

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-10 File ID: 27APR58.D  
 Sampled: 04/26/17 14:45 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 05:50  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[D2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>US</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>US</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>US</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	11.790	118	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.7900	97.9	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.010	100	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	179281	6.58	197293	6.58	
Chlorobenzene-d5 (IS)	66372	9.62	73254	9.62	
1,4-Difluorobenzene (IS)	271737	7.38	293261	7.39	

\* Values outside of QC limits



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
EPA-524.2

MW-21-5
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Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11226</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711226-10</u>	File ID:	<u>27APR58.D</u>		
Sampled:	<u>04/26/17 14:45</u>	Prepared:	<u>04/27/17 07:00</u>	Analyzed:	<u>04/28/17 05:50</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BJD2631</u>	Sequence:	<u>1707226</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*6/7/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

EB-7-042617

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11226</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711226-11</u>	File ID:	<u>27APR59.D</u>		
Sampled:	<u>04/26/17 16:10</u>	Prepared:	<u>04/27/17 07:00</u>	Analyzed:	<u>04/28/17 06:13</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B[D]2631</u>	Sequence:	<u>1707226</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*6/28/17*





Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

EB-7-042617

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-11 File ID: 27APR59.D  
 Sampled: 04/26/17 16:10 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 06:13  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BID2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U



Tidewater Inc. Reported: 6/7/2017 2:57:42PM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

EB-7-042617

Laboratory: BC Laboratories SDG: 17-11226  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711226-11 File ID: 27APR59.D  
 Sampled: 04/26/17 16:10 Prepared: 04/27/17 07:00 Analyzed: 04/28/17 06:13  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[D2631 Sequence: 1707226 Calibration: 1704006 Instrument: MS-V5

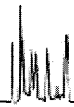
CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>UT</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>UT</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.780	108	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.090	101	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.130	101	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	179572	6.58	197293	6.58	
Chlorobenzene-d5 (IS)	64597	9.62	73254	9.62	
1,4-Difluorobenzene (IS)	267847	7.39	293261	7.39	

\* Values outside of QC limits

*4/28/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 2:57:42PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

**EB-7-042617**

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11226</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711226-11</u>	File ID:	<u>27APR59.D</u>		
Sampled:	<u>04/26/17 16:10</u>	Prepared:	<u>04/27/17 07:00</u>	Analyzed:	<u>04/28/17 06:13</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BJD2631</u>	Sequence:	<u>1707226</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*4/30/17*

LDC #: 38888A1

## VALIDATION COMPLETENESS WORKSHEET

SDG #: 17-11226

Level III/IV

Laboratory: BC Laboratories, Inc.

Date: 4/27/17

Page: 1 of 1

Reviewer: [Signature]

2nd Reviewer: [Signature]

METHOD: GC/MS Volatiles (EPA Method 524.2)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A, (M)	RSD ≤ 20% . 8 <sup>2</sup> 1CV ≤ 30%
IV.	Continuing calibration	M	COV ≤ 30%
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB=1. EB=11
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level III validation.
XIII.	Target compound identification	A	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

\*\* Indicates sample was underwent Level IV review

	Client ID	Lab ID	Matrix	Date
1	TB-8-042617	1711226-01	Water	04/26/17
2	MW-4-1	1711226-02	Water	04/26/17
3	MW-4-2	1711226-03	Water	04/26/17
4	MW-4-3	1711226-04	Water	04/26/17
5	MW-4-4	1711226-05	Water	04/26/17
6	MW-4-5	1711226-06	Water	04/26/17
7	MW-21-1	1711226-07	Water	04/26/17
8	MW-21-2**	1711226-08**	Water	04/26/17
9	MW-21-3	1711226-09	Water	04/26/17
10	MW-21-5	1711226-10	Water	04/26/17
11	EB-7-042617	1711226-11	Water	04/26/17
12				
13				

## VALIDATION FINDINGS CHECKLIST

**Method:** Volatiles (EPA Method 524.2)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>II. GC/MS Instrument performance check</b>				
Was a tune check performed prior to establishing and/or re-establishing an initial calibration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the BFB performance results reviewed and found to be within the specified criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>III. Initial calibration</b>				
Did the laboratory perform at least 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIIa. Initial Calibration Verification calibration</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) < 30%?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at the beginning of each analysis batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) of continuing calibration < 30%?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed with each analysis batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Field blanks</b>				
Field blanks were identified in this SDG.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Target compounds were detected in the field blanks.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VII. Surrogate spikes</b>				
Were all surrogate %R within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Was a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for this SDG?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

**VALIDATION FINDINGS CHECKLIST**

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) within 70-130%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>X. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Target compounds were detected in the field duplicates.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>XI. Internal standards</b>				
Were internal standard area counts within +/-30% of the area of the most recent continuing calibration standard and +/-50% of the average peak area in the initial calibration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were retention times within +/-30 seconds of the associated calibration standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XII. Compound quantitation/CRQLs</b>				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) or regression equations used to quantitate the compound?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were chromatogram peaks verified and accounted for?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIV. System performance</b>				
System performance was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

## TARGET COMPOUND WORKSHEET

### METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl chloride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO. 1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3-Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methylcyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.







**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

METHOD: GCMS 524.2

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

$$\text{RRF} = (\text{Ax})(\text{Cis})/(\text{Ais})(\text{Cx})$$

average RRF = sum of the RRFs/number of standards

$$\% \text{RSD} = 100 * (\text{S}/\text{X})$$

Where:

Ax = Area of compound

Cx = Concentration of compound

S = Standard deviation of the RRFs

X = Mean of the RRFs

Ais = Area of associated internal standard

Cis = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported (RRF 10 std)	Recalculated (RRF 10 std)	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL	4/13/2017	C	0.6738509	0.6738509	0.6507252	0.6507252	5.77474	5.77474
			CC	0.7608310	0.7608310	0.7401395	0.7401395	4.89008	4.89008
			EE	1.7287610	1.7287610	1.6995870	1.6995870	8.26667	8.26667

#	Standard ID	Calibration Date	Compound	Reported (RRF 160/40/8 std)	Recalculated (RRF160/40/8 std)	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL	4/13/2017	F	0.0343799	0.0343799	0.03573499	0.03573499	12.094280	12.094280
			VVV	0.0704187	0.0704187	0.07240331	0.07240331	11.825840	11.825840
			ZZZ	0.5104179	0.5104179	0.48355100	0.48355100	10.086370	10.086370

### VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

**METHOD:** GC/MS VOA (EPA Method 524.2)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

$$\% \text{ Difference} = 100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$$

$$\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$$

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 A<sub>x</sub> = Area of compound,                      A<sub>is</sub> = Area of associated internal standard  
 C<sub>x</sub> = Concentration of compound,        C<sub>is</sub> = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported	Recalculated	Reported	Recalculated
					RRF (CC)	RRF (CC)	%D	%D
1	<del>27APR33</del>	4/27/17	C (1st Internal Standard)	0.650725	<del>0.6835354</del> 1.747823	0.6835353	<del>2.8</del> 5.0	5.0
			CC (2nd Internal Standard)	0.7401395	0.7848057	0.7848056	6.0	6.0
			ZZ (3rd Internal Standard)	1.6995870	1.747823	1.7478232	2.8	2.8
2	<del>27APR33</del>	4/27/17	F (1st Internal Standard)	0.0757499	0.07459378	0.0745932	3.2	3.2
			VVVV (2nd Internal Standard)	0.07240331	0.0711721	0.071172	1.7	1.7
			ZZZZ (3rd Internal Standard)	0.48355101	0.01491386	0.0149138	96.9	96.9
3			(1st Internal Standard)					
			(2nd Internal Standard)					
			(3rd Internal Standard)					
4			(1st Internal Standard)					
			(2nd Internal Standard)					
			(3rd Internal Standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 38888A1

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

Page: 1 of 1  
 Reviewer: [Signature]  
 2nd reviewer: [Signature]

**METHOD:** GC/MS VOA (EPA Method 524.2)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery:  $SF/SS * 100$

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: 8

	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
			Reported	Recalculated	
Toluene-d8	10.00	10.05	100	100	0
Bromofluorobenzene	↓	10.24	102	102	↓
1,2-Dichlorobenzene-d4	↓	11.85	118	118	↓
Dibromofluoromethane					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
			Reported	Recalculated	
Toluene-d8					
Bromofluorobenzene					
1,2-Dichlorobenzene-d4					
Dibromofluoromethane					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
			Reported	Recalculated	
Toluene-d8					
Bromofluorobenzene					
1,2-Dichlorobenzene-d4					
Dibromofluoromethane					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
			Reported	Recalculated	
Toluene-d8					
Bromofluorobenzene					
1,2-Dichlorobenzene-d4					
Dibromofluoromethane					

LDC #: 38888A

## VALIDATION FINDINGS WORKSHEET

### Laboratory Control Sample Results Verification

Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**METHOD:** GC/MS VOA (EPA Method 524.2)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* SSC/SA

Where: SSC = Spiked sample concentration  
 SA = Spike added

RPD = | LCSC - LCSDC | \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration    LCSDC = Laboratory control sample duplicate concentration

LCS ID: B102631-B S 1

Compound	Spike Added ( <u>NA</u> )		Spiked Sample Concentration ( <u>NA</u> )		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene	<u>25.000</u>	<u>NA</u>	<u>27.300</u>	<u>NA</u>	<u>109</u>	<u>109</u>				
Trichloroethene	↓	↓	<u>26.840</u>	↓	<u>107</u>	<u>107</u>				
Benzene	↓	↓	<u>24.930</u>	↓	<u>99.7</u>	<u>99.7</u>				
Toluene	↓	↓	<u>25.450</u>	↓	<u>102</u>	<u>102</u>				
Chlorobenzene	↓	↓	<u>25.760</u>	↓	<u>103</u>	<u>103</u>				

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 38838A

### VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page: 1 of 1

Reviewer: [Signature]

2nd reviewer: [Signature]

**METHOD:** GC/MS VOA (EPA Method 524.2)

N/A

Were all reported results recalculated and verified for all level IV samples?

N/A

Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

$$\text{Concentration} = \frac{(A_x)(I_s)(DF)}{(A_s)(RRF)(V_o)(\%S)}$$

- A<sub>x</sub> = Area of the characteristic ion (EICP) for the compound to be measured
- A<sub>s</sub> = Area of the characteristic ion (EICP) for the specific internal standard
- I<sub>s</sub> = Amount of internal standard added in nanograms (ng)
- RRF = Relative response factor of the calibration standard.
- V<sub>o</sub> = Volume or weight of sample pruged in milliliters (ml) or grams (g).
- Df = Dilution factor.
- %S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 8, K:

$$\text{Conc.} = \frac{(4177)(10.0)(1)}{(169990)(0.8006886)} = 0.31 \mu\text{g/L}$$

#	Sample ID	Compound	Reported Concentration	Calculated Concentration	Qualification
	<u>8</u>	<u>K</u>	<u>0.31</u>		

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 2Q2017

**LDC Report Date:** June 28, 2017

**Parameters:** Semivolatiles

**Validation Level:** Level III

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-11226

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
MW-4-2	1711226-03	Water	04/26/17

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Semivolatile Organic Compounds (SVOCs) by Environmental Protection Agency (EPA) SW 846 Method 8270C

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.



## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination ( $r^2$ ) were greater than or equal to 0.990 with the following exceptions:

Date	Compound	$r^2$	Associated Samples	Flag	A or P
05/08/17	Benzidine	0.989853	All samples in SDG 17-11226	UJ (all non-detects)	A

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
05/08/17 (08MAY21)	Benzidine Bis(2-chloroisopropyl) ether Endrin aldehyde	60.6 27.5 20.9	All samples in SDG 17-11226	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A
05/08/17 (08MAY22)	Dimethyoate Methapyrilene	26.5 26.9	All samples in SDG 17-11226	UJ (all non-detects) UJ (all non-detects)	A

## IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
05/09/17 (09MAY12)	Benzidine	54.2	All samples in SDG 17-11226	UJ (all non-detects)	A
	Benzyl alcohol	44.2		UJ (all non-detects)	
	Bis(2-chloroisopropyl) ether	30.2		UJ (all non-detects)	
	Endrin aldehyde	22.4		UJ (all non-detects)	
	N-Nitroso-di-n-propylamine	20.1		UJ (all non-detects)	
	2-Methylphenol	24.7		UJ (all non-detects)	
	Carbazole	22.2		UJ (all non-detects)	
05/09/17 (09MAY13)	Acetophenone	27.4	All samples in SDG 17-11226	UJ (all non-detects)	A
	2-Acetylaminofluorene	43.2		UJ (all non-detects)	
	Aramite	30.2		UJ (all non-detects)	
	1,3-Dinitrobenzene	27.2		UJ (all non-detects)	
	Dinoseb	42.5		UJ (all non-detects)	
	Ethyl methanesulfonate	22.9		UJ (all non-detects)	
	Methyl methansulfonate	33.1		UJ (all non-detects)	
	1,4-Naphthoquinone	24.1		UJ (all non-detects)	
	1-Naphthylamine	26.7		UJ (all non-detects)	
	4-Nitroquinoline-1-oxide	53.7		UJ (all non-detects)	
	N-Nitrosodi-n-butylamine	35.9		UJ (all non-detects)	
	N-Nitrosomorpholine	55.6		UJ (all non-detects)	
	N-Nitrosopyrrolidine	64.2		UJ (all non-detects)	
	1,4-Phenylenediamine	61.7		UJ (all non-detects)	
	2,3,4,6-Tetrachlorophenol	26.8		UJ (all non-detects)	

All of the continuing calibration relative response factors (RRF) were within validation criteria.

### V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

### VI. Field Blanks

No field blanks were identified in this SDG.

### VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

### VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.



## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to initial calibration  $r^2$  and ICV and continuing calibration %D, and internal standards %R, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

NASA JPL, 2Q2017  
Semivolatiles - Data Qualification Summary - SDG 17-11226

Sample	Compound	Flag	A or P	Reason
MW-4-2	Benzidine	UJ (all non-detects)	A	Initial calibration (r <sup>2</sup> )
MW-4-2	Benzidine Bis(2-chloroisopropyl) ether Endrin aldehyde	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A	Initial calibration verification (%D)
MW-4-2	Dimethyate Methapyrilene	UJ (all non-detects) UJ (all non-detects)	A	Initial calibration verification (%D)
MW-4-2	Benzidine Benzyl alcohol Bis(2-chloroisopropyl) ether Endrin aldehyde N-Nitroso-di-n-propylamine 2-Methylphenol Carbazole	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A	Continuing calibration (%D)
MW-4-2	Acetophenone 2-Acetylaminofluorene Aramite 1,3-Dinitrobenzene Dinoseb Ethyl methanesulfonate Methyl methansulfonate 1,4-Naphthoquinone 1-Naphthylamine 4-Nitroquinoline-1-oxide N-Nitrosodi-n-butylamine N-Nitrosomorpholine N-Nitrosopyrrolidine 1,4-Phenylenediamine 2,3,4,6-Tetrachlorophenol	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A	Continuing calibration (%D)

Sample	Compound	Flag	A or P	Reason
MW-4-2	Phenol	UJ (all non-detects)	P	Internal standards (%R)
	Bis(2-chloroethyl)ether	UJ (all non-detects)		
	2-Chlorophenol	UJ (all non-detects)		
	1,3-Dichlorobenzene	UJ (all non-detects)		
	1,4-Dichlorobenzene	UJ (all non-detects)		
	1,2-Dichlorobenzene	UJ (all non-detects)		
	2-Methylphenol	UJ (all non-detects)		
	Bis(2-chloroisopropyl)ether	UJ (all non-detects)		
	3+4-Methylphenol	UJ (all non-detects)		
	N-Nitroso-d-n-propylamine	UJ (all non-detects)		
	Hexachoroethane	UJ (all non-detects)		
	Benzyl alcohol	UJ (all non-detects)		
	Aniline	UJ (all non-detects)		
	N-Nitrosodimethylamine	UJ (all non-detects)		
	Pyridine	UJ (all non-detects)		
	2-Picoline	UJ (all non-detects)		
	N-Nitrosomethylethylamine	UJ (all non-detects)		
	Methyl methanesulfonate	UJ (all non-detects)		
	N-Nitrosodiethylamine	UJ (all non-detects)		
	N-Nitrosomorpholine	UJ (all non-detects)		
	Ethyl methanesulfonate	UJ (all non-detects)		
	2-Toluidine	UJ (all non-detects)		
	Acetophenone	UJ (all non-detects)		
	Ethyl Methacrylate	UJ (all non-detects)		
	Pentachloroethane	UJ (all non-detects)		
	N-Nitrosopyrrolidine	UJ (all non-detects)		
	a,a-Dimethylphenethylamine	UJ (all non-detects)		
	Methyl methacrylate	UJ (all non-detects)		

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Semivolatiles - Laboratory Blank Data Qualification Summary - SDG 17-11226

No Sample Data Qualified in this SDG



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/8/2017 3:04:06PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

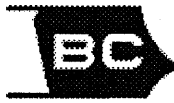
ORGANIC ANALYSIS DATA SHEET  
EPA-8270C

MW-4-2

Laboratory: BC Laboratories SDG: 17-11226  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711226-03 File ID: 09MAY21.D  
Sampled: 04/26/17 08:30 Prepared: 04/28/17 12:00 Analyzed: 05/09/17 23:02  
Solids: Preparation: EPA 3510B Initial/Final: 1000 ml / 0.97 ml  
Batch: B/E0320 Sequence: 1708156 Calibration: 1705021 Instrument: MS-B1

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
83-32-9	Acenaphthene	0.97	0.40	U
208-96-8	Acenaphthylene	0.97	0.34	U
309-00-2	Aldrin	0.97	0.45	U
62-53-3	Aniline	0.97	0.71	U <i>KS</i>
120-12-7	Anthracene	0.97	0.32	U
92-87-5	Benzidine	0.97	2.7	U <i>KS</i>
56-55-3	Benzo[a]anthracene	0.97	0.37	U
205-99-2	Benzo[b]fluoranthene	0.97	0.88	U
207-08-9	Benzo[k]fluoranthene	0.97	0.96	U
50-32-8	Benzo[a]pyrene	0.97	0.87	U
191-24-2	Benzo[g,h,i]perylene	0.97	1.2	U
65-85-0	Benzoic acid	0.97	2.0	U
100-51-6	Benzyl alcohol	0.97	0.44	U <i>KS</i>
85-68-7	Benzyl butyl phthalate	0.97	0.77	U
319-84-6	alpha-BHC	0.97	1.8	U
319-85-7	beta-BHC	0.97	1.4	U
319-86-8	delta-BHC	0.97	1.8	U
58-89-9	gamma-BHC (Lindane)	0.97	1.2	U
111-91-1	bis(2-Chloroethoxy)methane	0.97	0.45	U
111-44-4	bis(2-Chloroethyl) ether	0.97	0.86	U <i>KS</i>
39638-32-9	bis(2-Chloroisopropyl)ether	0.97	0.58	U <i>KS</i>
117-81-7	bis(2-Ethylhexyl)phthalate	0.97	0.67	U
101-55-3	4-Bromophenyl phenyl ether	0.97	0.42	U
106-47-8	4-Chloroaniline	0.97	0.40	U
91-58-7	2-Chloronaphthalene	0.97	0.34	U
7005-72-3	4-Chlorophenyl phenyl ether	0.97	0.46	U
218-01-9	Chrysene	0.97	0.42	U
72-54-8	4,4'-DDD	0.97	0.74	U
72-55-9	4,4'-DDE	0.97	1.2	U
50-29-3	4,4'-DDT	0.97	1.1	U
53-70-3	Dibenzo[a,h]anthracene	0.97	1.6	U
132-64-9	Dibenzofuran	0.97	0.32	U

6/30/17 Q



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/8/2017 3:04:06PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-8270C

MW-4-2

Laboratory: BC Laboratories SDG: 17-11226  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711226-03 File ID: 09MAY21.D  
Sampled: 04/26/17 08:30 Prepared: 04/28/17 12:00 Analyzed: 05/09/17 23:02  
Solids: Preparation: EPA 3510B Initial/Final: 1000 ml / 0.97 ml  
Batch: BIE0320 Sequence: 1708156 Calibration: 1705021 Instrument: MS-B1

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
95-50-1	1,2-Dichlorobenzene	0.97	0.39	U <i>UT</i>
541-73-1	1,3-Dichlorobenzene	0.97	0.50	U
106-46-7	1,4-Dichlorobenzene	0.97	0.55	U <i>↓</i>
91-94-1	3,3-Dichlorobenzidine	0.97	0.65	U
60-57-1	Dieldrin	0.97	0.68	U
84-66-2	Diethyl phthalate	0.97	0.35	U
131-11-3	Dimethyl phthalate	0.97	0.40	U
84-74-2	Di-n-butyl phthalate	0.97	0.33	U
121-14-2	2,4-Dinitrotoluene	0.97	0.75	U
606-20-2	2,6-Dinitrotoluene	0.97	0.56	U
117-84-0	Di-n-octyl phthalate	0.97	0.61	U
122-66-7	1,2-Diphenylhydrazine	0.97	0.43	U
959-98-8	Endosulfan I	0.97	3.2	U
33213-65-9	Endosulfan II	0.97	3.1	U
1031-07-8	Endosulfan sulfate	0.97	2.5	U
72-20-8	Endrin	0.97	1.4	U
7421-93-4	Endrin aldehyde	0.97	2.6	U <i>UT</i>
206-44-0	Fluoranthene	0.97	0.61	U
86-73-7	Fluorene	0.97	0.54	U
76-44-8	Heptachlor	0.97	0.94	U
1024-57-3	Heptachlor epoxide	0.97	0.69	U
118-74-1	Hexachlorobenzene	0.97	0.48	U
87-68-3	Hexachlorobutadiene	0.97	0.48	U
77-47-4	Hexachlorocyclopentadiene	0.97	0.52	U
67-72-1	Hexachloroethane	0.97	0.90	U <i>UT</i>
193-39-5	Indeno[1,2,3-cd]pyrene	0.97	1.2	U
78-59-1	Isophorone	0.97	0.31	U
91-57-6	2-Methylnaphthalene	0.97	0.38	U
91-20-3	Naphthalene	0.97	0.27	U
91-59-8	2-Naphthylamine	0.97	0.83	U
88-74-4	2-Nitroaniline	0.97	0.60	U
99-09-2	3-Nitroaniline	0.97	0.92	U

*6/20/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/8/2017 3:04:06PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-8270C**

MW-4-2

Laboratory: BC Laboratories SDG: 17-11226  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711226-03 File ID: 09MAY21.D  
Sampled: 04/26/17 08:30 Prepared: 04/28/17 12:00 Analyzed: 05/09/17 23:02  
Solids: Preparation: EPA 3510B Initial/Final: 1000 ml / 0.97 ml  
Batch: B/E0320 Sequence: 1708156 Calibration: 1705021 Instrument: MS-B1

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
100-01-6	4-Nitroaniline	0.97	1.3	U
98-95-3	Nitrobenzene	0.97	0.37	U
62-75-9	N-Nitrosodimethylamine	0.97	1.2	U <i>US</i>
621-64-7	N-Nitrosodi-N-propylamine	0.97	0.58	U <i>US</i>
86-30-6	N-Nitrosodiphenylamine	0.97	0.57	U
85-01-8	Phenanthrene	0.97	0.50	U
129-00-0	Pyrene	0.97	0.45	U
120-82-1	1,2,4-Trichlorobenzene	0.97	0.87	U
59-50-7	4-Chloro-3-methylphenol	0.97	0.48	U
95-57-8	2-Chlorophenol	0.97	0.44	U <i>US</i>
120-83-2	2,4-Dichlorophenol	0.97	0.63	U
105-67-9	2,4-Dimethylphenol	0.97	0.60	U
534-52-1	4,6-Dinitro-2-methylphenol	0.97	1.8	U
51-28-5	2,4-Dinitrophenol	0.97	2.5	U
95-48-7	2-Methylphenol	0.97	0.55	U <i>US</i>
15831-10-4	3- & 4-Methylphenol	0.97	0.72	U <i>US</i>
1319-77-3	Total Methylphenol	0.97	1.3	U
88-75-5	2-Nitrophenol	0.97	0.68	U
100-02-7	4-Nitrophenol	0.97	1.9	U
87-86-5	Pentachlorophenol	0.97	1.8	U
108-95-2	Phenol	0.97	0.49	U <i>US</i>
95-95-4	2,4,5-Trichlorophenol	0.97	0.66	U
88-06-2	2,4,6-Trichlorophenol	0.97	0.51	U
98-86-2	Acetophenone	0.97	3.0	U <i>US</i>
53-96-3	2-Acetylaminofluorene	0.97	0.38	U <i>US</i>
6044-68-4	Acrolein, dimethyl acetal	0.97	7.7	U
92-67-1	4-Aminobiphenyl	0.97	5.2	U
140-57-8	Aramite	0.97	2.3	U <i>US</i>
100-52-7	Benzaldehyde	0.97	0.98	U
1861-40-1	Benefin	0.97	0.88	U
92-52-4	1,1-Biphenyl	0.97	0.69	U
105-60-2	Caprolactam	0.97	0.61	U

*6/8/17* *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/8/2017 3:04:06PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-8270C

MW-4-2

Laboratory: BC Laboratories SDG: 17-11226  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711226-03 File ID: 09MAY21.D  
Sampled: 04/26/17 08:30 Prepared: 04/28/17 12:00 Analyzed: 05/09/17 23:02  
Solids: Preparation: EPA 3510B Initial/Final: 1000 ml / 0.97 ml  
Batch: B[E]0320 Sequence: 1708156 Calibration: 1705021 Instrument: MS-B1

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
86-74-8	Carbazole	0.97	0.36	U <i>US</i>
5103-71-9	cis-Chlordane	0.97	0.30	U
5103-74-2	trans-Chlordane	0.97	0.40	U
510-15-6	Chlorobenzilate	0.97	0.29	U
90-13-1	1-Chloronaphthalene	0.97	0.28	U
17708-57-5	cis-Diallate	0.97	0.21	U
17708-58-6	trans-Diallate	0.97	0.22	U
2303-16-4	Diallate	0.97	0.42	U
87-65-0	2,6-Dichlorophenol	0.97	1.3	U
60-51-5	Dimethoate	0.97	0.46	U <i>US</i>
60-11-7	p-(Dimethylamino)azobenzene	0.97	0.54	U
57-97-6	7,12-Dimethylbenz[a]anthracene	0.97	0.41	U
119-93-7	3,3'-Dimethylbenzidine	0.97	5.4	U
122-09-8	a,a-Dimethylphenethylamine	0.97	2.5	U <i>US</i>
67-68-5	Dimethyl sulfoxide (DMSO)	0.97	1.0	U
99-65-0	1,3-Dinitrobenzene	0.97	0.23	U <i>US</i>
88-85-7	Dinoseb	0.97	0.61	U <i>US</i>
122-39-4	Diphenylamine	0.97	0.20	U
298-04-4	Disulfoton	0.97	0.44	U
97-63-2	Ethyl methacrylate	0.97	0.19	U <i>US</i>
62-50-0	Ethyl methanesulfonate	0.97	0.26	U <i>US</i>
56-38-2	Ethyl Parathion	0.97	0.31	U
52-85-7	Famphur	0.97	8.3	U
70-30-4	Hexachlorophene	0.97	35	U
1888-71-7	Hexachloropropene	0.97	0.46	U
465-73-6	Isodrin	0.97	0.31	U
17627-76-8	cis-Isosafrole	0.97	0.41	U
4043-71-4	trans-Isosafrole	0.97	0.36	U
120-58-1	Isosafrole	0.97	0.76	U
143-50-0	Kepone	0.97	1.5	U
91-80-5	Methapyrilene	0.97	1.5	U <i>US</i>
72-43-5	Methoxychlor	0.97	0.82	U

6/30/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/8/2017 3:04:06PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

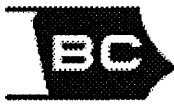
ORGANIC ANALYSIS DATA SHEET  
EPA-8270C

MW-4-2

Laboratory: BC Laboratories SDG: 17-11226  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711226-03 File ID: 09MAY21.D  
Sampled: 04/26/17 08:30 Prepared: 04/28/17 12:00 Analyzed: 05/09/17 23:02  
Solids: Preparation: EPA 3510B Initial/Final: 1000 ml / 0.97 ml  
Batch: B/E0320 Sequence: 1708156 Calibration: 1705021 Instrument: MS-B1

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
56-49-5	3-Methylcholanthrene	0.97	0.56	U
80-62-6	Methyl methacrylate	0.97	22	U <i>KS</i>
66-27-3	Methyl methanesulfonate	0.97	0.42	U <i>KS</i>
90-12-0	1-Methylnaphthalene	0.97	0.41	U
298-00-0	Methyl parathion	0.97	0.32	U
872-50-4	N-Methyl-2-pyrrolidinone	0.97	1.6	U
130-15-4	1,4-Naphthoquinone	0.97	2.1	U <i>KS</i>
134-32-7	1-Naphthylamine	0.97	5.3	U <i>KS</i>
99-55-8	5-Nitro-o-toluidine	0.97	0.44	U
56-57-5	4-Nitroquinoline 1-oxide	0.97	12	U <i>KS</i>
924-16-3	N-Nitrosodibutylamine	0.97	0.41	U <i>KS</i>
55-18-5	N-Nitrosodiethylamine	0.97	0.43	U <i>KS</i>
10595-95-6	N-Nitrosomethylethylamine	0.97	0.37	U <i>KS</i>
59-89-2	N-Nitrosomorpholine	0.97	0.35	U <i>KS</i>
100-75-4	N-Nitrosopiperidine	0.97	0.44	U
930-55-2	N-Nitrosopyrrolidine	0.97	0.44	U <i>KS</i>
608-93-5	Pentachlorobenzene	0.97	0.25	U
76-01-7	Pentachloroethane	0.97	1.0	U <i>KS</i>
82-68-8	Pentachloronitrobenzene	0.97	0.30	U
62-44-2	Phenacetin	0.97	0.20	U
106-50-3	1,4-Phenylenediamine	0.97	2.2	U <i>KS</i>
298-02-2	Phorate	0.97	0.34	U
109-06-8	2-Picoline	0.97	0.23	U <i>KS</i>
12674-11-2	PCB-1016	0.97	25	U
11104-28-2	PCB-1221	0.97	25	U
11141-16-5	PCB-1232	0.97	25	U
53469-21-9	PCB-1242	0.97	25	U
12672-29-6	PCB-1248	0.97	25	U
11097-69-1	PCB-1254	0.97	25	U
11096-82-5	PCB-1260	0.97	25	U
37324-23-5	PCB-1262	0.97	25	U
11100-14-4	PCB-1268	0.97	25	U

6/30/17 *Q*



Tidewater Inc.
3761 Attucks Drive
Powell, OH 43065

Reported: 6/8/2017 3:04:06PM
Project: JPL- GW Monitoring Wells
Project Number: 2Q17
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET
EPA-8270C

MW-4-2

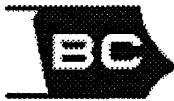
Laboratory: BC Laboratories
Client: Tidewater Inc.
Matrix: Water
Sampled: 04/26/17 08:30
Solids:
Batch: B[E0320
SDG: 17-11226
Project: JPL- GW Monitoring Wells
Laboratory ID: 1711226-03
Prepared: 04/28/17 12:00
Preparation: EPA 3510B
File ID: 09MAY21.D
Analyzed: 05/09/17 23:02
Initial/Final: 1000 ml / 0.97 ml
Sequence: 1708156
Calibration: 1705021
Instrument: MS-B1

Table with 5 columns: CAS NO., COMPOUND, DILUTION, CONC. (ug/L), Q. Lists various PCBs and other compounds with their respective concentrations and quality control status.

Table with 6 columns: SYSTEM MONITORING COMPOUND, ADDED (ug/L), CONC (ug/L), % REC, QC LIMITS, Q. Lists surrogate compounds used for system monitoring.

Table with 6 columns: INTERNAL STANDARD, AREA, RT, REF AREA, REF RT, Q. Lists internal standards used for the analysis.

Handwritten signature and date: 6/20/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/8/2017 3:04:06PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-8270C**

MW-4-2

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-03</u>	File ID: <u>09MAY21.D</u>	
Sampled: <u>04/26/17 08:30</u>	Prepared: <u>04/28/17 12:00</u>	Analyzed: <u>05/09/17 23:02</u>	
Solids:	Preparation: <u>EPA 3510B</u>	Initial/Final: <u>1000 ml / 0.97 ml</u>	
Batch: <u>B/E0320</u>	Sequence: <u>1708156</u>	Calibration: <u>1705021</u>	Instrument: <u>MS-B1</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
591-08-2	1-Acetyl-2-thiourea	0.97		U
117-79-3	2-Aminoanthraquinone	0.97		U
132-32-1	3-Amino-9-ethylcarbazole	0.97		U
101-05-3	Anilazine	0.97		U
90-04-0	o-Anisidine	0.97		U
86-50-0	Azinphos methyl	0.97		U
101-27-9	Barban	0.97		U
106-51-4	p-Benzoquinone	0.97		U
1689-84-5	Bromoxynil	0.97		U
2939-80-2	Captafol	0.97		U
133-06-2	Captan	0.97		U
63-25-2	Carbaryl	0.97		U
1563-66-2	Carbofuran	0.97		U
786-19-6	Carbophenothion	0.97		U
470-90-6	Chlorfenvinphos	0.97		U
95-79-4	5-Chloro-2-methylaniline	0.97		U
6959-48-4	3-(Chloromethyl) pyridine hydrochloride	0.97		U
95-83-0	4-Chloro-1,2-phenylenediamine	0.97		U
5131-60-2	4-Chloro-1,3-phenylenediamine	0.97		U
56-72-4	Coumaphos	0.97		U
120-71-8	p-Cresidine	0.97		U
7700-17-6	Crotoxyphos	0.97		U
131-89-5	2-Cyclohexyl-4,6-dinitrophenol	0.97		U
298-03-3	Demeton-O	0.97		U
126-75-0	Demeton-S	0.97		U
95-80-7	2,4-Diaminotoluene	0.97		U
224-42-0	Dibenz[a,j]acridine	0.97		U
192-65-4	Dibenzof[a,e]pyrene	0.97		U
96-12-8	1,2-Dibromo-3-chloropropane	0.97		U
117-80-6	Dichlone	0.97		U
62-73-7	Dichlorvos	0.97		U
141-66-2	Dicrotophos	0.97		U

4/30/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/8/2017 3:04:06PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-8270C**

MW-4-2

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11226</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711226-03</u>	File ID:	<u>09MAY21.D</u>		
Sampled:	<u>04/26/17 08:30</u>	Prepared:	<u>04/28/17 12:00</u>	Analyzed:	<u>05/09/17 23:02</u>		
Solids:		Preparation:	<u>EPA 3510B</u>	Initial/Final:	<u>1000 ml / 0.97 ml</u>		
Batch:	<u>BIE0320</u>	Sequence:	<u>1708156</u>	Calibration:	<u>1705021</u>	Instrument:	<u>MS-B1</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
56-53-1	Diethylstilbestrol	0.97		U
64-67-5	Diethyl sulfate	0.97		U
94-58-6	Dihydrosafrole	0.97		U
119-90-4	3,3'-Dimethoxybenzidine	0.97		U
528-29-0	1,2-Dinitrobenzene	0.97		U
100-25-4	1,4-Dinitrobenzene	0.97		U
39300-45-3	Dinocap	0.97		U
78-34-2	Dioxathion	0.97		U
57-41-0	5,5-Diphenylhydantoin	0.97		U
53494-70-5	Endrin ketone	0.97		U
2104-64-5	EPN	0.97		U
563-12-2	Ethion	0.97		U
51-79-6	Ethyl carbamate	0.97		U
115-90-2	Fensulfothion	0.97		U
55-38-9	Fenthion	0.97		U
33245-39-5	Fluchloralin	0.97		U
680-31-9	Hexamethylphosphoramide	0.97		U
123-31-9	Hydroquinone	0.97		U
21609-90-5	Leptophos	0.97		U
121-75-5	Malathion	0.97		U
108-31-6	Maleic Anhydride	0.97		U
72-33-3	Mestranol	0.97		U
101-14-4	4,4'-Methylenebis(2-chloroaniline)	0.97		U
101-61-1	4,4'-Methylenebis[N,N-dimethylaniline]	0.97		U
7786-34-7	Mevinphos	0.97		U
315-18-4	Mexacarbate	0.97		U
2385-85-5	Mirex	0.97		U
6923-22-4	Monocrotophos	0.97		U
300-76-5	Naled	0.97		U
54-11-5	Nicotine	0.97		U
602-87-9	5-Nitroacenaphthene	0.97		U
99-59-2	5-Nitro-o-anisidine	0.97		U

*6/8/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/8/2017 3:04:06PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-8270C**

MW-4-2

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-03</u>	File ID: <u>09MAY21.D</u>	
Sampled: <u>04/26/17 08:30</u>	Prepared: <u>04/28/17 12:00</u>	Analyzed: <u>05/09/17 23:02</u>	
Solids:	Preparation: <u>EPA 3510B</u>	Initial/Final: <u>1000 ml / 0.97 ml</u>	
Batch: <u>BIE0320</u>	Sequence: <u>1708156</u>	Calibration: <u>1705021</u>	Instrument: <u>MS-B1</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
92-93-3	4-Nitrobiphenyl	0.97		U
1836-75-5	Nitrophen	0.97		U
152-16-9	Octamethylpyrophosphoramidate	0.97		U
101-80-4	4,4'-Oxydianiline	0.97		U
50-06-6	Phenobarbital	0.97		U
2310-17-0	Phosalone	0.97		U
732-11-6	Phosmet	0.97		U
13171-21-6	Phosphamidon	0.97		U
85-44-9	Phthalic anhydride	0.97		U
120-62-7	Piperonyl sulfoxide	0.97		U
51-52-5	Propylthiouracil	0.97		U
108-46-3	Resorcinol	0.97		U
57-24-9	Strychnine	0.97		U
95-06-7	Sulfallate	0.97		U
13071-79-9	Terbufos	0.97		U
961-11-5	Tetrachlorvinphos	0.97		U
107-49-3	TEPP	0.97		U
108-98-5	Thiophenol (Benzenethiol)	0.97		U
584-84-9	Toluene 2,4-diisocyanate	0.97		U
1582-09-8	Trifluralin	0.97		U
137-17-7	2,4,5-Trimethylaniline	0.97		U
512-56-1	Trimethyl phosphate	0.97		U
126-72-7	Tris(2,3-dibromopropyl) phosphate	0.97		U
78-32-0	Tri-p-tolyl phosphate	0.97		U

\* Values outside of QC limits

6/20/17

LDC #: 38888A2a

# VALIDATION COMPLETENESS WORKSHEET

Date: 4/20/17

SDG #: 17-11226

Level III

Page: 1 of 1

Laboratory: BC Laboratories, Inc.

Reviewer: [Signature]

2nd Reviewer: [Signature]

**METHOD:** GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	MW gm	RSD ≤ 30/15/70. Y <sup>2</sup> 1 CV ≤ 20/0
IV.	Continuing calibration	MW	CV ≤ 20/0
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	MW	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LES
X.	Field duplicates	N	
XI.	Internal standards	MW	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet

ND = No compounds detected  
 R = Rinsate  
 FB = Field blank

D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank

SB=Source blank  
 OTHER:

	Client ID	Lab ID	Matrix	Date
1	MW-4-2	1711226-03	Water	04/26/17
2				
3				
4				
5				
6				
7				
8				

Notes:




## VALIDATION FINDINGS WORKSHEET

### METHOD: GC/MS SVOA

A. Phenol	AA. 2-Chloronaphthalene	AAA. Butylbenzylphthalate	AAAA. Dibenzothiophene	A1. N-Nitrosodiethylamine
B. Bis (2-chloroethyl) ether	BB. 2-Nitroaniline	BBB. 3,3'-Dichlorobenzidine	BBBB. Benzo(a)fluoranthene	B1. N-Nitrosodi-n-butylamine
C. 2-Chlorophenol	CC. Dimethylphthalate	CCC. Benzo(a)anthracene	CCCC. Benzo(b)fluorene	C1. N-Nitrosomethylethylamine
D. 1,3-Dichlorobenzene	DD. Acenaphthylene	DDD. Chrysene	DDDD. cis/trans-Decalin	D1. N-Nitrosomorpholine
E. 1,4-Dichlorobenzene	EE. 2,6-Dinitrotoluene	EEE. Bis(2-ethylhexyl)phthalate	EEEE. Biphenyl	E1. N-Nitrosopyrrolidine
F. 1,2-Dichlorobenzene	FF. 3-Nitroaniline	FFF. Di-n-octylphthalate	FFFF. Retene	F1. Phenacetin
G. 2-Methylphenol	GG. Acenaphthene	GGG. Benzo(b)fluoranthene	GGGG. C30-Hopane	G1. 2-Acetylaminofluorene
H. 2,2'-Oxybis(1-chloropropane)	HH. 2,4-Dinitrophenol	HHH. Benzo(k)fluoranthene	HHHH. 1-Methylphenanthrene	H1. Pronamide
I. 4-Methylphenol	II. 4-Nitrophenol	III. Benzo(a)pyrene	IIII. 1,4-Dioxane	I1. Methyl methanesulfonate
J. N-Nitroso-di-n-propylamine	JJ. Dibenzofuran	JJJ. Indeno(1,2,3-cd)pyrene	JJJJ. Acetophenone	J1. Ethyl methanesulfonate
K. Hexachloroethane	KK. 2,4-Dinitrotoluene	KKK. Dibenz(a,h)anthracene	KKKK. Atrazine	K1. o,o',o''-Triethylphosphorothioate
L. Nitrobenzene	LL. Diethylphthalate	LLL. Benzo(g,h,i)perylene	LLLL. Benzaldehyde	L1. n-Phenylene diamine
M. Isophorone	MM. 4-Chlorophenyl-phenyl ether	MMM. Bis(2-Chloroisopropyl)ether	MMMM. Caprolactam	M1. 1,4-Naphthoquinone
N. 2-Nitrophenol	NN. Fluorene	NNN. Aniline	NNNN. 2,6-Dichlorophenol	N1. N-Nitro-o-toluidine
O. 2,4-Dimethylphenol	OO. 4-Nitroaniline	OOO. N-Nitrosodimethylamine	OOOO. 1,2-Diphenylhydrazine	O1. 1,3,5-Trinitrobenzene
P. Bis(2-chloroethoxy)methane	PP. 4,6-Dinitro-2-methylphenol	PPP. Benzoic Acid	PPPP. 3-Methylphenol	P1. Pentachlorobenzene
Q. 2,4-Dichlorophenol	QQ. N-Nitrosodiphenylamine	QQQ. Benzyl alcohol	QQQQ. 3&4-Methylphenol	Q1. 4-Aminobiphenyl
R. 1,2,4-Trichlorobenzene	RR. 4-Bromophenyl-phenylether	RRR. Pyridine	RRRR. 4-Dimethyldibenzothiophene (4MDT)	R1. 2-Naphthylamine
S. Naphthalene	SS. Hexachlorobenzene	SSS. Benzidine	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	S1.
T. 4-Chloroaniline	TT. Pentachlorophenol	TTT. 1-Methylnaphthalene	TTTT. 1-Methyldibenzothiophene (1MDT)	T1.
U. Hexachlorobutadiene	UU. Phenanthrene	UUU. Benzo(b)thiophene	UUUU. 2,3,4,6-Tetrachlorophenol	U1.
V. 4-Chloro-3-methylphenol	VV. Anthracene	VVV. Benzonaphthothiophene	VVVV. 1,2,4,5-Tetrachlorobenzene	V1.
W. 2-Methylnaphthalene	WW. Carbazole	WWW. Benzo(e)pyrene	WWWW. 2-Picoline	W1.
X. Hexachlorocyclopentadiene	XX. Di-n-butylphthalate	XXX. 2,6-Dimethylnaphthalene	XXXX. 3-Methylcholanthrene	X1.
Y. 2,4,6-Trichlorophenol	YY. Fluoranthene	YYY. 2,3,5-Trimethylnaphthalene	YYYY. a,a-Dimethylphenethylamine	Y1.
Z. 2,4,5-Trichlorophenol	ZZ. Pyrene	ZZZ. Perylene	ZZZZ. Hexachloropropene	Z1.





VALIDATION FINDINGS WORKSHEET  
Continuing Calibration

METHOD: GC/MS BNA (EPA SW 846 Method 8270D)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?  
 Y N N/A Were percent differences (%D) ≤20 % and relative response factors (RRF) within the method criteria?

#	Date	Standard ID	Compound	Finding %D (Limit: <20.0%)	Finding RRF (Limit)	Associated Samples	Qualifications
	5/9/17	09MAX12	SSS	54.2		All (N/D)	↓ N/A
			RRR	44.2			
			MMM	30.2			
			zndrin aldehyde	22.4			
			J	20.1			
			G	24.7			
			WU	22.2			
	5/9/17	09MAX13	JWJ	27.4		All (N/D)	↓ N/A
			2-Acetylamino-fluorene	43.2			
			Aramite	30.2			
			1,3-Dinitrobenzene	27.2			
			Dinoseb	42.5			
			J1	22.9			
			I1	33.1			
			M1	24.1			
			1-Naphthylamine	26.7			
			4-Nitroquinoline-1-oxide	53.7			
			B1	35.9			
			O1	55.6			
			E1	64.2			
			1,4-Phenylenediamine	61.7			
			UUUU	26.8			





**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** NASA JPL, 2Q2017

**LDC Report Date:** June 28, 2017

**Parameters:** 1,4-Dioxane

**Validation Level:** Level III

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-11226

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
MW-4-1	1711226-02	Water	04/26/17

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.



## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## **VII. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

### **VIII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

### **IX. Laboratory Control Samples**

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

### **X. Field Duplicates**

No field duplicates were identified in this SDG.

### **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

### **XII. Compound Quantitation**

Raw data were not reviewed for Level III validation.

### **XIII. Target Compound Identifications**

Raw data were not reviewed for Level III validation.

### **XIV. System Performance**

Raw data were not reviewed for Level III validation.

### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**NASA JPL, 2Q2017**  
**1,4-Dioxane - Data Qualification Summary - SDG 17-11226**

No Sample Data Qualified in this SDG

**NASA JPL, 2Q2017**  
**1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG 17-11226**

No Sample Data Qualified in this SDG



**METHOD:** GC/MS 1,4-Dioxane (EPA SW846 Method 8270<sup>Ⓞ</sup>)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	RSD ≤ 15%, CV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20%
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	ES
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet

ND = No compounds detected  
 R = Rinsate  
 FB = Field blank

D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank

SB=Source blank  
 OTHER:

	Client ID	Lab ID	Matrix	Date
1	MW-4-1	1711226-02	Water	04/26/17
2				
3				
4				
5				
6				
7				
8				

Notes:


## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 2Q2017

**LDC Report Date:** June 29, 2017

**Parameters:** Metals

**Validation Level:** Level III & IV

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-11226

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MW-4-1	1711226-02	Water	04/26/17
MW-4-2	1711226-03	Water	04/26/17
MW-4-3	1711226-04	Water	04/26/17
MW-4-4	1711226-05	Water	04/26/17
MW-4-5	1711226-06	Water	04/26/17
MW-21-1	1711226-07	Water	04/26/17
MW-21-2**	1711226-08**	Water	04/26/17
MW-21-3	1711226-09	Water	04/26/17
MW-21-5	1711226-10	Water	04/26/17
EB-7-042617	1711226-11	Water	04/26/17
MW-4-1MS	1711226-02MS	Water	04/26/17
MW-4-1MSD	1711226-02MSD	Water	04/26/17
MW-4-1DUP	1711226-02DUP	Water	04/26/17
MW-21-2MS	1711226-08MS	Water	04/26/17
MW-21-2MSD	1711226-08MSD	Water	04/26/17
MW-21-2DUP	1711226-08DUP	Water	04/26/17

\*\*Indicates sample underwent Level IV validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, and Sodium by Environmental Protection Agency (EPA) Methods 200.7/200.8

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

## II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

## III. Instrument Calibration

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

## IV. ICP Interference Check Sample Analysis

ICP interference check sample analyses were not required by the methods.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

## VI. Field Blanks

Sample EB-6-042517 was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Analyte	Concentration
EB-7-042617	Calcium Magnesium	0.023 mg/L 0.022 mg/L

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.



## **IX. Serial Dilution**

Serial dilution analysis was performed on an associated project sample. Percent differences (%D) were within QC limits.

## **X. Laboratory Control Samples**

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

## **XI. Field Duplicates**

No field duplicates were identified in this SDG.

## **XII. Internal Standards (ICP-MS)**

All internal standard percent recoveries (%R) were within QC limits for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

## **XIII. Sample Result Verification**

All sample result verifications were acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

## **XIV. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**NASA JPL, 2Q2017**  
**Metals - Data Qualification Summary - SDG 17-11226**

No Sample Data Qualified in this SDG

**NASA JPL, 2Q2017**  
**Metals - Laboratory Blank Data Qualification Summary - SDG 17-11226**

No Sample Data Qualified in this SDG



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-4-1

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-02

File ID: PE2\_170504-146

Sampled: 04/26/17 12:45

Prepared: 05/03/17 11:00

Analyzed: 05/04/17 18:41

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E0345

Sequence: 1707832

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	73	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	24	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	21	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	3.5	1		EPA-200.7

*Handwritten signature*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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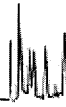
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-4-2

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-03</u>
Sampled: <u>04/26/17 08:30</u>	Prepared: <u>05/03/17 11:00</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>B[E0345</u>	Sequence: <u>1707832</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-OP2</u>
	File ID: <u>PE2 170504-152</u>
	Analyzed: <u>05/04/17 18:57</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	140	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	51	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	38	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	3.2	1		EPA-200.7

*6/20/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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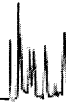
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-4-3

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-04</u>
Sampled: <u>04/26/17 12:15</u>	Prepared: <u>05/03/17 11:00</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>BIE0345</u>	Sequence: <u>1707832</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-OP2</u>
	File ID: <u>PE2_170504-156</u>
	Analyzed: <u>05/04/17 19:06</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	130	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	51	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	38	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	3.3	1		EPA-200.7

*4/29/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-4-4

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-05</u>
Sampled: <u>04/26/17 11:50</u>	Prepared: <u>05/03/17 11:00</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>BIE0345</u>	Sequence: <u>1707832</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-OP2</u>
	File ID: <u>PE2_170504-157</u>
	Analyzed: <u>05/04/17 19:09</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	120	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	51	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	38	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	3.2	1		EPA-200.7

*6/30/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.7**

MW-4-5

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-06

File ID: PE2\_170504-158

Sampled: 04/26/17 11:25

Prepared: 05/03/17 11:00

Analyzed: 05/04/17 19:12

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E0345

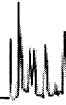
Sequence: 1707832

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	110	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	52	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	38	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	3.3	1		EPA-200.7

*6/20/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-21-1
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-07</u>
Sampled: <u>04/26/17 15:50</u>	Prepared: <u>05/03/17 11:00</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>B/E0345</u>	Sequence: <u>1707832</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-OP2</u>
	File ID: <u>PE2_170504-159</u>
	Analyzed: <u>05/04/17 19:14</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	86	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	27	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	32	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	2.1	1		EPA-200.7

*6/29/17 9*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-21-2

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-08

File ID: PE2 170504-160

Sampled: 04/26/17 15:30

Prepared: 05/03/17 11:00

Analyzed: 05/04/17 19:17

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE0345

Sequence: 1707832

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	160	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	54	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	56	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	3.1	1		EPA-200.7

*6/22/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.7**

**MW-21-3**

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-09

File ID: PE2 170504-161

Sampled: 04/26/17 15:10

Prepared: 05/03/17 11:00

Analyzed: 05/04/17 19:19

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE0345

Sequence: 1707832

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	140	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	46	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	56	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	3.6	1		EPA-200.7

*6/20/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-21-5

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-10

File ID: PE2\_170504-162

Sampled: 04/26/17 14:45

Prepared: 05/03/17 11:00

Analyzed: 05/04/17 19:22

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E0345

Sequence: 1707832

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	87	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	29	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	36	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	2.6	1		EPA-200.7

*6/20/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

EB-7-042617

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-11

File ID: PE2 170504-163

Sampled: 04/26/17 16:10

Prepared: 05/03/17 11:00

Analyzed: 05/04/17 19:25

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE0345

Sequence: 1707832

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	0.023	1	J	EPA-200.7
7439-95-4	Total Recoverable Magnesium	0.022	1	J	EPA-200.7
7440-23-5	Total Recoverable Sodium	0.051	1	U	EPA-200.7
7440-09-7	Total Recoverable Potassium	0.10	1	U	EPA-200.7

*Handwritten signature/initials*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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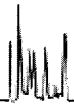
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-4-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-02</u>
Sampled: <u>04/26/17 12:45</u>	File ID: <u>PE_EL2_170501-207</u>
Solids: <u>0.00</u>	Prepared: <u>05/01/17 11:30</u>
Batch: <u>B/E0124</u>	Analyzed: <u>05/01/17 23:01</u>
Sequence: <u>1707506</u>	Preparation: <u>EPA 200.2</u>
	Initial/Final: <u>50 ml / 50 ml</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

*6/30/17 J*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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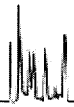
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-4-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-02</u>
Sampled: <u>04/26/17 12:45</u>	Prepared: <u>05/01/17 11:30</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>BIE0124</u>	Sequence: <u>1707558</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL2</u>
	File ID: <u>PE_EL2_170502-091</u>
	Analyzed: <u>05/02/17 13:00</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8

*Handwritten signature/initials*



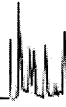
Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

**MW-4-2**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-03</u>
Sampled: <u>04/26/17 08:30</u>	File ID: <u>PE_EL2_170501-208</u>
Solids: <u>0.00</u>	Prepared: <u>05/01/17 11:30</u>
Batch: <u>B[E0124</u>	Preparation: <u>EPA 200.2</u>
Sequence: <u>1707506</u>	Initial/Final: <u>50 ml / 50 ml</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	1.7	1	J	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-4-2
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-03</u>	File ID: <u>PE_EL2_170502-092</u>	
Sampled: <u>04/26/17 08:30</u>	Prepared: <u>05/01/17 11:30</u>	Analyzed: <u>05/02/17 13:04</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>B[E]0124</u>	Sequence: <u>1707558</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8

*6/30/17*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-4-3
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-04</u>
Sampled: <u>04/26/17 12:15</u>	File ID: <u>PE_EL2_170501-209</u>
Solids: <u>0.00</u>	Prepared: <u>05/01/17 11:30</u>
Batch: <u>B[E]0124</u>	Analyzed: <u>05/01/17 23:08</u>
Sequence: <u>1707506</u>	Preparation: <u>EPA 200.2</u>
	Initial/Final: <u>50 ml / 50 ml</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	55	1		EPA-200.8
7439-92-1	Total Recoverable Lead	0.11	1	J	EPA-200.8

*6/28/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-4-3
--------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-04</u>
Sampled: <u>04/26/17 12:15</u>	Prepared: <u>05/01/17 11:30</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>B E0124</u>	Sequence: <u>1707558</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL2</u>
	File ID: <u>PE_EL2_170502-093</u>
	Analyzed: <u>05/02/17 13:07</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8

*6/22/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-4-4

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-05

File ID: PE\_EL2\_170501-210

Sampled: 04/26/17 11:50

Prepared: 05/01/17 11:30

Analyzed: 05/01/17 23:12

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B[E]0124

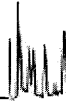
Sequence: 1707506

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

*Handwritten signature/initials*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-4-4
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-05</u>	File ID: <u>PE_EL2 170502-094</u>	
Sampled: <u>04/26/17 11:50</u>	Prepared: <u>05/01/17 11:30</u>	Analyzed: <u>05/02/17 13:11</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE0124</u>	Sequence: <u>1707558</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8

*6/30/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-4-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-06</u>
Sampled: <u>04/26/17 11:25</u>	Prepared: <u>05/01/17 11:30</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>B[E0124</u>	Sequence: <u>1707506</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL2</u>
	File ID: <u>PE_EL2_170501-211</u>
	Analyzed: <u>05/01/17 23:15</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

MW-4-5

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-06

File ID: PE\_EL2\_170502-095

Sampled: 04/26/17 11:25

Prepared: 05/01/17 11:30

Analyzed: 05/02/17 13:14

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE0124

Sequence: 1707558

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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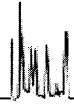
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-21-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-07</u>
Sampled: <u>04/26/17 15:50</u>	Prepared: <u>05/01/17 11:30</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>BIE0124</u>	Sequence: <u>1707506</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL2</u>
	File ID: <u>PE_EL2_170501-212</u>
	Analyzed: <u>05/01/17 23:19</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

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Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

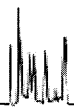
MW-21-1
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-07</u>
Sampled: <u>04/26/17 15:50</u>	Prepared: <u>05/01/17 11:30</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>B[E0124</u>	Sequence: <u>1707558</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL2</u>
	File ID: <u>PE_EL2_170502-096</u>
	Analyzed: <u>05/02/17 13:18</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8

*6/20/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

MW-21-2

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-08

File ID: PE\_EL2\_170501-197

Sampled: 04/26/17 15:30

Prepared: 05/01/17 11:30

Analyzed: 05/01/17 22:27

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE0124

Sequence: 1707506

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

*6/20/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-21-2
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-08</u>	File ID: <u>PE_EL2_170502-081</u>	
Sampled: <u>04/26/17 15:30</u>	Prepared: <u>05/01/17 11:30</u>	Analyzed: <u>05/02/17 12:23</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>B[E0124</u>	Sequence: <u>1707558</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8

*6/20/17 a*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-21-3
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-09</u>
Sampled: <u>04/26/17 15:10</u>	File ID: <u>PE_EL2_170501-213</u>
Solids: <u>0.00</u>	Prepared: <u>05/01/17 11:30</u>
Batch: <u>BIE0124</u>	Preparation: <u>EPA 200.2</u>
Sequence: <u>1707506</u>	Initial/Final: <u>50 ml / 50 ml</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

*6/28/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
--	--

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

**MW-21-3**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-09</u>
Sampled: <u>04/26/17 15:10</u>	Prepared: <u>05/01/17 11:30</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>B[E]0124</u>	Sequence: <u>1707558</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL2</u>
	File ID: <u>PE_EL2_170502-097</u>
	Analyzed: <u>05/02/17 13:21</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8

*6/29/17 8*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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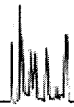
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-21-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-10</u>
Sampled: <u>04/26/17 14:45</u>	Prepared: <u>05/01/17 11:30</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>B E0124</u>	Sequence: <u>1707506</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL2</u>
	File ID: <u>PE_EL2_170501-214</u>
	Analyzed: <u>05/01/17 23:25</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

*6/20/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
--	--

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-21-5
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-10</u>	File ID: <u>PE_EL2_170502-098</u>	
Sampled: <u>04/26/17 14:45</u>	Prepared: <u>05/01/17 11:30</u>	Analyzed: <u>05/02/17 13:24</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BJE0124</u>	Sequence: <u>1707558</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

**EB-7-042617**

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-11

File ID: PE\_EL2\_170501-215

Sampled: 04/26/17 16:10

Prepared: 05/01/17 11:30

Analyzed: 05/01/17 23:29

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B|E0124

Sequence: 1707506

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

*6/20/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

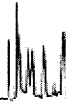
**EB-7-042617**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-11</u>
Sampled: <u>04/26/17 16:10</u>	File ID: <u>PE_EL2_170502-099</u>
Solids: <u>0.00</u>	Prepared: <u>05/01/17 11:30</u>
Batch: <u>BJE0124</u>	Analyzed: <u>05/02/17 13:28</u>
Sequence: <u>1707558</u>	Preparation: <u>EPA 200.2</u>
	Initial/Final: <u>50 ml / 50 ml</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8

*6/20/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-4-1

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-02

File ID: PE2\_170504-146

Sampled: 04/26/17 12:45

Prepared: 05/03/17 11:00

Analyzed: 05/04/17 18:41

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE0345

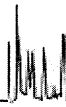
Sequence: 1707832

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	320	1		EPA-200.7

*6/28/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-4-2

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-03

File ID: PE2 170504-152

Sampled: 04/26/17 08:30

Prepared: 05/03/17 11:00

Analyzed: 05/04/17 18:57

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE0345

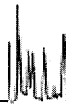
Sequence: 1707832

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	1000	1		EPA-200.7

*Handwritten signature/initials*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-4-3

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-04

File ID: PE2 170504-156

Sampled: 04/26/17 12:15

Prepared: 05/03/17 11:00

Analyzed: 05/04/17 19:06

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE0345

Sequence: 1707832

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	45000	1		EPA-200.7

*6/30/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-4-4

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-05

File ID: PE2 170504-157

Sampled: 04/26/17 11:50

Prepared: 05/03/17 11:00

Analyzed: 05/04/17 19:09

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE0345

Sequence: 1707832

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	10000	1		EPA-200.7

*6/28/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-4-5
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-06</u>	File ID: <u>PE2 170504-158</u>	
Sampled: <u>04/26/17 11:25</u>	Prepared: <u>05/03/17 11:00</u>	Analyzed: <u>05/04/17 19:12</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>B/E0345</u>	Sequence: <u>1707832</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-OP2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	4100	1		EPA-200.7

*6/28/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.7**

MW-21-1

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-07

File ID: PE2 170504-159

Sampled: 04/26/17 15:50

Prepared: 05/03/17 11:00

Analyzed: 05/04/17 19:14

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE0345

Sequence: 1707832

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	150	1		EPA-200.7

*43078*



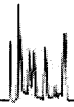
Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:07:49PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-21-2
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-08</u>
Sampled: <u>04/26/17 15:30</u>	Prepared: <u>05/03/17 11:00</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>B/E0345</u>	Sequence: <u>1707832</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-OP2</u>
	File ID: <u>PE2 170504-160</u>
	Analyzed: <u>05/04/17 19:17</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	150	1		EPA-200.7



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-21-3

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-09

File ID: PE2\_170504-161

Sampled: 04/26/17 15:10

Prepared: 05/03/17 11:00

Analyzed: 05/04/17 19:19

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B[E0345

Sequence: 1707832

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	190	1		EPA-200.7

*6/30/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.7**

MW-21-5

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-10

File ID: PE2\_170504-162

Sampled: 04/26/17 14:45

Prepared: 05/03/17 11:00

Analyzed: 05/04/17 19:22

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE0345

Sequence: 1707832

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	240	1		EPA-200.7

*6/30/17* *D*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:07:49PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.7**

**EB-7-042617**

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-11

File ID: PE2\_170504-163

Sampled: 04/26/17 16:10

Prepared: 05/03/17 11:00

Analyzed: 05/04/17 19:25

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE0345

Sequence: 1707832

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	30	1	U	EPA-200.7

*6/20/17 J*

LDC #: 38888A4a

## VALIDATION COMPLETENESS WORKSHEET

Date: 06/28/17

SDG #: 17-11226

Level III/IV

Page: 1 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: ATL

2nd Reviewer: [Signature]

**METHOD:** Metals (EPA Method 200.7/200.8)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, A	
II.	ICP/MS Tune	A	
III.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SWA	
VI.	Field Blanks	SW 10=EB	
VII.	Matrix Spike/Matrix Spike Duplicates	A	
VIII.	Duplicate sample analysis	A	
IX.	Serial Dilution	A	
X.	Laboratory control samples	A	LCS
XI.	Field Duplicates	N	
XII.	Internal Standard (ICP-MS)	A	
XIII.	Sample Result Verification	A	Not reviewed for Level III validation.
XIV.	Overall Assessment of Data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

\*\* Indicates sample was underwent Level IV review

	Client ID	Lab ID	Matrix	Date
1	MW-4-1	1711226-02	Water	04/26/17
2	MW-4-2	1711226-03	Water	04/26/17
3	MW-4-3	1711226-04	Water	04/26/17
4	MW-4-4	1711226-05	Water	04/26/17
5	MW-4-5	1711226-06	Water	04/26/17
6	MW-21-1	1711226-07	Water	04/26/17
7	MW-21-2**	1711226-08**	Water	04/26/17
8	MW-21-3	1711226-09	Water	04/26/17
9	MW-21-5	1711226-10	Water	04/26/17
10	EB-7-042617	1711226-11	Water	04/26/17
11	MW-4-1MS	1711226-02MS	Water	04/26/17
12	MW-4-1MSD	1711226-02MSD	Water	04/26/17
13	MW-4-1DUP	1711226-02DUP	Water	04/26/17
14	MW-21-2MS	1711226-08MS	Water	04/26/17
15	MW-21-2MSD	1711226-08MSD	Water	04/26/17

LDC #: 38888A4a

### VALIDATION COMPLETENESS WORKSHEET

Date: 06/28/17

SDG #: 17-11226

Level III/IV

Page: 2 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: ATL

2nd Reviewer: [Signature]

**METHOD:** Metals (EPA Method 200.7/200.8)

	Client ID	Lab ID	Matrix	Date
16	MW-21-2DUP	1711226-08DUP	Water	04/26/17
17				
18				
19				
20				
21				

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Method:**Metals (EPA SW 846 Method 6010/6020/7000)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
<b>II. ICP/MS Tune</b>				
Were all isotopes in the tuning solution mass resolution within 0.1 amu?	✓			
Were %RSD of isotopes in the tuning solution $\leq 5\%$ ?	✓			
<b>III. Calibration</b>				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury) QC limits?	✓			
Were the low standard checks within 70-130%			✓	
Were all initial calibration correlation coefficients within limits as specified by the method?			✓	
<b>IV. Blanks</b>				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
<b>V. ICP Interference Check Sample</b>				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
<b>VI. Matrix spike/Matrix spike duplicates</b>				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) $\leq 20\%$ for waters and $\leq 35\%$ for soil samples? A control limit of $\pm RL(\pm 2X RL$ for soil) was used for samples that were $\leq 5X$ the RL, including when only one of the duplicate sample values were $\leq 5X$ the RL.	✓			
<b>VII. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			

**VALIDATION FINDINGS CHECKLIST**

Validation Area	Yes	No	NA	Findings/Comments
<b>VIII. Internal Standards (EPA SW 846 Method 6020/EPA 200.8)</b>				
Were all the percent recoveries (%R) within the 30-120% (6020)/60-125% (200.8) of the intensity of the internal standard in the associated initial calibration?	✓			
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
<b>IX. ICP Serial Dilution</b>				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the MDL (ICP)/>100X the MDL(ICP/MS)?	✓			
Were all percent differences (%Ds) < 10%?	✓			
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
<b>X. Sample Result Verification</b>				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
<b>XI. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	✓			
<b>XII. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
<b>XIII. Field blanks</b>				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	



## VALIDATION FINDINGS WORKSHEET Field Blanks

**METHOD:** Trace Metals (EPA SW846 6010B/7000)

**Blank units:** mg/L      **Associated sample units:** \_\_\_\_\_

**Sampling date:** 04/26/17      Soil factor applied \_\_\_\_\_

**Field blank type:** (circle one) Field Blank / Rinsate / Other: \_\_\_\_\_      Associated Samples: ~~None~~ (X template)

Analyte	Blank ID	Sample Identification										
	10	Action Limit										
Ca	0.023	0.115										
Mg	0.022	0.110										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".



**VALIDATION FINDINGS WORKSHEET**  
**Initial and Continuing Calibration Calculation Verification**

**METHOD:** Trace Metals (See cover)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$\%R = \frac{\text{Found}}{\text{True}} \times 100$  Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution  
 True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated	Reported	Acceptable (Y/N)
					%R	%R	
ICV	ICP (Initial calibration)	K	49.58	50	99.2	99.2	Y
CCV4	ICP (Continuing calibration) (05/04/17 @ 18:59)	Fe	49.24	50	98.5	98.5	Y
ICV	ICP-MS (Initial calibration)	Pb	131	125	105	105	Y
CCV6	ICP-MS (Continuing calibration) (05/02/17 @ 12:51)	As	101	100	101	101	Y
	CVAA (Initial calibration)						
	CVAA (Continuing calibration)						

Comments: \_\_\_\_\_

**VALIDATION FINDINGS WORKSHEET**  
**Level IV Recalculation Worksheet**

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$
 Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).  
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$
 Where, S = Original sample concentration  
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$
 Where, I = Initial Sample Result (mg/L)  
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD / %D	%R / RPD / %D	
1707832-IFAL	ICP interference check (05/04 @ 17:16)	Mg	490.9	500	98.2	98.2	Y
LCS	Laboratory control sample	Cr	41.4	40	104	104	Y
11	Matrix spike	Na	(SSR-SR) 9.92	10	99.1	99.1	Y
11/12	Duplicate	Na	31.40	30.586	2.63	2.63	Y
7	ICP serial dilution	Pb	ND	ND			Y

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 2Q2017

**LDC Report Date:** June 30, 2017

**Parameters:** Wet Chemistry

**Validation Level:** Level III & IV

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-11226

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MW-4-1	1711226-02	Water	04/26/17
MW-4-2	1711226-03	Water	04/26/17
MW-4-3	1711226-04	Water	04/26/17
MW-4-4	1711226-05	Water	04/26/17
MW-4-5	1711226-06	Water	04/26/17
MW-21-1	1711226-07	Water	04/26/17
MW-21-2**	1711226-08**	Water	04/26/17
MW-21-3	1711226-09	Water	04/26/17
MW-21-5	1711226-10	Water	04/26/17
EB-7-042617	1711226-11	Water	04/26/17
MW-4-1MS	1711226-02MS	Water	04/26/17
MW-4-1MSD	1711226-02MSD	Water	04/26/17
MW-4-1DUP	1711226-02DUP	Water	04/26/17
MW-4-2DUP	1711226-03DUP	Water	04/26/17
MW-21-2MS	1711226-08MS	Water	04/26/17
MW-21-2MSD	1711226-08MSD	Water	04/26/17
MW-21-2DUP	1711226-08DUP	Water	04/26/17

\*\*Indicates sample underwent Level IV validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Alkalinity by Standard Method 2320B

Chloride, Nitrate as Nitrogen, and Sulfate by Environmental Protection Agency (EPA) Method 300.0

Nitrite as Nitrogen by EPA 353.2

Hexavalent Chromium by EPA SW 846 Method 7196

Perchlorate by EPA Method 314.0

pH by EPA Method 150.1

Total Dissolved Solids by EPA Method 160.1

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

## II. Initial Calibration

All criteria for the initial calibration of each method were met.

## III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

## V. Field Blanks

Sample EB-7-042617 was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Analyte	Concentration
EB-7-042617	Chloride	0.14 mg/L

## VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

## VIII. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

## **IX. Field Duplicates**

No field duplicates were identified in this SDG.

## **X. Sample Result Verification**

All sample result verifications were acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.



**NASA JPL, 2Q2017**  
**Wet Chemistry - Data Qualification Summary - SDG 17-11226**

No Sample Data Qualified in this SDG

**NASA JPL, 2Q2017**  
**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 17-11226**

No Sample Data Qualified in this SDG



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

**MW-4-1**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-02</u>
Sampled: <u>04/26/17 12:45</u>	Prepared: <u>04/27/17 08:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[D2562</u>	Sequence: <u>1707346</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>
	File ID: <u>Tiamo042717-048</u>
	Analyzed: <u>04/27/17 12:36</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	300	1		SM-2320B
3812-32-6	Carbonate	2.5	1	U	SM-2320B
---	Total Alkalinity as CaCO3	250	1		SM-2320B



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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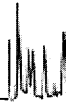
**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-4-2
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-03</u>
Sampled: <u>04/26/17 08:30</u>	Prepared: <u>04/27/17 08:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BJD2564</u>	Sequence: <u>1707346</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>
	File ID: <u>Tiamo042717-091</u>
	Analyzed: <u>04/27/17 15:59</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	260	2	D	SM-2320B
3812-32-6	Carbonate	5.0	2	UD	SM-2320B
---	Total Alkalinity as CaCO3	220	2	D	SM-2320B

*6/30/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-4-3

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-04

File ID: Tiamo042717-094

Sampled: 04/26/17 12:15

Prepared: 04/27/17 08:00

Analyzed: 04/27/17 16:16

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BID2564

Sequence: 1707346

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	290	2	D	SM-2320B
3812-32-6	Carbonate	5.0	2	UD	SM-2320B
---	Total Alkalinity as CaCO3	240	2	D	SM-2320B

6/27/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-4-4

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-05</u>
Sampled: <u>04/26/17 11:50</u>	Prepared: <u>04/27/17 08:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[D2564</u>	Sequence: <u>1707346</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>
	File ID: <u>Tiamo042717-095</u>
	Analyzed: <u>04/27/17 16:22</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	300	2	D	SM-2320B
3812-32-6	Carbonate	5.0	2	UD	SM-2320B
---	Total Alkalinity as CaCO3	250	2	D	SM-2320B

*6/30/17 8*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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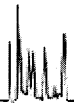
**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-4-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-06</u>
Sampled: <u>04/26/17 11:25</u>	Prepared: <u>04/27/17 08:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BID2564</u>	Sequence: <u>1707346</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>
	File ID: <u>Tiamo042717-096</u>
	Analyzed: <u>04/27/17 16:28</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	320	2	D	SM-2320B
3812-32-6	Carbonate	5.0	2	UD	SM-2320B
---	Total Alkalinity as CaCO3	260	2	D	SM-2320B

*6/30/17* ♀



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-21-1

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-07

File ID: Tiamo042717-097

Sampled: 04/26/17 15:50

Prepared: 04/27/17 08:00

Analyzed: 04/27/17 16:34

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BJD2564

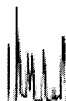
Sequence: 1707346

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	190	1		SM-2320B
3812-32-6	Carbonate	2.5	1	U	SM-2320B
---	Total Alkalinity as CaCO3	150	1		SM-2320B

6/20/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**SM-2320B**

MW-21-2

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-08

File ID: Tiamo042717-098

Sampled: 04/26/17 15:30

Prepared: 04/27/17 08:00

Analyzed: 04/27/17 16:41

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BID2564

Sequence: 1707346

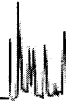
Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	350	2	D	SM-2320B
3812-32-6	Carbonate	5.0	2	UD	SM-2320B
---	Total Alkalinity as CaCO3	290	2	D	SM-2320B

6/30/17 9





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-21-3

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-09</u>
Sampled: <u>04/26/17 15:10</u>	Prepared: <u>04/27/17 08:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[D2564</u>	Sequence: <u>1707346</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>
	File ID: <u>Tiamo042717-099</u>
	Analyzed: <u>04/27/17 16:47</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	360	2	D	SM-2320B
3812-32-6	Carbonate	5.0	2	UD	SM-2320B
---	Total Alkalinity as CaCO3	290	2	D	SM-2320B

*4/30/17 8*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-21-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-10</u>
Sampled: <u>04/26/17 14:45</u>	Prepared: <u>04/27/17 08:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BID2564</u>	Sequence: <u>1707346</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>
	File ID: <u>Tiamo042717-100</u>
	Analyzed: <u>04/27/17 16:53</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	200	1		SM-2320B
3812-32-6	Carbonate	2.5	1	U	SM-2320B
---	Total Alkalinity as CaCO3	160	1		SM-2320B

*4/27/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

EB-7-042617

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-11

File ID: Tiamo042717-102

Sampled: 04/26/17 16:10

Prepared: 04/27/17 08:00

Analyzed: 04/27/17 17:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: B[D2564

Sequence: 1707346

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	5.0	1	U	SM-2320B
3812-32-6	Carbonate	2.5	1	U	SM-2320B
---	Total Alkalinity as CaCO3	4.1	1	U	SM-2320B

*4/27/17 CC*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-4-1
--------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-02</u>	File ID: <u>170426 2028 CR6-021</u>	
Sampled: <u>04/26/17 12:45</u>	Prepared: <u>04/26/17 22:33</u>	Analyzed: <u>04/26/17 22:33</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B[D2624</u>	Sequence: <u>1707409</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*6/30/17* &



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-7196

MW-4-2
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-03</u>
Sampled: <u>04/26/17 08:30</u>	File ID: <u>170426 2028 CR6-022</u>
Solids: <u>0.00</u>	Prepared: <u>04/26/17 22:33</u>
Batch: <u>B[D2624</u>	Analyzed: <u>04/26/17 22:33</u>
Sequence: <u>1707409</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>20 ml / 20 ml</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

6/30/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

**MW-4-3**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-04</u>
Sampled: <u>04/26/17 12:15</u>	File ID: <u>170426 2028 CR6-023</u>
Solids: <u>0.00</u>	Prepared: <u>04/26/17 22:33</u>
Batch: <u>BJD2624</u>	Analyzed: <u>04/26/17 22:33</u>
Sequence: <u>1707409</u>	Initial/Final: <u>20 ml / 20 ml</u>
	Preparation: <u>No Prep</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*6/20/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-4-4

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-05

File ID: 170426 2028 CR6-024

Sampled: 04/26/17 11:50

Prepared: 04/26/17 22:33

Analyzed: 04/26/17 22:33

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJD2624

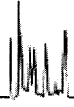
Sequence: 1707409

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*6/30/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-4-5
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-06</u>
Sampled: <u>04/26/17 11:25</u>	File ID: <u>170426 2028 CR6-027</u>
Solids: <u>0.00</u>	Prepared: <u>04/26/17 22:33</u>
Batch: <u>B[D2624</u>	Sequence: <u>1707409</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>
	Initial/Final: <u>20 ml / 20 ml</u>
	Analyzed: <u>04/26/17 22:37</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*6/20/17 8*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-7196

MW-21-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-07</u>
Sampled: <u>04/26/17 15:50</u>	File ID: <u>170426 2028 CR6-042</u>
Solids: <u>0.00</u>	Prepared: <u>04/26/17 22:33</u>
Batch: <u>B[D2624</u>	Analyzed: <u>04/26/17 23:04</u>
Sequence: <u>1707409</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>20 ml / 20 ml</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0014	1	J	EPA-7196

6/30/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-7196

MW-21-2

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-08</u>	File ID: <u>170426 2028 CR6-017</u>	
Sampled: <u>04/26/17 15:30</u>	Prepared: <u>04/26/17 22:33</u>	Analyzed: <u>04/26/17 22:33</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B[D2624</u>	Sequence: <u>1707409</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0010	1	J	EPA-7196

*6/30/17 8*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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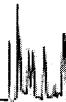
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-21-3

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-09</u>	File ID: <u>170426 2028 CR6-037</u>	
Sampled: <u>04/26/17 15:10</u>	Prepared: <u>04/26/17 22:33</u>	Analyzed: <u>04/26/17 22:52</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B[D2624</u>	Sequence: <u>1707409</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00080	1	J	EPA-7196

*4/20/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-21-5

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-10

File ID: 170426 2028 CR6-030

Sampled: 04/26/17 14:45

Prepared: 04/26/17 22:33

Analyzed: 04/26/17 22:37

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BID2624

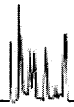
Sequence: 1707409

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0018	1	J	EPA-7196

6/30/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

EB-7-042617

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-11

File ID: 170426 2028 CR6-031

Sampled: 04/26/17 16:10

Prepared: 04/26/17 22:33

Analyzed: 04/26/17 22:37

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[D2624

Sequence: 1707409

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

6/20/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-4-1
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-02</u>
Sampled: <u>04/26/17 12:45</u>	File ID: <u>170427 0756 NO2-046</u>
Solids: <u>0.00</u>	Prepared: <u>04/27/17 07:56</u>
Batch: <u>B[E0109</u>	Analyzed: <u>04/27/17 09:15</u>
Sequence: <u>1707512</u>	Initial/Final: <u>20 ml / 20 ml</u>
	Preparation: <u>No Prep</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*6/30/17 8*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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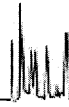
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-4-2

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-03</u>	File ID: <u>170427 0756 NO2-050</u>	
Sampled: <u>04/26/17 08:30</u>	Prepared: <u>04/27/17 07:56</u>	Analyzed: <u>04/27/17 09:15</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B/E0109</u>	Sequence: <u>1707512</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*Handwritten signature/initials*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-4-3

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-04</u>
Sampled: <u>04/26/17 12:15</u>	File ID: <u>170427 0756 NO2-051</u>
Solids: <u>0.00</u>	Prepared: <u>04/27/17 07:56</u>
Batch: <u>B/E0109</u>	Analyzed: <u>04/27/17 09:15</u>
Sequence: <u>1707512</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>20 ml / 20 ml</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*6/20/17 8*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-4-4
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-05</u>	File ID: <u>170427 0756 NO2-052</u>	
Sampled: <u>04/26/17 11:50</u>	Prepared: <u>04/27/17 07:56</u>	Analyzed: <u>04/27/17 09:15</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B[E0109</u>	Sequence: <u>1707512</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*6/30/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-4-5
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-06</u>
Sampled: <u>04/26/17 11:25</u>	File ID: <u>170427 0756 NO2-053</u>
Solids: <u>0.00</u>	Prepared: <u>04/27/17 07:56</u>
Batch: <u>B[E0109</u>	Analyzed: <u>04/27/17 09:15</u>
Sequence: <u>1707512</u>	Initial/Final: <u>20 ml / 20 ml</u>
	Preparation: <u>No Prep</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*6/28/17 8*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-353.2

MW-21-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-07</u>	File ID: <u>170427 0756 NO2-056</u>	
Sampled: <u>04/26/17 15:50</u>	Prepared: <u>04/27/17 07:56</u>	Analyzed: <u>04/27/17 09:19</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B[E]0109</u>	Sequence: <u>1707512</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*6/30/17 8*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

**MW-21-2**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-08</u>
Sampled: <u>04/26/17 15:30</u>	File ID: <u>170427 0756 NO2-065</u>
Solids: <u>0.00</u>	Prepared: <u>04/27/17 07:56</u>
Batch: <u>B/E0109</u>	Analyzed: <u>04/27/17 09:36</u>
Sequence: <u>1707512</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>20 ml / 20 ml</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.26	1		EPA-353.2

*6/20/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

**MW-21-3**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-09</u>	File ID: <u>170427 0756 NO2-066</u>	
Sampled: <u>04/26/17 15:10</u>	Prepared: <u>04/27/17 07:56</u>	Analyzed: <u>04/27/17 09:36</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B/E0109</u>	Sequence: <u>1707512</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.082	1		EPA-353.2

*6/20/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-21-5

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-10

File ID: 170427 0756 NO2-059

Sampled: 04/26/17 14:45

Prepared: 04/27/17 07:56

Analyzed: 04/27/17 09:19

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B/E0109

Sequence: 1707512

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*6/20/17 8*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-353.2**

**EB-7-042617**

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-11

File ID: 170427 0756 NO2-060

Sampled: 04/26/17 16:10

Prepared: 04/27/17 07:56

Analyzed: 04/27/17 09:19

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[E]0109

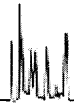
Sequence: 1707512

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*6/30/17 8*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

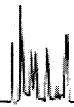
MW-4-1
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-02</u>	File ID: <u>F051317.seq-38.0000.txt</u>	
Sampled: <u>04/26/17 12:45</u>	Prepared: <u>05/13/17 22:00</u>	Analyzed: <u>05/14/17 02:40</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B/E1550</u>	Sequence: <u>1708498</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC6</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*4/30/17*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-4-2
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-03</u>	File ID: <u>F051317.seq-39.0000.txt</u>	
Sampled: <u>04/26/17 08:30</u>	Prepared: <u>05/13/17 22:00</u>	Analyzed: <u>05/14/17 02:54</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B/E1550</u>	Sequence: <u>1708498</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC6</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	4.4	1		EPA-314.0

*6/20/17 &*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-4-3

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-04

File ID: F051317.seq-40.0000.txt

Sampled: 04/26/17 12:15

Prepared: 05/13/17 22:00

Analyzed: 05/14/17 03:07

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B|E1550

Sequence: 1708498

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

6/30/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-4-4
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-05</u>	File ID: <u>F051317.seq-41.0000.txt</u>	
Sampled: <u>04/26/17 11:50</u>	Prepared: <u>05/13/17 22:00</u>	Analyzed: <u>05/14/17 03:20</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B/E1550</u>	Sequence: <u>1708498</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC6</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*6/30/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-4-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-06</u>
Sampled: <u>04/26/17 11:25</u>	File ID: <u>F051317.seq-42.0000.txt</u>
Solids: <u>0.00</u>	Prepared: <u>05/13/17 22:00</u>
Batch: <u>B[E1550</u>	Analyzed: <u>05/14/17 03:34</u>
Sequence: <u>1708498</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>20 ml / 20 ml</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>IC6</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*6/20/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-314.0

MW-21-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-07</u>
Sampled: <u>04/26/17 15:50</u>	Prepared: <u>05/13/17 22:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B/E1550</u>	Sequence: <u>1708498</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>IC6</u>
	File ID: <u>F051317.seq-43.0000.txt</u>
	Analyzed: <u>05/14/17 03:47</u>
	Initial/Final: <u>20 ml / 20 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	6.5	1		EPA-314.0

*6/20/17 8*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-314.0

MW-21-2

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-08</u>	File ID: <u>F051317.seq-46.0000.txt</u>	
Sampled: <u>04/26/17 15:30</u>	Prepared: <u>05/13/17 22:00</u>	Analyzed: <u>05/14/17 04:27</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BJE1550</u>	Sequence: <u>1708498</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC6</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	1.8	1	J	EPA-314.0

*6/28/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-314.0

MW-21-3

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-09</u>
Sampled: <u>04/26/17 15:10</u>	Prepared: <u>05/13/17 22:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E]1550</u>	Sequence: <u>1708498</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>IC6</u>
	File ID: <u>F051317.seq-47.0000.txt</u>
	Analyzed: <u>05/14/17 04:41</u>
	Initial/Final: <u>20 ml / 20 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	4.0	1		EPA-314.0

*6/30/17* &



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

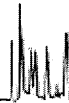
MW-21-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-10</u>	File ID: <u>F051317.seq-48.0000.txt</u>	
Sampled: <u>04/26/17 14:45</u>	Prepared: <u>05/13/17 22:00</u>	Analyzed: <u>05/14/17 04:54</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B/E1550</u>	Sequence: <u>1708498</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC6</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	2.6	1	J	EPA-314.0

*6/20/17*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

EB-7-042617

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-11</u>
Sampled: <u>04/26/17 16:10</u>	File ID: <u>F051317.seq-49.0000.txt</u>
Solids: <u>0.00</u>	Prepared: <u>05/13/17 22:00</u>
Batch: <u>B/E1550</u>	Sequence: <u>1708498</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>IC6</u>
	Initial/Final: <u>20 ml / 20 ml</u>
	Analyzed: <u>05/14/17 05:07</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*6/20/17 &*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-300.0**

MW-4-1

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-02

File ID: A042617.seq-54

Sampled: 04/26/17 12:45

Prepared: 04/26/17 17:00

Analyzed: 04/27/17 10:11

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BID2602

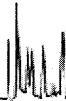
Sequence: 1707491

Calibration: UNASSIGNED

Instrument: IC1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	8.9	1		EPA-300.0
14797-55-8	Nitrate as N	2.2	1		EPA-300.0
14808-79-8	Sulfate	50	1		EPA-300.0

*6/30/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

MW-4-2

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-03RE1

File ID: A042617.seq-55

Sampled: 04/26/17 08:30

Prepared: 04/26/17 17:00

Analyzed: 04/27/17 10:28

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJD2602

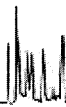
Sequence: 1707491

Calibration: UNASSIGNED

Instrument: IC1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	130	1		EPA-300.0
14797-55-8	Nitrate as N	13	1		EPA-300.0
14808-79-8	Sulfate	190	1		EPA-300.0

6/20/17 2



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-300.0**

MW-4-3

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-04RE1

File ID: A042617.seq-56

Sampled: 04/26/17 12:15

Prepared: 04/26/17 17:00

Analyzed: 04/27/17 10:44

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJD2602

Sequence: 1707491

Calibration: UNASSIGNED

Instrument: IC1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	130	1		EPA-300.0
14797-55-8	Nitrate as N	0.12	1		EPA-300.0
14808-79-8	Sulfate	180	1		EPA-300.0

*6/20/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-300.0**

MW-4-4

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-05RE1

File ID: A042617.seq-61

Sampled: 04/26/17 11:50

Prepared: 04/26/17 17:00

Analyzed: 04/27/17 13:53

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJD2602

Sequence: 1707491

Calibration: UNASSIGNED

Instrument: IC1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	120	1		EPA-300.0
14797-55-8	Nitrate as N	0.021	1	U	EPA-300.0
14808-79-8	Sulfate	150	1		EPA-300.0

*6/20/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-300.0**

MW-4-5

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-06

File ID: A042617.seq-46

Sampled: 04/26/17 11:25

Prepared: 04/26/17 17:00

Analyzed: 04/27/17 05:34

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BID2602

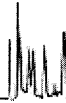
Sequence: 1707491

Calibration: UNASSIGNED

Instrument: IC1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	120	1		EPA-300.0
14797-55-8	Nitrate as N	0.021	1	U	EPA-300.0
14808-79-8	Sulfate	100	1		EPA-300.0

6/20/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-300.0**

MW-21-1

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-07RE1

File ID: A042617.seq-62

Sampled: 04/26/17 15:50

Prepared: 04/26/17 17:00

Analyzed: 04/27/17 14:09

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJD2602

Sequence: 1707491

Calibration: UNASSIGNED

Instrument: IC1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	67	1		EPA-300.0
14797-55-8	Nitrate as N	9.0	1		EPA-300.0
14808-79-8	Sulfate	120	1		EPA-300.0

*0/30/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-300.0**

MW-21-2

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-08RE1

File ID: A042617.seq-63

Sampled: 04/26/17 15:30

Prepared: 04/26/17 17:00

Analyzed: 04/27/17 14:26

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJD2602

Sequence: 1707491

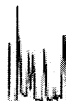
Calibration: UNASSIGNED

Instrument: IC1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	170	1		EPA-300.0
14797-55-8	Nitrate as N	6.5	1		EPA-300.0
14808-79-8	Sulfate	180	1		EPA-300.0

6/30/17





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-300.0**

MW-21-3

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-09

File ID: A042617.seq-67

Sampled: 04/26/17 15:10

Prepared: 04/26/17 17:00

Analyzed: 04/27/17 15:32

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BID2602

Sequence: 1707491

Calibration: UNASSIGNED

Instrument: IC1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	120	1		EPA-300.0
14797-55-8	Nitrate as N	10	1		EPA-300.0
14808-79-8	Sulfate	160	1		EPA-300.0

*6/20/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

MW-21-5

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-10

File ID: A042617.seq-68

Sampled: 04/26/17 14:45

Prepared: 04/26/17 17:00

Analyzed: 04/27/17 15:48

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJD2602

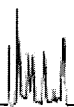
Sequence: 1707491

Calibration: UNASSIGNED

Instrument: IC1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	80	1		EPA-300.0
14797-55-8	Nitrate as N	6.5	1		EPA-300.0
14808-79-8	Sulfate	130	1		EPA-300.0

6/28/17 9



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-300.0**

**EB-7-042617**

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-11

File ID: A042617.seq-70

Sampled: 04/26/17 16:10

Prepared: 04/26/17 17:00

Analyzed: 04/27/17 16:21

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJD2602

Sequence: 1707491

Calibration: UNASSIGNED

Instrument: IC1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	0.14	1	J	EPA-300.0
14797-55-8	Nitrate as N	0.021	1	U	EPA-300.0
14808-79-8	Sulfate	0.13	1	U	EPA-300.0

*6/30/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-160.1**

MW-4-1

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-02

File ID:

Sampled: 04/26/17 12:45

Prepared: 05/02/17 09:00

Analyzed: 05/02/17 09:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 100 ml / 100 ml

Batch: BJE0181

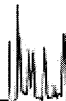
Sequence: 1707936

Calibration: UNASSIGNED

Instrument: MANUAL

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	340	2	D	EPA-160.1

*6/29/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-160.1**

MW-4-2

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-03

File ID:

Sampled: 04/26/17 08:30

Prepared: 05/02/17 09:00

Analyzed: 05/02/17 09:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 100 ml / 100 ml

Batch: B/E0181

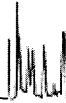
Sequence: 1707936

Calibration: UNASSIGNED

Instrument: MANUAL

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	830	5	D	EPA-160.1

*6/20/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-160.1**

MW-4-3

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-04

File ID:

Sampled: 04/26/17 12:15

Prepared: 05/02/17 09:00

Analyzed: 05/02/17 09:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 100 ml / 100 ml

Batch: BJE0181

Sequence: 1707936

Calibration: UNASSIGNED

Instrument: MANUAL

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	680	5	D	EPA-160.1

*6/20/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
--	--

**INORGANIC ANALYSIS DATA SHEET**

**EPA-160.1**

MW-4-4

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-05

File ID:

Sampled: 04/26/17 11:50

Prepared: 05/02/17 09:00

Analyzed: 05/02/17 09:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 100 ml / 100 ml

Batch: BJE0181

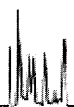
Sequence: 1707936

Calibration: UNASSIGNED

Instrument: MANUAL

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	680	3.33	D	EPA-160.1

*Handwritten signature/initials*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-160.1**

MW-4-5

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-06

File ID:

Sampled: 04/26/17 11:25

Prepared: 05/02/17 09:00

Analyzed: 05/02/17 09:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 100 ml / 100 ml

Batch: BJE0181

Sequence: 1707936

Calibration: UNASSIGNED

Instrument: MANUAL

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	660	3.33	D	EPA-160.1

*6/20/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-160.1**

MW-21-1

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-07

File ID:

Sampled: 04/26/17 15:50

Prepared: 05/02/17 09:00

Analyzed: 05/02/17 09:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 100 ml / 100 ml

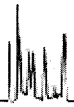
Batch: BJE0181

Sequence: 1707936

Calibration: UNASSIGNED

Instrument: MANUAL

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	570	3.33	D	EPA-160.1



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-160.1**

MW-21-2

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-08

File ID:

Sampled: 04/26/17 15:30

Prepared: 05/02/17 09:00

Analyzed: 05/02/17 09:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 100 ml / 100 ml

Batch: BJE0181

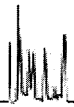
Sequence: 1707936

Calibration: UNASSIGNED

Instrument: MANUAL

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	860	5	D	EPA-160.1

*6/20/17 J*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-160.1**

MW-21-3

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-09

File ID:

Sampled: 04/26/17 15:10

Prepared: 05/02/17 09:00

Analyzed: 05/02/17 09:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 100 ml / 100 ml

Batch: BJE0181

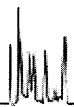
Sequence: 1707936

Calibration: UNASSIGNED

Instrument: MANUAL

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	720	5	D	EPA-160.1

6/30/17 *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-160.1**

**MW-21-5**

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-10

File ID:

Sampled: 04/26/17 14:45

Prepared: 05/02/17 09:00

Analyzed: 05/02/17 09:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 100 ml / 100 ml

Batch: BJE0181

Sequence: 1707936

Calibration: UNASSIGNED

Instrument: MANUAL

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	570	3.33	D	EPA-160.1

*6/30/17 9*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-160.1**

**EB-7-042617**

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-11

File ID:

Sampled: 04/26/17 16:10

Prepared: 05/02/17 09:00

Analyzed: 05/02/17 09:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 100 ml / 100 ml

Batch: BJE0181

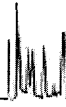
Sequence: 1707936

Calibration: UNASSIGNED

Instrument: MANUAL

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	6.7	0.667	UD	EPA-160.1

*6/20/17 9*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-4-1

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-02

File ID: Tiamo042717-048

Sampled: 04/26/17 12:45

Prepared: 04/27/17 08:00

Analyzed: 04/27/17 12:36

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BID2562

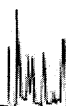
Sequence: 1707346

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	7.25	1		EPA-150.1

*6/27/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-4-2

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-03

File ID: Tiamo042717-091

Sampled: 04/26/17 08:30

Prepared: 04/27/17 08:00

Analyzed: 04/27/17 15:59

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BID2564

Sequence: 1707346

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	7.45	1		EPA-150.1

*Handwritten signature/initials*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-4-3

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-04

File ID: Tiamo042717-094

Sampled: 04/26/17 12:15

Prepared: 04/27/17 08:00

Analyzed: 04/27/17 16:16

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BID2564

Sequence: 1707346

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	7.82	1		EPA-150.1





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-4-4

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-05

File ID: Tiamo042717-095

Sampled: 04/26/17 11:50

Prepared: 04/27/17 08:00

Analyzed: 04/27/17 16:22

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BJD2564

Sequence: 1707346

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	7.98	1		EPA-150.1

*Handwritten signature/initials*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-150.1**

MW-4-5

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-06

File ID: Tiamo042717-096

Sampled: 04/26/17 11:25

Prepared: 04/27/17 08:00

Analyzed: 04/27/17 16:28

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BID2564

Sequence: 1707346

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	7.95	1		EPA-150.1

*6/30/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/7/2017 3:00:28PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
--	--

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-21-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11226</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711226-07</u>
Sampled: <u>04/26/17 15:50</u>	File ID: <u>Tiamo042717-097</u>
Solids: <u>0.00</u>	Prepared: <u>04/27/17 08:00</u>
Batch: <u>BID2564</u>	Analyzed: <u>04/27/17 16:34</u>
Sequence: <u>1707346</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>50 ml / 50 ml</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	7.19	1		EPA-150.1

*6/28/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-150.1**

MW-21-2

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-08

File ID: Tiamo042717-098

Sampled: 04/26/17 15:30

Prepared: 04/27/17 08:00

Analyzed: 04/27/17 16:41

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BJD2564

Sequence: 1707346

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	7.52	1		EPA-150.1

*4/30/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-21-3

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-09

File ID: Tiamo042717-099

Sampled: 04/26/17 15:10

Prepared: 04/27/17 08:00

Analyzed: 04/27/17 16:47

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BID2564

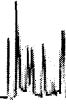
Sequence: 1707346

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	7.71	1		EPA-150.1

*Handwritten signature: 4/20/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-21-5

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-10

File ID: Tiamo042717-100

Sampled: 04/26/17 14:45

Prepared: 04/27/17 08:00

Analyzed: 04/27/17 16:53

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BID2564

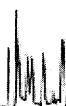
Sequence: 1707346

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.19	1		EPA-150.1

*6/28/17 [Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/7/2017 3:00:28PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

EB-7-042617

Laboratory: BC Laboratories

SDG: 17-11226

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711226-11

File ID: Tiamo042717-102

Sampled: 04/26/17 16:10

Prepared: 04/27/17 08:00

Analyzed: 04/27/17 17:00

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BJD2564

Sequence: 1707346

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	4.66	1		EPA-150.1

*6/30/17 J*

LDC #: 3888A6

**VALIDATION COMPLETENESS WORKSHEET**

Date: 06/28/17

SDG #: 17-11226

Level III/IV

Page: 1 of 1

Laboratory: BC Laboratories, Inc.

Reviewer: ATL

2nd Reviewer: 

**METHOD: (Analyte) Alkalinity (SM2320B), Chloride, Nitrate-N, Sulfate (EPA Method 300.0), Nitrite-N (EPA Method 353.2), Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), pH EPA Method 150.1), TDS (EPA Method 160.1)**

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	SW	10 = EB
VI.	Matrix Spike/Matrix Spike Duplicates	A	
VII.	Duplicate sample analysis	A	
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	N	
X.	Sample result verification	A	Not reviewed for Level III validation.
XI.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

\*\* Indicates sample was underwent Level IV review

	Client ID	Lab ID	Matrix	Date
1	MW-4-1	1711226-02	Water	04/26/17
2	MW-4-2	1711226-03	Water	04/26/17
3	MW-4-3	1711226-04	Water	04/26/17
4	MW-4-4	1711226-05	Water	04/26/17
5	MW-4-5	1711226-06	Water	04/26/17
6	MW-21-1	1711226-07	Water	04/26/17
7	MW-21-2**	1711226-08**	Water	04/26/17
8	MW-21-3	1711226-09	Water	04/26/17
9	MW-21-5	1711226-10	Water	04/26/17
10	EB-7-042617	1711226-11	Water	04/26/17
11	MW-4-1MS	1711226-02MS	Water	04/26/17
12	MW-4-1MSD	1711226-02MSD	Water	04/26/17
13	MW-4-1DUP	1711226-02DUP	Water	04/26/17
14	MW-4-2DUP	1711226-03DUP	Water	04/26/17
15	MW-21-2MS	1711226-08MS	Water	04/26/17
16	MW-21-2MSD	1711226-08MSD	Water	04/26/17
17	MW-21-2DUP	1711226-08DUP	Water	04/26/17



Method: Inorganics (EPA Method )

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
All technical holding times were met.	✓			
<b>II. Calibration</b>				
Were all instruments calibrated daily, each set-up time?		✓		
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)	✓		✓	
<b>III. Blanks</b>				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
<b>IV. Matrix spike/Matrix spike duplicates and Duplicates</b>				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL (≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were < 5X the CRDL.	✓			
<b>V. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
<b>VI. Regional Quality Assurance and Quality Control</b>				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?		✓		

**VALIDATION FINDINGS CHECKLIST**

Validation Area	Yes	No	NA	Findings/Comments
<b>VII. Sample Result Verification</b>				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
<b>VIII. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	✓			
<b>IX. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
<b>X. Field blanks</b>				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.	✓			



**VALIDATION FINDINGS WORKSHEET**  
**Field Blanks**

**METHOD:** Inorganics, EPA Method See Cover  
**Blank units:** mg/L **Associated sample units:** mg/L  
**Sampling date:** 04/26/17 Soil factor applied NA  
**Field blank type:** (circle one) Field Blank / Rinsate / Other: \_\_\_\_\_

Associated Samples: ~~none~~ *X report*

Analyte	Blank ID	Action Limit	Sample Identification							
	10									
Cl	0.14	0.70								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
 Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC #: 38888A6

**Validation Findings Worksheet  
Initial and Continuing Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: ATL  
 2nd Reviewer: R

Method: Inorganics, Method see cover

The correlation coefficient (r) for the calibration of NO<sub>3</sub>-N was recalculated. Calibration date: 04/25/17

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$\%R = \frac{\text{Found} \times 100}{\text{True}}$

Where,

Found = concentration of each analyte measured in the analysis of the ICV or CCV solution

True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (mg/l)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r <sup>2</sup>	r or r <sup>2</sup>	
Initial Calibration Verification	NO <sub>3</sub> -N	s1	0.1	0.037	0.999944	0.999980	Y
		s2	0.5	0.16			
		s3	2	0.67			
		s4	5	1.784			
		s5	10	3.851			
		s6	20	8.344			
CCVC (04/27 @ 9:36) Calibration verification	NO <sub>2</sub> -N	FOUND 0.5	TRUE 0.5		100	100	Y
CCV <sub>3</sub> (04/26 @ 22:33) Calibration verification	Cr <sup>6+</sup>	0.05	0.05		103	103	Y
CCV <sub>4</sub> (05/14 @ 04:01) Calibration verification	ClO <sub>4</sub> <sup>-</sup>	9.70	10		97	96.8	Y

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Level IV Recalculation Worksheet**

**METHOD:** Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$
 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).  
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$
 Where, S = Original sample concentration  
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD	%R / RPD	
LCS	Laboratory control sample	TDS	605	586	103	103	Y
15	Matrix spike sample	Cl <sup>-</sup>	(SSR-SR) 49	50,505	97	98.2	Y
15/16	Duplicate sample	Cl <sup>-</sup>	218	218.73	0.3343	<del>0.332</del> 0.00412	Y

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**VALIDATION FINDINGS WORKSHEET**  
Sample Calculation Verification

**METHOD:** Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y  N  N/A Have results been reported and calculated correctly?
- Y  N  N/A Are results within the calibrated range of the instruments?
- Y  N  N/A Are all detection limits below the CRQL?

Compound (analyte) results for NO<sub>2</sub>-N reported with a positive detect were recalculated and verified using the following equation:

Concentration =

Recalculation:

$A \times 1.88679077 - 0.007132$

$0.139 \times 1.88679077 - 0.007132$   
 $= 0.2551$

#	Sample ID	Analyte	Reported Concentration (mg/L)	Calculated Concentration (mg/L)	Acceptable (Y/N)
	7	Alkalinity	290	290	Y
	7	SO <sub>4</sub> <sup>-</sup>	180	180	Y
	7	NO <sub>2</sub> -N	0.26	0.26	Y
	7	Cr <sup>6+</sup>	0.0010	0.0010	Y
	7	ClO <sub>4</sub> <sup>-</sup>	1.8 (µg/L)	20 (µg/L)	Y
	7	pH	7.52	7.52	Y
	7	TDS	860	860	Y

Note: \_\_\_\_\_  
\_\_\_\_\_



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Tidewater, Inc.  
3761 Attucks Drive  
Powell, OH 43065  
ATTN: Mr. David Conner

July 7, 2017

SUBJECT: NASA JPL, 2Q2017, Data Validation

Dear Mr. Conner,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on June 22, 2017. Attachment 1 is a summary of the samples that were reviewed for each analysis.

### LDC Project #38952:

#### SDG #

#### Fraction

17-10954/7D26017, 17-11226/7D28011	Volatiles, 1-4-Dioxane, Metals, Wet Chemistry
17-11382/7E03006, 17-11629/7E04018	
17-11489	

The data validation was performed under Level III & IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007, update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng  
Project Manager/Senior Chemist





## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 2Q2017  
**LDC Report Date:** July 6, 2017  
**Parameters:** N-Nitrosodimethylamine  
**Validation Level:** Level III  
**Laboratory:** BC Laboratories, Inc./Weck Laboratories, Inc.  
**Sample Delivery Group (SDG):** 17-10954/7D26017

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
MW-13	1710954-05/7D26017-01	Water	04/24/17
MW-16	1710954-06/7D26017-02	Water	04/24/17

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

N-Nitrosodimethylamine by Environmental Protection Agency (EPA) Method 1625M

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

Instrument performance was not required by the method.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## **VII. Surrogates**

Surrogates were not required by the method.

### **VIII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

### **IX. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

### **X. Field Duplicates**

No field duplicates were identified in this SDG.

### **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

### **XII. Compound Quantitation**

Raw data were not reviewed for Level III validation.

### **XIII. Target Compound Identifications**

Raw data were not reviewed for Level III validation.

### **XIV. System Performance**

Raw data were not reviewed for Level III validation.

### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**NASA JPL, 2Q2017  
N-Nitrosodimethylamine - Data Qualification Summary - SDG 17-10954/7D26017**

No Sample Data Qualified in this SDG

**NASA JPL, 2Q2017  
N-Nitrosodimethylamine - Laboratory Blank Data Qualification Summary - SDG  
17-10954/7D26017**

No Sample Data Qualified in this SDG



WECK LABORATORIES, INC.

# Certificate of Analysis

FINAL REPORT

Work Orders: 7D26017

Report Date: 5/03/2017

Project: 1710954

Received Date: 4/26/2017

Turnaround Time: Normal

Phones: (661) 327-4911

Fax: (661) 327-1918

Attn: Misty Orton

P.O. #:

Client: BC Laboratories  
4100 Atlas Court  
Bakersfield, CA 93308

Billing Code:

Dear Misty Orton,

Enclosed are the results of analyses for samples received 4/26/17 with the Chain-of-Custody document. The samples were received in good condition, at 4.1 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

## Sample Results

Sample: 1710954-05  
7D26017-01 (Water) Sampled: 04/24/17 7:22 by Client

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
<b>Method:</b> EPA 1625M N-Nitrosodimethylamine	<b>Batch ID:</b> W7D1442 ND	<b>Instr:</b> GCMS09 2.0	ng/l	<b>Prepared:</b> 04/27/17 08:22 1	<b>Analyzed:</b> 05/02/17 05:59	<b>Analyst:</b> mld

Sample: 1710954-06  
7D26017-02 (Water) Sampled: 04/24/17 9:20 by Client

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
<b>Method:</b> EPA 1625M N-Nitrosodimethylamine	<b>Batch ID:</b> W7D1442 ND	<b>Instr:</b> GCMS09 2.0	ng/l	<b>Prepared:</b> 04/27/17 08:22 1	<b>Analyzed:</b> 05/02/17 06:27	<b>Analyst:</b> mld

7/6/17 *[Signature]*

**METHOD:** GC/MS N-Nitrosodimethylamine (EPA Method 1625M)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	A/A	8 <sup>2</sup> , 1CV ≤ 70%
IV.	Continuing calibration	A	CV ≤ 20%
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	A	100%
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Sub Lab ID	Lab ID	Matrix	Date
1	MW-13	7026017-01	1710954-05	Water	04/24/17
2	MW-16	02	1710954-06	Water	04/24/17
3					
4					
5					
6					
7					
8					

Notes:




**Laboratory Data Consultants, Inc.**  
**Data Validation Report**

**Project/Site Name:** NASA JPL, 2Q2017

**LDC Report Date:** July 6, 2017

**Parameters:** N-Nitrosodimethylamine

**Validation Level:** Level III

**Laboratory:** BC Laboratories, Inc./Weck Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-11226/7D28011

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
MW-4-1	1711226-02/7D28011-01	Water	04/26/17

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

N-Nitrosodimethylamine by Environmental Protection Agency (EPA) Method 1625M

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

Instrument performance was not required by the method.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## **VII. Surrogates**

Surrogates were not required by the method.

### **VIII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

### **IX. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

### **X. Field Duplicates**

No field duplicates were identified in this SDG.

### **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

### **XII. Compound Quantitation**

Raw data were not reviewed for Level III validation.

### **XIII. Target Compound Identifications**

Raw data were not reviewed for Level III validation.

### **XIV. System Performance**

Raw data were not reviewed for Level III validation.

### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**NASA JPL, 2Q2017**

**N-Nitrosodimethylamine - Data Qualification Summary - SDG 17-11226/7D28011**

No Sample Data Qualified in this SDG

**NASA JPL, 2Q2017**

**N-Nitrosodimethylamine - Laboratory Blank Data Qualification Summary - SDG 17-11226/7D28011**

No Sample Data Qualified in this SDG



# Certificate of Analysis

FINAL REPORT

WECK LABORATORIES, INC.

Work Orders: 7D28011

Report Date: 5/08/2017

Project: 1711226

Received Date: 4/28/2017

Turnaround Time: Normal

Phones: (661) 327-4911

Fax: (661) 327-1918

Attn: Misty Orton

P.O. #:

Client: BC Laboratories  
4100 Atlas Court  
Bakersfield, CA 93308

Billing Code:

Dear Misty Orton,

Enclosed are the results of analyses for samples received 4/28/17 with the Chain-of-Custody document. The samples were received in good condition, at 2.9 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

## Sample Results

Sample: 1711226-02  
7D28011-01 (Water) Sampled: 04/26/17 12:45 by Client

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Method: EPA 1625M N-Nitrosodimethylamine	Batch ID: W7E0074 Instr: GCMS09 ND	2.0	ng/l	1	Prepared: 05/02/17 12:00 05/05/17 09:15	Analyst: mld

*7/6/17*

LDC #: 38952B2b  
 SDG #: 17-11226/7D28011  
 Laboratory: BC Laboratories, Inc./Weck Laboratories, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level III

Date: 4/29/17  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: RK

**METHOD:** GC/MS N-Nitrosodimethylamine (EPA Method 1625M)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	A, A	$r^2$ 1eV $\leq$ 30%
IV.	Continuing calibration	A	CCV $\leq$ 30%
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	CG
IX.	Laboratory control samples	N	LCs/b
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	MW-4-1	7028011-01	Water	04/26/17
2				
3				
4				
5				
6				
7				
8				

Notes:


**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** NASA JPL, 2Q2017  
**LDC Report Date:** July 6, 2017  
**Parameters:** N-Nitrosodimethylamine  
**Validation Level:** Level III  
**Laboratory:** BC Laboratories, Inc./Weck Laboratories, Inc.  
**Sample Delivery Group (SDG):** 17-11382/7E03006

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
MW-17-4	1711382-05/7E03006-01	Water	04/27/17



## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

N-Nitrosodimethylamine by Environmental Protection Agency (EPA) Method 1625M

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

Instrument performance was not required by the method.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## **VII. Surrogates**

Surrogates were not required by the method.

## **VIII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **IX. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **X. Field Duplicates**

No field duplicates were identified in this SDG.

## **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

## **XII. Compound Quantitation**

Raw data were not reviewed for Level III validation.

## **XIII. Target Compound Identifications**

Raw data were not reviewed for Level III validation.

## **XIV. System Performance**

Raw data were not reviewed for Level III validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**NASA JPL, 2Q2017**

**N-Nitrosodimethylamine - Data Qualification Summary - SDG 17-11382/7E03006**

No Sample Data Qualified in this SDG

**NASA JPL, 2Q2017**

**N-Nitrosodimethylamine - Laboratory Blank Data Qualification Summary - SDG  
17-11382/7E03006**

No Sample Data Qualified in this SDG



# Certificate of Analysis

FINAL REPORT

WECK LABORATORIES, INC.

Work Orders: 7E03006

Report Date: 5/10/2017

Project: 1711382

Received Date: 5/3/2017

Turnaround Time: Normal

Phones: (661) 327-4911

Fax: (661) 327-1918

Attn: Misty Orton

P.O. #:

Client: BC Laboratories  
4100 Atlas Court  
Bakersfield, CA 93308

Billing Code:

Dear Misty Orton,

Enclosed are the results of analyses for samples received 5/03/17 with the Chain-of-Custody document. The samples were received in good condition, at 2.9 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

## Sample Results

Sample: 1711382-05

Sampled: 04/27/17 13:00 by Client

7E03006-01 (Water)

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Method: EPA 1625M N-Nitrosodimethylamine	Batch ID: W7E0230 Instr: GCMS09 ND		2.0	ng/l	Prepared: 05/04/17 08:51 05/08/17 20:23	Analyst: mld

LDC #: 38952C2b  
 SDG #: 17-11382/7E03006  
 Laboratory: BC Laboratories, Inc./Weck Laboratories, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level III

Date: 6/30/17  
 Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: KK

**METHOD:** GC/MS N-Nitrosodimethylamine (EPA Method 1625M)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	A/A	r <sup>2</sup> , 1CV ≤ 30/d
IV.	Continuing calibration	A	CCV ≤ 30/d
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	MW-17-4 / 7203006-01	1711382-05	Water	04/27/17
2				
3				
4				
5				
6				
7				
8				

Notes:


## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 2Q2017

**LDC Report Date:** July 6, 2017

**Parameters:** Volatiles

**Validation Level:** Level III & IV

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-11489

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
TB-10-042817	1711489-01	Water	04/28/17
MW-23-1**	1711489-02**	Water	04/28/17
MW-23-2	1711489-03	Water	04/28/17
MW-23-3	1711489-04	Water	04/28/17
MW-23-4	1711489-05	Water	04/28/17
MW-23-5	1711489-06	Water	04/28/17
DUP-7-2Q17	1711489-07	Water	04/28/17
MW-14-1	1711489-08	Water	04/28/17
MW-14-2	1711489-09	Water	04/28/17
MW-14-3**	1711489-10**	Water	04/28/17
MW-14-4	1711489-11	Water	04/28/17
MW-14-5	1711489-12	Water	04/28/17
DUP-8-2Q17	1711489-13	Water	04/28/17
EB-9-042817	1711489-14	Water	04/28/17

\*\*Indicates sample underwent Level IV review

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method 524.2

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV evaluation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.



## I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

## III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 20.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination ( $r^2$ ) were greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
04/14/17	Pentachloroethane	45.4	All samples in SDG 17-11489	UJ (all non-detects)	P

## IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
05/08/17 (08MAY02)	Bromomethane	63.1	TB-10-042817 MW-23-1** MW-23-2 MW-23-3 MW-23-4 MW-23-5 DUP-7-2Q17 MW-14-1 MW-14-2 MW-14-3** MW-14-4 MW-14-5 DUP-8-2Q17	UJ (all non-detects)	P
05/08/17 (08MAY03)	trans-1,4-Dichloro-2-butene Methyl iodide	53.3 49.3	TB-10-042817 MW-23-1** MW-23-2 MW-23-3 MW-23-4 MW-23-5 DUP-7-2Q17 MW-14-1 MW-14-2 MW-14-3** MW-14-4 MW-14-5 DUP-8-2Q17	UJ (all non-detects) UJ (all non-detects)	P
05/08/17 (08MAY33)	Bromomethane	54.1	EB-9-042817	UJ (all non-detects)	P
05/08/17 (08MAY34)	trans-1,4-Dichloro-2-butene Methyl iodide Pentachloroethane	35.5 58.2 78.7	EB-9-042817	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	P

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## VI. Field Blanks

Sample TB-10-042817 was identified as a trip blank. No contaminants were found.

Sample EB-9-042817 was identified as an equipment blank. No contaminants were found.

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

### VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

### IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

### X. Field Duplicates

Samples MW-14-2 and DUP-8-2Q17, and MW-23-4 and DUP-7-2Q17 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	MW-14-2	DUP-8-2Q17	
Chloroform	0.50	0.47	6
1,1-Dichloroethane	0.15	0.16	6
Tetrachloroethene	0.33	0.43	26
Trichloroethene	1.4	1.4	0

### XI. Internal Standards

All internal standard areas and retention times were within QC limits.

### XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

### XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

### XIV. System Performance

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due ICV %D and continuing calibration %D, data were qualified as estimated in fourteen samples.

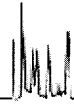
The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**NASA JPL, 2Q2017**  
**Volatiles - Data Qualification Summary - SDG 17-11489**

Sample	Compound	Flag	A or P	Reason
TB-10-042817 MW-23-1** MW-23-2 MW-23-3 MW-23-4 MW-23-5 DUP-7-2Q17 MW-14-1 MW-14-2 MW-14-3** MW-14-4 MW-14-5 DUP-8-2Q17 EB-9-042817	Pentachloroethane	UJ (all non-detects)	P	Initial calibration verification (%D)
TB-10-042817 MW-23-1** MW-23-2 MW-23-3 MW-23-4 MW-23-5 DUP-7-2Q17 MW-14-1 MW-14-2 MW-14-3** MW-14-4 MW-14-5 DUP-8-2Q17 EB-9-042817	Bromomethane trans-1,4-Dichloro-2-butene Methyl iodide	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	P	Continuing calibration (%D)
EB-9-042817	Pentachloroethane	UJ (all non-detects)	P	Continuing calibration (%D)

**NASA JPL, 2Q2017**  
**Volatiles - Laboratory Blank Data Qualification Summary - SDG 17-11489**

No Sample Data Qualified in this SDG



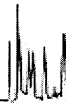
Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

TB-10-042817

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-01 File ID: 08MAY18.D  
 Sampled: 04/28/17 06:30 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 12:56  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>UT</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U


 Tidewater Inc.  
 3761 Attucks Drive  
 Powell, OH 43065

 Reported: 6/21/2017 9:53:07AM  
 Project: JPL- GW Monitoring Wells  
 Project Number: 2Q17  
 Project Manager: David Conner

## ORGANIC ANALYSIS DATA SHEET

### EPA-524.2

**TB-10-042817**

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11489</u>
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711489-01</u>
		File ID:	<u>08MAY18.D</u>
Sampled:	<u>04/28/17 06:30</u>	Prepared:	<u>05/08/17 07:00</u>
		Analyzed:	<u>05/08/17 12:56</u>
Solids:		Preparation:	<u>EPA 5030 Water MS</u>
		Initial/Final:	<u>25 ml / 25 ml</u>
Batch:	<u>B[E]0790</u>	Sequence:	<u>1707902</u>
		Calibration:	<u>1704006</u>
		Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

*7/5/17*







Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
EPA-524.2

TB-10-042817

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11489</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711489-01</u>	File ID:	<u>08MAY18.D</u>		
Sampled:	<u>04/28/17 06:30</u>	Prepared:	<u>05/08/17 07:00</u>	Analyzed:	<u>05/08/17 12:56</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B/E0790</u>	Sequence:	<u>1707902</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*7/6/17*



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-23-1

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-02 File ID: 08MAY19.D  
 Sampled: 04/28/17 09:05 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 13:19  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>US</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.68	
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.16	J
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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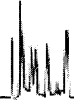
**ORGANIC ANALYSIS DATA SHEET**  
EPA-524.2

MW-23-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-02</u>	File ID: <u>08MAY19.D</u>	
Sampled: <u>04/28/17 09:05</u>	Prepared: <u>05/08/17 07:00</u>	Analyzed: <u>05/08/17 13:19</u>	
Solids:	Preparation: <u>EPA 5030 Water MS</u>	Initial/Final: <u>25 ml / 25 ml</u>	
Batch: <u>B[E]0790</u>	Sequence: <u>1707902</u>	Calibration: <u>1704006</u>	Instrument: <u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.78	
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	5.3	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

7/6/17 *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:53:07AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-23-1

Laboratory: BC Laboratories      SDG: 17-11489  
Client: Tidewater Inc.      Project: JPL- GW Monitoring Wells  
Matrix: Water      Laboratory ID: 1711489-02      File ID: 08MAY19.D  
Sampled: 04/28/17 09:05      Prepared: 05/08/17 07:00      Analyzed: 05/08/17 13:19  
Solids:      Preparation: EPA 5030 Water MS      Initial/Final: 25 ml / 25 ml  
Batch: B[E0790      Sequence: 1707902      Calibration: 1704006      Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>UT</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>UT</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.360	104	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.010	100	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.5600	95.6	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	188267	6.58	191226	6.58	
Chlorobenzene-d5 (IS)	68890	9.62	75608	9.62	
1,4-Difluorobenzene (IS)	277930	7.39	295651	7.38	

\* Values outside of QC limits



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

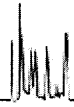
MW-23-1
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Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11489</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711489-02</u>	File ID:	<u>08MAY19.D</u>		
Sampled:	<u>04/28/17 09:05</u>	Prepared:	<u>05/08/17 07:00</u>	Analyzed:	<u>05/08/17 13:19</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B/E0790</u>	Sequence:	<u>1707902</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*Handwritten signature/initials*



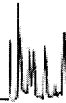
Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-23-2

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-03 File ID: 08MAY20.D  
 Sampled: 04/28/17 08:25 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 13:42  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>MS</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.80	
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.37	J
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

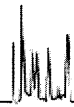
Reported: 6/21/2017 9:53:07AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-23-2

Laboratory: BC Laboratories SDG: 17-11489  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711489-03 File ID: 08MAY20.D  
Sampled: 04/28/17 08:25 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 13:42  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	1.3	
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	4.4	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-23-2

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-03 File ID: 08MAY20.D  
 Sampled: 04/28/17 08:25 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 13:42  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

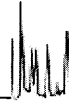
CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>KS</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>KS</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>KS</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.300	103	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.8400	98.4	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.2400	92.4	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	194895	6.58	191226	6.58	
Chlorobenzene-d5 (IS)	73417	9.62	75608	9.62	
1,4-Difluorobenzene (IS)	280893	7.38	295651	7.38	

\* Values outside of QC limits





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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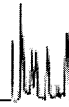
**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-23-2
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-03</u>	File ID: <u>08MAY20.D</u>	
Sampled: <u>04/28/17 08:25</u>	Prepared: <u>05/08/17 07:00</u>	Analyzed: <u>05/08/17 13:42</u>	
Solids:	Preparation: <u>EPA 5030 Water MS</u>	Initial/Final: <u>25 ml / 25 ml</u>	
Batch: <u>B[E0790</u>	Sequence: <u>1707902</u>	Calibration: <u>1704006</u>	Instrument: <u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-23-3

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-04 File ID: 08MAY21.D  
 Sampled: 04/28/17 08:05 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 14:05  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>KT</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.15	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-23-3

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-04 File ID: 08MAY21.D  
 Sampled: 04/28/17 08:05 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 14:05  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B/E0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.25	J
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-23-3

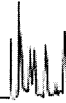
Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-04 File ID: 08MAY21.D  
 Sampled: 04/28/17 08:05 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 14:05  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>US</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>US</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>US</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.350	104	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.6900	96.9	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.9100	99.1	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	188386	6.58	191226	6.58	
Chlorobenzene-d5 (IS)	67831	9.61	75608	9.62	
1,4-Difluorobenzene (IS)	292609	7.39	295651	7.38	

\* Values outside of QC limits



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-23-3
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-04</u>	File ID: <u>08MAY21.D</u>	
Sampled: <u>04/28/17 08:05</u>	Prepared: <u>05/08/17 07:00</u>	Analyzed: <u>05/08/17 14:05</u>	
Solids:	Preparation: <u>EPA 5030 Water MS</u>	Initial/Final: <u>25 ml / 25 ml</u>	
Batch: <u>B/E0790</u>	Sequence: <u>1707902</u>	Calibration: <u>1704006</u>	Instrument: <u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*7/21/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:53:07AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

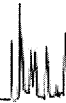
ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-23-4

Laboratory: BC Laboratories SDG: 17-11489  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711489-05 File ID: 08MAY22.D  
Sampled: 04/28/17 07:00 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 14:28  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B/E0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>MS</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*7/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:53:07AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-23-4

Laboratory: BC Laboratories SDG: 17-11489  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711489-05 File ID: 08MAY22.D  
Sampled: 04/28/17 07:00 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 14:28  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

*Handwritten signature/initials*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:53:07AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-23-4

Laboratory: BC Laboratories SDG: 17-11489  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711489-05 File ID: 08MAY22.D  
Sampled: 04/28/17 07:00 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 14:28  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>KS</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>KS</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>KS</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.300	103	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.5800	95.8	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.5400	95.4	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	182738	6.58	191226	6.58	
Chlorobenzene-d5 (IS)	69169	9.62	75608	9.62	
1,4-Difluorobenzene (IS)	285247	7.39	295651	7.38	

\* Values outside of QC limits





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-23-4
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Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11489</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711489-05</u>	File ID:	<u>08MAY22.D</u>		
Sampled:	<u>04/28/17 07:00</u>	Prepared:	<u>05/08/17 07:00</u>	Analyzed:	<u>05/08/17 14:28</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B[E0790</u>	Sequence:	<u>1707902</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*7/6/17*



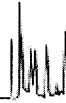
Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-23-5

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-06 File ID: 08MAY23.D  
 Sampled: 04/28/17 06:40 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 14:52  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>UT</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-23-5

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11489</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711489-06</u>	File ID:	<u>08MAY23.D</u>		
Sampled:	<u>04/28/17 06:40</u>	Prepared:	<u>05/08/17 07:00</u>	Analyzed:	<u>05/08/17 14:52</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B[E]0790</u>	Sequence:	<u>1707902</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.41	J
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

7/19/17 8



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-23-5

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-06 File ID: 08MAY23.D  
 Sampled: 04/28/17 06:40 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 14:52  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>UT</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>UT</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.360	104	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.8600	98.6	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	8.9600	89.6	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	166100	6.58	191226	6.58	
Chlorobenzene-d5 (IS)	65385	9.62	75608	9.62	
1,4-Difluorobenzene (IS)	255570	7.39	295651	7.38	

\* Values outside of QC limits



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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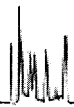
**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-23-5
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Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11489</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711489-06</u>	File ID:	<u>08MAY23.D</u>		
Sampled:	<u>04/28/17 06:40</u>	Prepared:	<u>05/08/17 07:00</u>	Analyzed:	<u>05/08/17 14:52</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B/E0790</u>	Sequence:	<u>1707902</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:53:07AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

DUP-7-2Q17

Laboratory: BC Laboratories SDG: 17-11489  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711489-07 File ID: 08MAY24.D  
Sampled: 04/28/17 07:10 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 15:15  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>UT</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*7/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:53:07AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

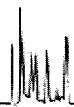
ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

DUP-7-2Q17

Laboratory: BC Laboratories SDG: 17-11489  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711489-07 File ID: 08MAY24.D  
Sampled: 04/28/17 07:10 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 15:15  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

7/6/17



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

DUP-7-2Q17

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-07 File ID: 08MAY24.D  
 Sampled: 04/28/17 07:10 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 15:15  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

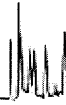
CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>US</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>US</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>US</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.530	105	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.7300	97.3	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.2800	92.8	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	166372	6.58	191226	6.58	
Chlorobenzene-d5 (IS)	65768	9.61	75608	9.62	
1,4-Difluorobenzene (IS)	257880	7.39	295651	7.38	

\* Values outside of QC limits





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

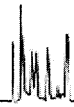
**DUP-7-2Q17**

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11489</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711489-07</u>	File ID:	<u>08MAY24.D</u>		
Sampled:	<u>04/28/17 07:10</u>	Prepared:	<u>05/08/17 07:00</u>	Analyzed:	<u>05/08/17 15:15</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B/E0790</u>	Sequence:	<u>1707902</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*7/6/17*



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

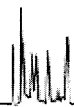
MW-14-1

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-08 File ID: 08MAY25.D  
 Sampled: 04/28/17 13:00 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 15:38  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B/E0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>MS</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.37	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*7/6/17*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-14-1

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11489</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711489-08</u>	File ID:	<u>08MAY25.D</u>		
Sampled:	<u>04/28/17 13:00</u>	Prepared:	<u>05/08/17 07:00</u>	Analyzed:	<u>05/08/17 15:38</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B E0790</u>	Sequence:	<u>1707902</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>KS</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>KS</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>KS</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.770	108	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.6100	96.1	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.3400	93.4	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	183194	6.58	191226	6.58	
Chlorobenzene-d5 (IS)	69386	9.62	75608	9.62	
1,4-Difluorobenzene (IS)	284954	7.39	295651	7.38	

\* Values outside of QC limits

*7/6/07 8*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-14-1
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Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11489</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711489-08</u>	File ID:	<u>08MAY25.D</u>		
Sampled:	<u>04/28/17 13:00</u>	Prepared:	<u>05/08/17 07:00</u>	Analyzed:	<u>05/08/17 15:38</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B[E0790</u>	Sequence:	<u>1707902</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*Handwritten signature*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:53:07AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

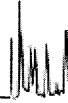
ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-14-2

Laboratory: BC Laboratories SDG: 17-11489  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711489-09 File ID: 08MAY26.D  
Sampled: 04/28/17 12:00 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 16:01  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U U
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.50	
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	J
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-14-2

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11489</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711489-09</u>	File ID:	<u>08MAY26.D</u>		
Sampled:	<u>04/28/17 12:00</u>	Prepared:	<u>05/08/17 07:00</u>	Analyzed:	<u>05/08/17 16:01</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B[E]0790</u>	Sequence:	<u>1707902</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.33	J
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	1.4	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

*7/6/17*



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-14-2

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-09 File ID: 08MAY26.D  
 Sampled: 04/28/17 12:00 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 16:01  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

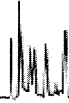
CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>KS</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>KS</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>KS</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.780	108	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.8100	98.1	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.010	100	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	189012	6.58	191226	6.58	
Chlorobenzene-d5 (IS)	69166	9.62	75608	9.62	
1,4-Difluorobenzene (IS)	280698	7.38	295651	7.38	

\* Values outside of QC limits





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-14-2
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Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11489</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711489-09</u>	File ID:	<u>08MAY26.D</u>		
Sampled:	<u>04/28/17 12:00</u>	Prepared:	<u>05/08/17 07:00</u>	Analyzed:	<u>05/08/17 16:01</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B[E]0790</u>	Sequence:	<u>1707902</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits



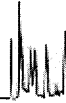
Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-14-3

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-10 File ID: 08MAY27.D  
 Sampled: 04/28/17 11:30 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 16:24  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>MS</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.44	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.33	J
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-14-3

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-10 File ID: 08MAY27.D  
 Sampled: 04/28/17 11:30 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 16:24  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B|E0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.56	
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	1.1	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-14-3

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-10 File ID: 08MAY27.D  
 Sampled: 04/28/17 11:30 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 16:24  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>US</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>US</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>US</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.760	108	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.360	104	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	8.9400	89.4	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	172635	6.58	191226	6.58	
Chlorobenzene-d5 (IS)	66342	9.62	75608	9.62	
1,4-Difluorobenzene (IS)	250947	7.39	295651	7.38	

\* Values outside of QC limits



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-14-3
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Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11489</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711489-10</u>	File ID:	<u>08MAY27.D</u>		
Sampled:	<u>04/28/17 11:30</u>	Prepared:	<u>05/08/17 07:00</u>	Analyzed:	<u>05/08/17 16:24</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B[E0790</u>	Sequence:	<u>1707902</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*7/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:53:07AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

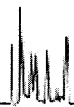
ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-14-4

Laboratory: BC Laboratories SDG: 17-11489  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711489-11 File ID: 08MAY28.D  
Sampled: 04/28/17 10:45 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 16:47  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>UT</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.27	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.19	J
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*7/6/17*



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

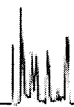
**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-14-4

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-11 File ID: 08MAY28.D  
 Sampled: 04/28/17 10:45 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 16:47  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.50	
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.38	J
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

7/6/17 9



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-14-4

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-11 File ID: 08MAY28.D  
 Sampled: 04/28/17 10:45 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 16:47  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B|E0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>US</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>US</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>US</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

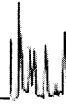
SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.400	104	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.6400	96.4	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.6500	96.5	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	183218	6.58	191226	6.58	
Chlorobenzene-d5 (IS)	67871	9.62	75608	9.62	
1,4-Difluorobenzene (IS)	277614	7.38	295651	7.38	

\* Values outside of QC limits

*7/6/17 9*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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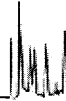
**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-14-4
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Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11489</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711489-11</u>	File ID:	<u>08MAY28.D</u>		
Sampled:	<u>04/28/17 10:45</u>	Prepared:	<u>05/08/17 07:00</u>	Analyzed:	<u>05/08/17 16:47</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BIE0790</u>	Sequence:	<u>1707902</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

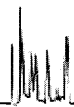
**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-14-5

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-12 File ID: 08MAY29.D  
 Sampled: 04/28/17 10:20 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 17:10  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B|E0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>UJ</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.29	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*7/6/17*



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-14-5

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-12 File ID: 08MAY29.D  
 Sampled: 04/28/17 10:20 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 17:10  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

*7/5/17*



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-14-5

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-12 File ID: 08MAY29.D  
 Sampled: 04/28/17 10:20 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 17:10  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>US</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>US</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>US</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.730	107	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.050	100	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.3400	93.4	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	185035	6.58	191226	6.58	
Chlorobenzene-d5 (IS)	70038	9.62	75608	9.62	
1,4-Difluorobenzene (IS)	278894	7.39	295651	7.38	

\* Values outside of QC limits

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

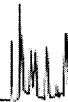
MW-14-5
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Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11489</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711489-12</u>	File ID:	<u>08MAY29.D</u>		
Sampled:	<u>04/28/17 10:20</u>	Prepared:	<u>05/08/17 07:00</u>	Analyzed:	<u>05/08/17 17:10</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B[E0790</u>	Sequence:	<u>1707902</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*7/6/17*



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

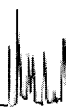
**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

DUP-8-2Q17

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-13 File ID: 08MAY30.D  
 Sampled: 04/28/17 12:10 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 17:33  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>US</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.47	J
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.16	J
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*7/6/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:53:07AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

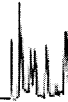
ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

DUP-8-2Q17

Laboratory: BC Laboratories SDG: 17-11489  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711489-13 File ID: 08MAY30.D  
Sampled: 04/28/17 12:10 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 17:33  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.43	J
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	1.4	
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

7/6/17



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

DUP-8-2Q17

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-13 File ID: 08MAY30.D  
 Sampled: 04/28/17 12:10 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 17:33  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>UT</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>UT</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

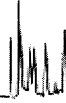
SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.950	110	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.6100	96.1	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	10.040	100	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	179297	6.58	191226	6.58	
Chlorobenzene-d5 (IS)	69146	9.62	75608	9.62	
1,4-Difluorobenzene (IS)	282766	7.39	295651	7.38	

\* Values outside of QC limits

*7/6/17 8*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

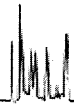
**DUP-8-2Q17**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-13</u>
Sampled: <u>04/28/17 12:10</u>	Prepared: <u>05/08/17 07:00</u>
Solids:	Preparation: <u>EPA 5030 Water MS</u>
Batch: <u>B/E0790</u>	Sequence: <u>1707902</u>
	Calibration: <u>1704006</u>
	Instrument: <u>MS-V5</u>
	File ID: <u>08MAY30.D</u>
	Analyzed: <u>05/08/17 17:33</u>
	Initial/Final: <u>25 ml / 25 ml</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*7/6/17 8*



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

EB-9-042817

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-14 File ID: 08MAY37.D  
 Sampled: 04/28/17 13:30 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 20:15  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B/E0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>MS</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:53:07AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

**EB-9-042817**

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11489</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711489-14</u>	File ID:	<u>08MAY37.D</u>		
Sampled:	<u>04/28/17 13:30</u>	Prepared:	<u>05/08/17 07:00</u>	Analyzed:	<u>05/08/17 20:15</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>B[E0790</u>	Sequence:	<u>1707902</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

*7/16/17*



Tidewater Inc. Reported: 6/21/2017 9:53:07AM  
 3761 Attucks Drive Project: JPL- GW Monitoring Wells  
 Powell, OH 43065 Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

**EB-9-042817**

Laboratory: BC Laboratories SDG: 17-11489  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711489-14 File ID: 08MAY37.D  
 Sampled: 04/28/17 13:30 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 20:15  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B[E]0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>US</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>US</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>US</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.290	103	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.010	100	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.4900	94.9	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	187010	6.58	183480	6.58	
Chlorobenzene-d5 (IS)	69490	9.62	71533	9.62	
1,4-Difluorobenzene (IS)	282727	7.39	281771	7.38	

\* Values outside of QC limits



LDC #: 38952D1

## VALIDATION COMPLETENESS WORKSHEET

SDG #: 17-11489

Level III/IV

Laboratory: BC Laboratories, Inc.

Date: 4/30/17

Page: 1 of 2

Reviewer: [Signature]

2nd Reviewer: KK

METHOD: GC/MS Volatiles (EPA Method 524.2)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A MW	RSD ≤ 20%. $r^2$ 10/15 ≤ 30%
IV.	Continuing calibration	MW	CCV ≤ 30%
V.	Laboratory Blanks	A	
VI.	Field blanks	NO	TB = 1. EB = 14
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	A	ICS
X.	Field duplicates	MW	D = 5 + 7. 9 + 13
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level III validation.
XIII.	Target compound identification	A	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB = Source blank  
OTHER:

\*\* Indicates sample was underwent Level IV review

	Client ID	Lab ID	Matrix	Date
1	TB-10-042817	1711489-01	Water	04/28/17
2	MW-23-1**	1711489-02**	Water	04/28/17
3	MW-23-2	1711489-03	Water	04/28/17
4	MW-23-3	1711489-04	Water	04/28/17
5	MW-23-4 D1	1711489-05	Water	04/28/17
6	MW-23-5	1711489-06	Water	04/28/17
7	DUP-7-2Q17 D1	1711489-07	Water	04/28/17
8	MW-14-1	1711489-08	Water	04/28/17
9	MW-14-2 D2	1711489-09	Water	04/28/17
10	MW-14-3**	1711489-10**	Water	04/28/17
11	MW-14-4	1711489-11	Water	04/28/17
12	MW-14-5	1711489-12	Water	04/28/17
13	DUP-8-2Q17 D2	1711489-13	Water	04/28/17

LDC #: 38952D1 **VALIDATION COMPLETENESS WORKSHEET**  
 SDG #: 17-11489 Level III/IV  
 Laboratory: BC Laboratories, Inc.

Date: 6/30/17  
 Page: 1 of 2  
 Reviewer: Q  
 2nd Reviewer: KK

**METHOD:** GC/MS Volatiles (EPA Method 524.2)

	Client ID	Lab ID	Matrix	Date
14	EB-9-042817	1711489-14	Water	04/28/17
15				
16				
17				
18				
19				

Notes:


## VALIDATION FINDINGS CHECKLIST

## Method: Volatiles (EPA Method 524.2)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>II. GC/MS Instrument performance check</b>				
Was a tune check performed prior to establishing and/or re-establishing an initial calibration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the BFB performance results reviewed and found to be within the specified criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>III. Initial calibration</b>				
Did the laboratory perform at least 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIIa. Initial Calibration Verification calibration</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) < 30%?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at the beginning of each analysis batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) of continuing calibration < 30%?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed with each analysis batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Field blanks</b>				
Field blanks were identified in this SDG.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Target compounds were detected in the field blanks.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VII. Surrogate spikes</b>				
Were all surrogate %R within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Was a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for this SDG?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



LDC #: 3895201

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: J  
 2nd Reviewer: KK

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) within 70-130%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>X. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Target compounds were detected in the field duplicates.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XI. Internal standards</b>				
Were internal standard area counts within +/-30% of the area of the most recent continuing calibration standard and +/-50% of the average peak area in the initial calibration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were retention times within +/-30 seconds of the associated calibration standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XII. Compound quantitation/CRQLs</b>				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) or regression equations used to quantitate the compound?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were chromatogram peaks verified and accounted for?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIV. System performance</b>				
System performance was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

# TARGET COMPOUND WORKSHEET

## METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl chloride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethane	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethane, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO. 1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3-Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methylcyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.





LDC#: 38952D1

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**

Page: 1 of 1  
Reviewer: 9  
2nd Reviewer: KK

**METHOD:** GCMS VOA (EPA Method 524.2)

Compound	Concentration (ug/L)		RPD
	9	13	
K	0.50	0.47	6
I	0.15	0.16	6
AA	0.33	0.43	26
S	1.4	1.4	0

V:\FIELD DUPLICATES\Field Duplicates\FD\_Organics\2017\38952D1\_JPLwpd.wpd

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

METHOD: GCMS 524.2

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

$$RRF = (A_x)(C_{is}) / (A_{is})(C_x)$$

$$\text{average RRF} = \text{sum of the RRFs} / \text{number of standards}$$

$$\%RSD = 100 * (S/X)$$

Where:

Ax = Area of compound

Cx = Concentration of compound

S = Standard deviation of the RRFs

X = Mean of the RRFs

Ais = Area of associated internal standard

Cis = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported (RRF 10 std)	Recalculated (RRF 10 std)	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL	4/13/2017	C	0.6738509	0.6738509	0.6507252	0.6507252	5.77474	5.77474
			CC	0.7608310	0.7608310	0.7401395	0.7401395	4.89008	4.89008
			EE	1.7287610	1.7287610	1.6995870	1.6995870	8.26667	8.26667

#	Standard ID	Calibration Date	Compound	Reported (RRF 160/40/8 std)	Recalculated (RRF160/40/8 std)	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL	4/13/2017	F	0.0343799	0.0343799	0.03573499	0.03573499	12.094280	12.094280
			VVVV	0.0704187	0.0704187	0.07240331	0.07240331	11.825840	11.825840
			ZZZZ	0.5104179	0.5104179	0.48355100	0.48355100	10.086370	10.086370

## VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260C) 504.2

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 \* (ave. RRF - RRF)/ave. RRF  
 RRF = (A<sub>x</sub>)(C<sub>is</sub>)/(A<sub>is</sub>)(C<sub>x</sub>)

Where: ave. RRF = initial calibration average RRF  
 RRF = continuing calibration RRF  
 A<sub>x</sub> = Area of compound,  
 C<sub>x</sub> = Concentration of compound,  
 A<sub>is</sub> = Area of associated internal standard  
 C<sub>is</sub> = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	<u>03MAY02</u>	<u>5/8/17</u>	<u>C</u> (1st internal standard)	<u>0.650752</u>	<u>0.6848457</u>		<u>5.2</u>	<u>5.2</u>
			<u>CC</u> (2nd internal standard)	<u>0.7401395</u>	<u>0.8141133</u>		<u>10.0</u>	<u>10.0</u>
			<u>EE</u> (3rd internal standard)	<u>1.6995870</u>	<u>1.865817</u>		<u>9.8</u>	<u>9.8</u>
			(4th internal standard)					
2	<u>03MAY03</u>	<u>5/8/17</u>	<u>F</u> (1st internal standard)	<u>0.03573199</u>	<u>0.03684743</u>	<u>0.0368474</u>	<u>3.1</u>	<u>3.1</u>
			<u>VVVV</u> (2nd internal standard)	<u>0.07240331</u>	<u>0.07124067</u>	<u>0.0712406</u>	<u>1.6</u>	<u>1.6</u>
			<u>222Z</u> (3rd internal standard)	<u>0.4835500</u>	<u>0.4296668</u>	<u>0.4296668</u>	<u>11.1</u>	<u>11.1</u>
			(4th internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

**METHOD:** GC/MS VOA (EPA SW-846 Method 8260G-524.2)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
SS = Surrogate Spiked

Sample ID: 2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4	10.00	10.36	104	104	0
Toluene-d8	↓	10.01	100	100	↓
Bromofluorobenzene	↓	9.56	95.6	95.6	↓

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					



## VALIDATION FINDINGS WORKSHEET Laboratory Control Sample Results Verification

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260C) 524.2

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* SSC/SA

Where: SSC = Spiked sample concentration  
SA = Spike added

RPD = | LCSC - LCSDC | \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration    LCSDC = Laboratory control sample duplicate concentration

LCS ID: B120790-PS1

Compound	Spike Added ( <u>NA</u> )		Spiked Sample Concentration ( <u>NA</u> )		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene	<u>25.00</u>	<u>NA</u>	<u>28.110</u>	<u>NA</u>	<u>112</u>	<u>112</u>				
Trichloroethene	↓	↓	<u>25.700</u>	↓	<u>103</u>	<u>103</u>				
Benzene	↓	↓	<u>25.670</u>	↓	<u>103</u>	<u>103</u>				
Toluene	↓	↓	<u>27.000</u>	↓	<u>108</u>	<u>108</u>				
Chlorobenzene	↓	↓	<u>26.270</u>	↓	<u>105</u>	<u>105</u>				

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 2Q2017

**LDC Report Date:** July 6, 2017

**Parameters:** Metals

**Validation Level:** Level III & IV

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-11489

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MW-23-1**	1711489-02**	Water	04/28/17
MW-23-2	1711489-03	Water	04/28/17
MW-23-3	1711489-04	Water	04/28/17
MW-23-4	1711489-05	Water	04/28/17
MW-23-5	1711489-06	Water	04/28/17
DUP-7-2Q17	1711489-07	Water	04/28/17
MW-14-1	1711489-08	Water	04/28/17
MW-14-2	1711489-09	Water	04/28/17
MW-14-3**	1711489-10**	Water	04/28/17
MW-14-4	1711489-11	Water	04/28/17
MW-14-5	1711489-12	Water	04/28/17
DUP-8-2Q17	1711489-13	Water	04/28/17
EB-9-042817	1711489-14	Water	04/28/17
MW-23-1MS	1711489-02MS	Water	04/28/17
MW-23-1MSD	1711489-02MSD	Water	04/28/17
MW-23-1DUP	1711489-02DUP	Water	04/28/17
MW-23-2MS	1711489-03MS	Water	04/28/17
MW-23-2MSD	1711489-03MSD	Water	04/28/17
MW-23-2DUP	1711489-03DUP	Water	04/28/17
MW-14-5MS	1711489-12MS	Water	04/28/17
MW-14-5MSD	1711489-12MSD	Water	04/28/17
MW-14-5DUP	1711489-12DUP	Water	04/28/17
MW-23-5DUP	1711489-06DUP	Water	04/28/17
MW-23-5MS	1711489-06MS	Water	04/28/17
MW-23-5MSD	1711489-06MSD	Water	04/28/17

\*\*Indicates sample underwent Level IV validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, and Sodium by Environmental Protection Agency (EPA) Methods 200.7/200.8

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

## II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

## III. Instrument Calibration

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

## IV. ICP Interference Check Sample Analysis

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Calcium	0.016371 mg/L	MW-23-1** MW-23-2 MW-23-3 MW-23-4 MW-23-5 DUP-7-2Q17 MW-14-1 MW-14-2 MW-14-3** MW-14-4
ICB/CCB	Sodium	0.075916 mg/L	MW-14-5 DUP-8-2Q17
ICB/CCB	Calcium Sodium	0.014907 mg/L 0.075155 mg/L	EB-9-042817
PB (prep blank)	Calcium Sodium	0.018145 mg/L 0.078170 mg/L	MW-14-5 DUP-8-2Q17 EB-9-042817

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
EB-9-042817	Calcium Sodium	0.016 mg/L 0.060 mg/L	0.016U mg/L 0.060U mg/L

## VI. Field Blanks

Sample EB-9-042817 was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Analyte	Concentration
EB-9-042817	Chromium Calcium Sodium	0.70 ug/L 0.016 mg/L 0.060 mg/L

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. For MW-23-2MS/MSD, no data were qualified for Calcium percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration. Relative percent differences (RPD) were within QC limits.

## VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

## IX. Serial Dilution

Serial dilution analysis was performed on an associated project sample. Percent differences (%D) were within QC limits.

## X. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

## XI. Field Duplicates

Samples MW-23-4 and DUP-7-2Q17 and samples MW-14-2 and DUP-8-2Q17 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD
	MW-23-4	DUP-7-2Q17	
Iron	35 ug/L	34 ug/L	3
Arsenic	1.1 ug/L	1.2 ug/L	9
Chromium	3.1 ug/L	3.0 ug/L	3
Calcium	35 mg/L	36 mg/L	3
Magnesium	12 mg/L	12 mg/L	0
Sodium	29 mg/L	28 mg/L	4
Potassium	1.9 mg/L	1.8 mg/L	5

Analyte	Concentration		RPD
	MW-14-2	DUP-8-2Q17	
Iron	140 ug/L	150 ug/L	7
Chromium	0.60 ug/L	0.66 ug/L	10
Calcium	150 mg/L	150 mg/L	0
Magnesium	56 mg/L	55 mg/L	2
Sodium	43 mg/L	43 mg/L	0
Potassium	3.1 mg/L	3.0 mg/L	3

## XII. Internal Standards (ICP-MS)

All internal standard percent recoveries (%R) were within QC limits for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

### **XIII. Sample Result Verification**

All sample result verifications were acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

### **XIV. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to laboratory blank contamination, data were qualified as not detected in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.



**NASA JPL, 2Q2017  
Metals - Data Qualification Summary - SDG 17-11489**

No Sample Data Qualified in this SDG

**NASA JPL, 2Q2017  
Metals - Laboratory Blank Data Qualification Summary - SDG 17-11489**

Sample	Analyte	Modified Final Concentration	A or P
EB-9-042817	Calcium Sodium	0.016U mg/L 0.060U mg/L	A



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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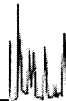
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-23-1
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-02</u>
Sampled: <u>04/28/17 09:05</u>	File ID: <u>PE2_170509-042</u>
Solids: <u>0.00</u>	Prepared: <u>05/08/17 09:15</u>
Batch: <u>BIE0880</u>	Analyzed: <u>05/09/17 14:02</u>
Sequence: <u>1708126</u>	Preparation: <u>EPA 200.2</u>
	Initial/Final: <u>50 ml / 50 ml</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-OP2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	590	1		EPA-200.7

7/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-23-2

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-03

File ID: PE2\_170509-049

Sampled: 04/28/17 08:25

Prepared: 05/08/17 09:15

Analyzed: 05/09/17 14:21

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE0880

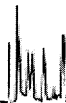
Sequence: 1708126

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	79	1		EPA-200.7

*7/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-23-3

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-04

File ID: PE2\_170509-043

Sampled: 04/28/17 08:05

Prepared: 05/08/17 09:15

Analyzed: 05/09/17 14:04

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE0880

Sequence:

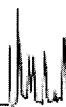
1708126

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	54	1		EPA-200.7

7/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-23-4

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-05

File ID: PE2\_170509-044

Sampled: 04/28/17 07:00

Prepared: 05/08/17 09:15

Analyzed: 05/09/17 14:07

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE0880

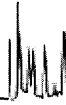
Sequence: 1708126

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	35	1	J	EPA-200.7

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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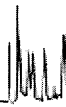
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-23-5
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-06</u>
Sampled: <u>04/28/17 06:40</u>	Prepared: <u>05/08/17 09:15</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>BIE0880</u>	Sequence: <u>1708126</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-OP2</u>
	File ID: <u>PE2_170509-045</u>
	Analyzed: <u>05/09/17 14:09</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	79	1		EPA-200.7

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

DUP-7-2Q17
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-07</u>	File ID: <u>PE2_170509-046</u>	
Sampled: <u>04/28/17 07:10</u>	Prepared: <u>05/08/17 09:15</u>	Analyzed: <u>05/09/17 14:12</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>B[E0880]</u>	Sequence: <u>1708126</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-OP2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	34	1	J	EPA-200.7

*Handwritten signature/initials*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.7**

MW-14-1

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-08

File ID: PE2\_170509-055

Sampled: 04/28/17 13:00

Prepared: 05/08/17 09:15

Analyzed: 05/09/17 14:37

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E0880

Sequence: 1708126

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	190	1		EPA-200.7

7/6/17





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-14-2
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-09</u>
Sampled: <u>04/28/17 12:00</u>	Prepared: <u>05/08/17 09:15</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>BIE0880</u>	Sequence: <u>1708126</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-OP2</u>
	File ID: <u>PE2_170509-056</u>
	Analyzed: <u>05/09/17 14:40</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	140	1		EPA-200.7

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-14-3
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-10</u>	File ID: <u>PE2_170509-057</u>	
Sampled: <u>04/28/17 11:30</u>	Prepared: <u>05/08/17 09:15</u>	Analyzed: <u>05/09/17 14:42</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE0880</u>	Sequence: <u>1708126</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-OP2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	190	1		EPA-200.7

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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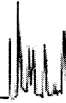
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-14-4
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-11</u>	File ID: <u>PE2_170509-058</u>	
Sampled: <u>04/28/17 10:45</u>	Prepared: <u>05/08/17 09:15</u>	Analyzed: <u>05/09/17 14:45</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE0880</u>	Sequence: <u>1708126</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-OP2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	81	1		EPA-200.7

*7/2/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.7**

MW-14-5

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-12

File ID: PE2\_170510-135

Sampled: 04/28/17 10:20

Prepared: 05/09/17 09:00

Analyzed: 05/10/17 15:46

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E1007

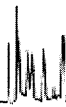
Sequence: 1708312

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	98	1		EPA-200.7

7/6/17 9



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

DUP-8-2Q17

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-13

File ID: PE2\_170510-141

Sampled: 04/28/17 12:10

Prepared: 05/09/17 09:00

Analyzed: 05/10/17 16:02

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B[E1007

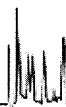
Sequence: 1708312

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	150	1		EPA-200.7

7/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

EB-9-042817

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-14

File ID: PE2\_170510-179

Sampled: 04/28/17 13:30

Prepared: 05/09/17 09:00

Analyzed: 05/10/17 17:50

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B[E]1007

Sequence: 1708312

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	30	1	U	EPA-200.7

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

**MW-23-1**

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-02

File ID: PE-EL3 170503-171

Sampled: 04/28/17 09:05

Prepared: 05/03/17 08:30

Analyzed: 05/03/17 21:31

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE0334

Sequence: 1707702

Calibration: UNASSIGNED

Instrument: PE-EL3

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8
7440-47-3	Total Recoverable Chromium	1.6	1	J	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

*Handwritten signature/initials*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

MW-23-2

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-03

File ID: PE-EL3 170503-181

Sampled: 04/28/17 08:25

Prepared: 05/03/17 08:30

Analyzed: 05/03/17 22:05

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E0334

Sequence: 1707702

Calibration: UNASSIGNED

Instrument: PE-EL3

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8
7440-47-3	Total Recoverable Chromium	1.7	1	J	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

*Handwritten signature/initials*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-23-3

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-04</u>
Sampled: <u>04/28/17 08:05</u>	File ID: <u>PE-EL3 170503-182</u>
Solids: <u>0.00</u>	Prepared: <u>05/03/17 08:30</u>
Batch: <u>B/E0334</u>	Analyzed: <u>05/03/17 22:09</u>
Sequence: <u>1707702</u>	Preparation: <u>EPA 200.2</u>
	Initial/Final: <u>50 ml / 50 ml</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL3</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8
7440-47-3	Total Recoverable Chromium	3.2	1		EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

7/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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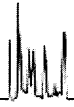
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-23-4
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-05</u>	File ID: <u>PE-EL3 170503-183</u>	
Sampled: <u>04/28/17 07:00</u>	Prepared: <u>05/03/17 08:30</u>	Analyzed: <u>05/03/17 22:12</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BJE0334</u>	Sequence: <u>1707702</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL3</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	1.1	1	J	EPA-200.8
7440-47-3	Total Recoverable Chromium	3.1	1		EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-23-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-06</u>
Sampled: <u>04/28/17 06:40</u>	Prepared: <u>05/03/17 08:30</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>B[E0336</u>	Sequence: <u>1707759</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL3</u>
	File ID: <u>PE-EL3 170504-070</u>
	Analyzed: <u>05/04/17 12:26</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	2.6	1		EPA-200.8
7439-92-1	Total Recoverable Lead	0.30	1	J	EPA-200.8

7/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-23-5

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-06

File ID: PE-EL3 170505-069

Sampled: 04/28/17 06:40

Prepared: 05/03/17 08:30

Analyzed: 05/05/17 12:06

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE0336

Sequence: 1707859

Calibration: UNASSIGNED

Instrument: PE-EL3

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.62	1	J	EPA-200.8

5/16/17 9



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

**DUP-7-2Q17**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-07</u>
Sampled: <u>04/28/17 07:10</u>	File ID: <u>PE-EL3 170504-080</u>
Solids: <u>0.00</u>	Prepared: <u>05/03/17 08:30</u>
Batch: <u>B/E0336</u>	Analyzed: <u>05/04/17 13:01</u>
Sequence: <u>1707759</u>	Preparation: <u>EPA 200.2</u>
	Initial/Final: <u>50 ml / 50 ml</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL3</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	1.2	1	J	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

7/6/17 *[Signature]*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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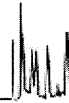
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

**DUP-7-2Q17**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-07</u>
Sampled: <u>04/28/17 07:10</u>	Prepared: <u>05/03/17 08:30</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>B[E0336</u>	Sequence: <u>1707859</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL3</u>
	File ID: <u>PE-EL3 170505-079</u>
	Analyzed: <u>05/05/17 12:41</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	3.0	1		EPA-200.8

*7/6/17 8*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

MW-14-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-08</u>
Sampled: <u>04/28/17 13:00</u>	File ID: <u>PE-EL3_170504-081</u>
Solids: <u>0.00</u>	Prepared: <u>05/03/17 08:30</u>
Batch: <u>BJE0336</u>	Analyzed: <u>05/04/17 13:05</u>
Sequence: <u>1707759</u>	Preparation: <u>EPA 200.2</u>
	Initial/Final: <u>50 ml / 50 ml</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL3</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

7/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-14-1
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-08</u>	File ID: <u>PE-EL3 170505-080</u>	
Sampled: <u>04/28/17 13:00</u>	Prepared: <u>05/03/17 08:30</u>	Analyzed: <u>05/05/17 12:45</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BJE0336</u>	Sequence: <u>1707859</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL3</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	1.2	1	J	EPA-200.8

7/5/17 *[Signature]*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-14-2

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-09</u>
Sampled: <u>04/28/17 12:00</u>	Prepared: <u>05/03/17 08:30</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>B/E0336</u>	Sequence: <u>1707759</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL3</u>
	File ID: <u>PE-EL3 170504-082</u>
	Analyzed: <u>05/04/17 13:08</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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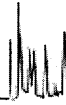
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-14-2

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-09</u>
Sampled: <u>04/28/17 12:00</u>	Prepared: <u>05/03/17 08:30</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>B[E0336</u>	Sequence: <u>1707859</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL3</u>
	File ID: <u>PE-EL3 170505-081</u>
	Analyzed: <u>05/05/17 12:48</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.60	1	J	EPA-200.8

7/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
--	--

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

MW-14-3

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-10

File ID: PE-EL3 170504-083

Sampled: 04/28/17 11:30

Prepared: 05/03/17 08:30

Analyzed: 05/04/17 13:11

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE0336

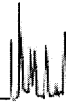
Sequence: 1707759

Calibration: UNASSIGNED

Instrument: PE-EL3

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

*7/6/17 8*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

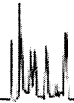
**EPA-200.8**

MW-14-3

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-10</u>
Sampled: <u>04/28/17 11:30</u>	Prepared: <u>05/03/17 08:30</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>B[E0336</u>	Sequence: <u>1707859</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL3</u>
	File ID: <u>PE-EL3_170505-082</u>
	Analyzed: <u>05/05/17 12:51</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.68	1	J	EPA-200.8

7/6/17 *[Signature]*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

MW-14-4

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-11

File ID: PE-EL3\_170504-084

Sampled: 04/28/17 10:45

Prepared: 05/03/17 08:30

Analyzed: 05/04/17 13:15

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE0336

Sequence: 1707759

Calibration: UNASSIGNED

Instrument: PE-EL3

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

2/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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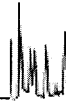
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-14-4
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-11</u>	File ID: <u>PE-EL3 170505-083</u>	
Sampled: <u>04/28/17 10:45</u>	Prepared: <u>05/03/17 08:30</u>	Analyzed: <u>05/05/17 12:55</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE0336</u>	Sequence: <u>1707859</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL3</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	2.0	1	J	EPA-200.8

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-14-5
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-12</u>	File ID: <u>PE-EL3 170504-085</u>	
Sampled: <u>04/28/17 10:20</u>	Prepared: <u>05/03/17 08:30</u>	Analyzed: <u>05/04/17 13:18</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>B[E]0336</u>	Sequence: <u>1707759</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL3</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

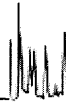
MW-14-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-12</u>	File ID: <u>PE-EL3 170505-084</u>	
Sampled: <u>04/28/17 10:20</u>	Prepared: <u>05/03/17 08:30</u>	Analyzed: <u>05/05/17 12:58</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>B[E0336</u>	Sequence: <u>1707859</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-EL3</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.86	1	J	EPA-200.8

7/6/17 8





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

**DUP-8-2Q17**

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-13

File ID: PE-EL3 170504-086

Sampled: 04/28/17 12:10

Prepared: 05/03/17 08:30

Analyzed: 05/04/17 13:22

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE0336

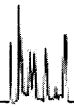
Sequence: 1707759

Calibration: UNASSIGNED

Instrument: PE-EL3

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

2/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

DUP-8-2Q17

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-13</u>
Sampled: <u>04/28/17 12:10</u>	File ID: <u>PE-EL3 170505-085</u>
Solids: <u>0.00</u>	Prepared: <u>05/03/17 08:30</u>
Batch: <u>B[E0336</u>	Analyzed: <u>05/05/17 13:02</u>
Sequence: <u>1707859</u>	Initial/Final: <u>50 ml / 50 ml</u>
	Preparation: <u>EPA 200.2</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-EL3</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.66	1	J	EPA-200.8

7/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

**EB-9-042817**

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-14

File ID: PE-EL3 170504-087

Sampled: 04/28/17 13:30

Prepared: 05/03/17 08:30

Analyzed: 05/04/17 13:25

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE0336

Sequence: 1707759

Calibration: UNASSIGNED

Instrument: PE-EL3

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

*7/6/17 8*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:32:31AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.8**

**EB-9-042817**

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-14

File ID: PE-EL3 170505-086

Sampled: 04/28/17 13:30

Prepared: 05/03/17 08:30

Analyzed: 05/05/17 13:05

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B[E0336

Sequence: 1707859

Calibration: UNASSIGNED

Instrument: PE-EL3

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	0.70	1	J	EPA-200.8

*7/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-23-1

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-02

File ID: PE2\_170509-042

Sampled: 04/28/17 09:05

Prepared: 05/08/17 09:15

Analyzed: 05/09/17 14:02

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE0880

Sequence:

1708126

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	130	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	46	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	33	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	2.7	1		EPA-200.7

7/6/17 *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-23-2

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-03

File ID: PE2\_170509-049

Sampled: 04/28/17 08:25

Prepared: 05/08/17 09:15

Analyzed: 05/09/17 14:21

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E0880

Sequence:

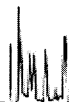
1708126

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	140	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	50	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	36	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	2.9	1		EPA-200.7

7/6/17 9



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

**MW-23-3**

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-04

File ID: PE2\_170509-043

Sampled: 04/28/17 08:05

Prepared: 05/08/17 09:15

Analyzed: 05/09/17 14:04

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B[E]0880

Sequence:

1708126

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	52	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	17	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	31	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	2.1	1		EPA-200.7

*7/6/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-23-4

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-05

File ID: PE2\_170509-044

Sampled: 04/28/17 07:00

Prepared: 05/08/17 09:15

Analyzed: 05/09/17 14:07

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE0880

Sequence:

1708126

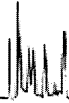
Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	35	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	12	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	29	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	1.9	1		EPA-200.7

7/6/17 8





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.7**

**MW-23-5**

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-06

File ID: PE2\_170509-045

Sampled: 04/28/17 06:40

Prepared: 05/08/17 09:15

Analyzed: 05/09/17 14:09

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE0880

Sequence:

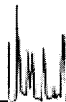
1708126

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	4.0	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	0.32	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	77	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	1.5	1		EPA-200.7

*5/16/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.7**

**DUP-7-2Q17**

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-07

File ID: PE2\_170509-046

Sampled: 04/28/17 07:10

Prepared: 05/08/17 09:15

Analyzed: 05/09/17 14:12

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE0880

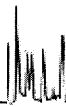
Sequence: 1708126

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	36	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	12	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	28	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	1.8	1		EPA-200.7

*Handwritten signature and date: 7/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-14-1

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-08

File ID: PE2 170509-055

Sampled: 04/28/17 13:00

Prepared: 05/08/17 09:15

Analyzed: 05/09/17 14:37

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B|E0880

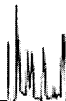
Sequence: 1708126

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	160	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	54	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	49	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	3.0	1		EPA-200.7

*4/6/17 9*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.7**

MW-14-2

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-09

File ID: PE2 170509-056

Sampled: 04/28/17 12:00

Prepared: 05/08/17 09:15

Analyzed: 05/09/17 14:40

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE0880

Sequence: 1708126

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	150	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	56	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	43	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	3.1	1		EPA-200.7

7/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.7**

MW-14-3

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-10

File ID: PE2 170509-057

Sampled: 04/28/17 11:30

Prepared: 05/08/17 09:15

Analyzed: 05/09/17 14:42

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE0880

Sequence: 1708126

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	120	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	52	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	46	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	3.2	1		EPA-200.7

*7/14/17 8*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.7**

**MW-14-4**

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-11

File ID: PE2\_170509-058

Sampled: 04/28/17 10:45

Prepared: 05/08/17 09:15

Analyzed: 05/09/17 14:45

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE0880

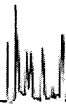
Sequence: 1708126

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	61	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	25	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	32	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	2.5	1		EPA-200.7

7/6/17 *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.7**

MW-14-5

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-12

File ID: PE2\_170510-135

Sampled: 04/28/17 10:20

Prepared: 05/09/17 09:00

Analyzed: 05/10/17 15:46

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E1007

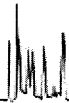
Sequence: 1708312

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	19	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	14	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	35	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	2.1	1		EPA-200.7

7/6/17 *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.7**

**DUP-8-2Q17**

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-13

File ID: PE2\_170510-141

Sampled: 04/28/17 12:10

Prepared: 05/09/17 09:00

Analyzed: 05/10/17 16:02

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE1007

Sequence: 1708312

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	150	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	55	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	43	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	3.0	1		EPA-200.7

7/6/17 *[Signature]*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 10:32:31AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-200.7**

EB-9-042817

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-14

File ID: PE2\_170510-179

Sampled: 04/28/17 13:30

Prepared: 05/09/17 09:00

Analyzed: 05/10/17 17:50

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E1007

Sequence: 1708312

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	0.016	1	J U	EPA-200.7
7439-95-4	Total Recoverable Magnesium	0.019	1	U	EPA-200.7
7440-23-5	Total Recoverable Sodium	0.060	1	J U	EPA-200.7
7440-09-7	Total Recoverable Potassium	0.10	1	U	EPA-200.7

7/6/17 [Signature]

LDC #: 38952D4a

## VALIDATION COMPLETENESS WORKSHEET

Date: 7/6/17

SDG #: 17-11489

Level III/IV

Page: 1 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: JB2nd Reviewer: [Signature]**METHOD:** Metals (EPA Method 200.7/200.8)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	ICP/MS Tune	A	
III.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	SW	EB=13
VII.	Matrix Spike/Matrix Spike Duplicates	A	(14, 15), (17, 18) - (n > 4x), (20, 21), (24, 25)
VIII.	Duplicate sample analysis	A	16, 19 (F OK by D.H.), 22, 23
IX.	Serial Dilution	A	
X.	Laboratory control samples	A	LCS
XI.	Field Duplicates	SW	(4, 6) (8, 12)
XII.	Internal Standard (ICP-MS)	A	
XIII.	Sample Result Verification	A	Not reviewed for Level III validation.
XIV.	Overall Assessment of Data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

\*\* Indicates sample was underwent Level IV review

	Client ID	Lab ID	Matrix	Date
1	MW-23-1**	1711489-02**	Water	04/28/17
2	MW-23-2	1711489-03	Water	04/28/17
3	MW-23-3	1711489-04	Water	04/28/17
4	MW-23-4	1711489-05	Water	04/28/17
5	MW-23-5	1711489-06	Water	04/28/17
6	DUP-7-2Q17	1711489-07	Water	04/28/17
7	MW-14-1	1711489-08	Water	04/28/17
8	MW-14-2	1711489-09	Water	04/28/17
9	MW-14-3**	1711489-10**	Water	04/28/17
10	MW-14-4	1711489-11	Water	04/28/17
11	MW-14-5	1711489-12	Water	04/28/17
12	DUP-8-2Q17	1711489-13	Water	04/28/17
13	EB-9-042817	1711489-14	Water	04/28/17
14	MW-23-1MS	1711489-02MS	Water	04/28/17
15	MW-23-1MSD	1711489-02MSD	Water	04/28/17

LDC #: 38952D4a

### VALIDATION COMPLETENESS WORKSHEET

Date: 7/6/17

SDG #: 17-11489

Level III/IV

Page: 2 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: *[Signature]*

2nd Reviewer: *[Signature]*

METHOD: Metals (EPA Method 200.7/200.8)

	Client ID	Lab ID	Matrix	Date
16	MW-23-1DUP	1711489-02DUP	Water	04/28/17
17	MW-23-2MS <sup>7</sup>	1711489-03MS	Water	04/28/17
18	MW-23-2MSD	1711489-03MSD	Water	04/28/17
19	MW-23-2DUP <sup>7</sup>	1711489-03DUP	Water	04/28/17
20	MW-14-5MS	1711489-12MS	Water	04/28/17
21	MW-14-5MSD	1711489-12MSD	Water	04/28/17
22	MW-14-5DUP	1711489-12DUP	Water	04/28/17
23	# 5 Dup			
24	# 5 MS			
25	# 5 MSP			
26				
27				

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Method:**Metals (EPA SW 846 Method 6010/6020/7000)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
<b>II. ICP/MS Tune</b>				
Were all isotopes in the tuning solution mass resolution within 0.1 amu?	✓			
Were %RSD of isotopes in the tuning solution ≤5%?	✓			
<b>III. Calibration</b>				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury) QC limits?	✓			
Were the low standard checks within 70-130%	✓	⊙		
Were all initial calibration correlation coefficients within limits as specified by the method?			✓	
<b>IV. Blanks</b>				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
<b>V. ICP Interference Check Sample</b>				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
<b>VI. Matrix spike/Matrix spike duplicates</b>				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) < 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were < 5X the RL.	✓			
<b>VII. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			

Validation Area	Yes	No	NA	Findings/Comments
<b>VIII. Internal Standards (EPA SW 846 Method 6020/EPA 200.8)</b>				
Were all the percent recoveries (%R) within the 30-120% (6020)/60-125% (200.8) of the intensity of the internal standard in the associated initial calibration?	✓			
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
<b>IX. ICP Serial Dilution</b>				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the MDL (ICP)/>100X the MDL (ICP/MS)?			✓	
Were all percent differences (%Ds) < 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.		✓		
<b>X. Sample Result Verification</b>				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
<b>XI. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	✓			
<b>XII. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
<b>XIII. Field blanks</b>				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.	✓			



**VALIDATION FINDINGS WORKSHEET  
PB/ICB/CCB QUALIFIED SAMPLES**

METHOD: Trace metals (EPA SW 864 Method 6010B/6020/7000)

Soil preparation factor applied: NA

Sample Concentration units, unless otherwise noted: mg/L Associated Samples: 1 - 10

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (mg/L)	Maximum ICB/CCB <sup>a</sup> (mg/L)	Action Level									
Ca		0.016371		0.08186									

Sample Concentration units, unless otherwise noted: mg/L Associated Samples: 11 - 12

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (mg/L)	Maximum ICB/CCB <sup>a</sup> (mg/L)	Action Level									
Na			0.075916	0.37958									

Sample Concentration units, unless otherwise noted: mg/L Associated Samples: 13

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (mg/L)	Maximum ICB/CCB <sup>a</sup> (mg/L)	Action Level	13								
Ca			0.014907	0.07454	0.016								
Na			0.075155	0.375775	0.060								

Sample Concentration units, unless otherwise noted: mg/L Associated Samples: 11 - 13

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (mg/L)	Maximum ICB/CCB <sup>a</sup> (mg/L)	Action Level	13								
Ca		0.018145		0.09073	0.016								
Na		0.078170		0.39085	0.060								

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

**VALIDATION FINDINGS WORKSHEET**  
**Field Blanks**

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Y N N/A Were field blanks identified in this SDG?  
Y N N/A Were target analytes detected in the field blanks?

Sample: 13 Field Blank / Trip Blank / Rinsate / Other EB (circle one)

Analyte	Concentration Units ( )
Cr	0.70 mg/L
Ca	0.016 mg/L
Na	0.060 mg/L

Sample: \_\_\_\_\_ Field Blank / Trip Blank / Rinsate / Other \_\_\_\_\_ (circle one)

Analyte	Concentration Units ( )



**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**

**METHOD:** Metals (EPA Method 200.7/200.8)

Analyte	Concentration (varies)		RPD	
	4	6		
Fe (ug/L)	35	34	3	
Arsenic (ug/L)	1.1	1.2	9	
Cr (ug/L)	3.1	3.0	3	
Ca (mg/L)	35	36	3	
Mg (mg/L)	12	12	0	
Na (mg/L)	29	28	4	
K (mg/L)	1.9	1.8	5	

Analyte	Concentration (varies)		RPD	
	8	12		
Fe (ug/L)	140	150	7	
Cr (ug/L)	0.60	0.66	10	
Ca (mg/L)	150	150	0	
Mg (mg/L)	56	55	2	
Na (mg/L)	43	43	0	
K (mg/L)	3.1	3.0	3	

## VALIDATION FINDINGS WORKSHEET

### Initial and Continuing Calibration Calculation Verification

**METHOD:** Trace metals (EPA SW 846 Method 6010/6020/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution  
 True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated	Reported	Acceptable (Y/N)
					%R	%R	
ICV	5/9 11:45 ICP (Initial calibration)	Fe	51.00 mg/L	50.000 mg/L	102%	102%	Y
ICV	8:20 5/9 ICP/MS (Initial calibration)	Pb	123.861 ug/L	125.00 ug/L	99.17%	99.17%	Y
	CVAA (Initial calibration)						
CCV	14:48 ICP (Continuing calibration)	Ca	50.07 mg/L	50.000 mg/L	100%	100%	Y
CCV	5/5 12:33 ICP/MS (Continuing calibration)	Cr	40.461 ug/L	40.000 ug/L	101%	101%	Y
	CVAA (Continuing calibration)						

Comments:

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LDC #: 33952D4

SDG #: 17-11429

**VALIDATION FINDINGS WORKSHEET**  
**Level IV Recalculation Worksheet**

Page: 1 of 1

Reviewer: JB

2nd Reviewer: [Signature]

**METHOD:** Trace metals (EPA CLP SOW ILM02.1)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).  
 True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$\text{RPD} = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration  
 D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (ug/L)  
 SDR = Serial Dilution Result (ug/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD / %D	%R / RPD / %D	
IFB	5/10 13:20 ICP interference check	Mg	541.7 mg/L	500.00 mg/L	108%	108%	Y
LCS	5/9 12:50 Laboratory control sample	Fe	1.036 mg/L	1000.0 ug/L	104%	104%	Y
MS	5/3 21:41 Matrix spike	As	SSRD (SSR-SR) 101.721 ug/L	100.00 mg/L	102%	102%	Y
MSD	21:45 Duplicate	As	102.648 mg/L	Found: 101.721 ug/L	0.907%	0.907% RPD	Y
	ICP serial dilution						

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 2Q2017

**LDC Report Date:** July 6, 2017

**Parameters:** Wet Chemistry

**Validation Level:** Level III & IV

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-11489

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MW-23-1**	1711489-02**	Water	04/28/17
MW-23-2	1711489-03	Water	04/28/17
MW-23-3	1711489-04	Water	04/28/17
MW-23-4	1711489-05	Water	04/28/17
MW-23-5	1711489-06	Water	04/28/17
DUP-7-2Q17	1711489-07	Water	04/28/17
MW-14-1	1711489-08	Water	04/28/17
MW-14-2	1711489-09	Water	04/28/17
MW-14-3**	1711489-10**	Water	04/28/17
MW-14-4	1711489-11	Water	04/28/17
MW-14-5	1711489-12	Water	04/28/17
DUP-8-2Q17	1711489-13	Water	04/28/17
EB-9-042817	1711489-14	Water	04/28/17
MW-23-1MS	1711489-02MS	Water	04/28/17
MW-23-1MSD	1711489-02MSD	Water	04/28/17
MW-23-1DUP	1711489-02DUP	Water	04/28/17
MW-23-4DUP	1711489-05DUP	Water	04/28/17
MW-14-4MS	1711489-11MS	Water	04/28/17
MW-14-4MSD	1711489-11MSD	Water	04/28/17
MW-14-4DUP	1711489-11DUP	Water	04/28/17
EB-9-042817MS	1711489-14MS	Water	04/28/17
EB-9-042817MSD	1711489-14MSD	Water	04/28/17
EB-9-042817DUP	1711489-14DUP	Water	04/28/17

\*\*Indicates sample underwent Level IV validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Alkalinity by Standard Method 2320B

Chloride, Nitrate as Nitrogen, and Sulfate by Environmental Protection Agency (EPA) Method 300.0

Nitrite as Nitrogen by EPA 353.2

Hexavalent Chromium by EPA SW 846 Method 7196

Perchlorate by EPA Method 314.0

pH by EPA Method 150.1

Total Dissolved Solids by EPA Method 160.1

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
MW-23-1** MW-23-2 MW-23-3 MW-23-4 MW-23-5 DUP-7-2Q17 MW-14-1 MW-14-2 MW-14-3** MW-14-4 MW-14-5 DUP-8-2Q17 EB-9-042817	pH	4 days	48 hours	J (all detects)	P
MW-14-1	Nitrate as N	48.15 hours	48 hours	J (all detects)	P
MW-14-2	Nitrate as N	48.85 hours	48 hours	J (all detects)	P

## II. Initial Calibration

All criteria for the initial calibration of each method were met.

## III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Hexavalent chromium	0.0091900 mg/L	MW-23-1** MW-23-2 MW-23-3 MW-23-4 MW-23-5 DUP-7-2Q17 MW-14-1 MW-14-2 MW-14-3**



Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Hexavalent chromium	0.00098800 mg/L	DUP-7-2Q17
ICB/CCB	Hexavalent chromium	0.00085000 mg/L	MW-23-2 MW-23-4 MW-14-3**

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
MW-23-2	Hexavalent chromium	0.0014 mg/L	0.0014U mg/L
MW-23-3	Hexavalent chromium	0.0029 mg/L	0.0029U mg/L
MW-23-4	Hexavalent chromium	0.0032 mg/L	0.0032U mg/L
DUP-7-2Q17	Hexavalent chromium	0.0036 mg/L	0.0036U mg/L
MW-14-1	Hexavalent chromium	0.00080 mg/L	0.00080U mg/L
MW-14-2	Hexavalent chromium	0.0018 mg/L	0.0018U mg/L
MW-14-3**	Hexavalent chromium	0.0010 mg/L	0.0010U mg/L

## V. Field Blanks

Sample EB-9-042817 was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Analyte	Concentration
EB-9-042817	Chloride Nitrite as N	0.18 mg/L 0.10 mg/L

## VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

## VIII. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

## IX. Field Duplicates

Samples MW-23-4 and DUP-7-2Q17 and samples MW-14-2 and DUP-8-2Q17 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD
	MW-23-4	DUP-7-2Q17	
Chloride	12 mg/L	12 mg/L	0
Sulfate	10 mg/L	10 mg/L	0
Nitrate as N	4.0 mg/L	4.0 mg/L	0
Perchlorate	0.94 ug/L	0.67 ug/L	34
Hexavalent chromium	0.0032 mg/L	0.0036 mg/L	12
Alkalinity, total	150 mg/L	150 mg/L	0
pH	8.36 pH units	8.29 pH units	1
Total dissolved solids	230 mg/L	240 mg/L	4

Analyte	Concentration		RPD
	MW-14-2	DUP-8-2Q17	
Chloride	120 mg/L	120 mg/L	0
Sulfate	180 mg/L	180 mg/L	0
Nitrate as N	11 mg/L	11 mg/L	0
Perchlorate	4.8 ug/L	3.8 ug/L	23

Analyte	Concentration		RPD
	MW-14-2	DUP-8-2Q17	
Nitrite as N	1.4 mg/L	1.6 mg/L	13
Hexavalent chromium	0.0018 mg/L	0.0017 mg/L	6
Alkalinity, total	250 mg/L	250 mg/L	0
pH	7.92 pH units	8.09 pH units	2
Total dissolved solids	820 mg/L	850 mg/L	4

### X. Sample Result Verification

All sample result verifications were acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

### XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, data were qualified as estimated in thirteen samples.

Due to laboratory blank contamination, data were qualified as not detected in seven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**NASA JPL, 2Q2017  
Wet Chemistry - Data Qualification Summary - SDG 17-11489**

Sample	Analyte	Flag	A or P	Reason
MW-23-1** MW-23-2 MW-23-3 MW-23-4 MW-23-5 DUP-7-2Q17 MW-14-1 MW-14-2 MW-14-3** MW-14-4 MW-14-5 DUP-8-2Q17 EB-9-042817	pH	J (all detects)	P	Technical holding times
MW-14-1 MW-14-2	Nitrate as N	J (all detects)	P	Technical holding times

**NASA JPL, 2Q2017  
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 17-11489**

Sample	Analyte	Modified Final Concentration	A or P
MW-23-2	Hexavalent chromium	0.0014U mg/L	A
MW-23-3	Hexavalent chromium	0.0029U mg/L	A
MW-23-4	Hexavalent chromium	0.0032U mg/L	A
DUP-7-2Q17	Hexavalent chromium	0.0036U mg/L	A
MW-14-1	Hexavalent chromium	0.00080U mg/L	A
MW-14-2	Hexavalent chromium	0.0018U mg/L	A
MW-14-3**	Hexavalent chromium	0.0010U mg/L	A



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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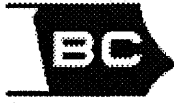
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-23-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-02</u>
	File ID: <u>Tiamo050217-116</u>
Sampled: <u>04/28/17 09:05</u>	Prepared: <u>05/02/17 09:00</u>
	Analyzed: <u>05/02/17 18:37</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>50 ml / 50 ml</u>
Batch: <u>BIE0186</u>	Sequence: <u>1707646</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	7.62	1	J	EPA-150.1

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-23-2
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-03</u>	File ID: <u>Tiamo050217-117</u>	
Sampled: <u>04/28/17 08:25</u>	Prepared: <u>05/02/17 09:00</u>	Analyzed: <u>05/02/17 18:43</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE0186</u>	Sequence: <u>1707646</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	7.89	1	J	EPA-150.1

7/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-23-3

Laboratory: BC Laboratories SDG: 17-11489  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711489-04 File ID: Tiamo050217-118  
Sampled: 04/28/17 08:05 Prepared: 05/02/17 09:00 Analyzed: 05/02/17 18:48  
Solids: 0.00 Preparation: No Prep Initial/Final: 50 ml / 50 ml  
Batch: BIE0186 Sequence: 1707646 Calibration: UNASSIGNED Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.11	1	J	EPA-150.1

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-23-4

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-05</u>	File ID: <u>Tiamo050217-123</u>	
Sampled: <u>04/28/17 07:00</u>	Prepared: <u>05/02/17 09:00</u>	Analyzed: <u>05/02/17 19:10</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE0187</u>	Sequence: <u>1707646</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.36	1	J	EPA-150.1

7/6/17 J





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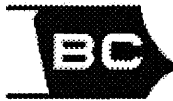
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-23-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-06</u>
File ID: <u>Tiamo050217-125</u>	
Sampled: <u>04/28/17 06:40</u>	Prepared: <u>05/02/17 09:00</u>
Analyzed: <u>05/02/17 19:21</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>B E0187</u>	Sequence: <u>1707646</u>
Calibration: <u>UNASSIGNED</u>	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	9.63	1	J	EPA-150.1

7/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

DUP-7-2Q17

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-07</u>
File ID: <u>Tiamo050217-126</u>	
Sampled: <u>04/28/17 07:10</u>	Prepared: <u>05/02/17 09:00</u>
Analyzed: <u>05/02/17 19:27</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE0187</u>	Sequence: <u>1707646</u>
Calibration: <u>UNASSIGNED</u>	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.29	1	T	EPA-150.1

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-14-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-08</u>
File ID: <u>Tiamo050217-127</u>	
Sampled: <u>04/28/17 13:00</u>	Prepared: <u>05/02/17 09:00</u>
Analyzed: <u>05/02/17 19:33</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE0187</u>	Sequence: <u>1707646</u>
Calibration: <u>UNASSIGNED</u>	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	7.79	1	J	EPA-150.1

7/6/17 9



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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-14-2
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-09</u>
	File ID: <u>Tiamo050217-128</u>
Sampled: <u>04/28/17 12:00</u>	Prepared: <u>05/02/17 09:00</u>
	Analyzed: <u>05/02/17 19:39</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>50 ml / 50 ml</u>
Batch: <u>BIE0187</u>	Sequence: <u>1707646</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	7.92	1	A	EPA-150.1

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-14-3

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-10</u>	File ID: <u>Tiamo050217-129</u>	
Sampled: <u>04/28/17 11:30</u>	Prepared: <u>05/02/17 09:00</u>	Analyzed: <u>05/02/17 19:45</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE0187</u>	Sequence: <u>1707646</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.09	1	A	EPA-150.1

*7/6/17*



Tidewater Inc.  
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Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-14-4

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-11

File ID: Tiamo050217-130

Sampled: 04/28/17 10:45

Prepared: 05/02/17 09:00

Analyzed: 05/02/17 19:50

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: B[E0187

Sequence: 1707646

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.27	1	J	EPA-150.1

*Handwritten signature and date: 7/16/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-14-5

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-12

File ID: Tiamo050217-131

Sampled: 04/28/17 10:20

Prepared: 05/02/17 09:00

Analyzed: 05/02/17 19:55

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: B[E0187

Sequence: 1707646

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.55	1	5	EPA-150.1

7/6/17 9



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

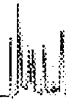
DUP-8-2Q17

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-13</u>
	File ID: <u>Tiamo050217-132</u>
Sampled: <u>04/28/17 12:10</u>	Prepared: <u>05/02/17 09:00</u>
	Analyzed: <u>05/02/17 20:01</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>50 ml / 50 ml</u>
Batch: <u>BIE0187</u>	Sequence: <u>1707646</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.09	1	✓	EPA-150.1

*7/6/17*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

EB-9-042817

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-14

File ID: Tiamo050217-133

Sampled: 04/28/17 13:30

Prepared: 05/02/17 09:00

Analyzed: 05/02/17 20:06

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BIE0187

Sequence: 1707646

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	5.27	1	J	EPA-150.1

7/6/17 J



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-23-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-02</u>
File ID:	
Sampled: <u>04/28/17 09:05</u>	Prepared: <u>05/04/17 13:00</u>
Analyzed: <u>05/04/17 13:00</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Initial/Final: <u>100 ml / 100 ml</u>	
Batch: <u>BJE0535</u>	Sequence: <u>1708361</u>
Calibration: <u>UNASSIGNED</u>	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	770	5	D	EPA-160.1

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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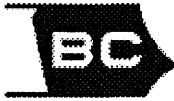
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-23-2
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-03</u>
Sampled: <u>04/28/17 08:25</u>	Prepared: <u>05/04/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BJE0535</u>	Sequence: <u>1708361</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	780	5	D	EPA-160.1

*1/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-23-3
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-04</u>
Sampled: <u>04/28/17 08:05</u>	Prepared: <u>05/04/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BJE0535</u>	Sequence: <u>1708361</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	330	2	D	EPA-160.1

7/6/17 9



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-23-4
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-05</u>
Sampled: <u>04/28/17 07:00</u>	Prepared: <u>05/04/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BIE0535</u>	Sequence: <u>1708361</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	230	2	D	EPA-160.1

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-160.1

MW-23-5
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-06</u>
Sampled: <u>04/28/17 06:40</u>	Prepared: <u>05/04/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BIE0535</u>	Sequence: <u>1708361</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	260	2	D	EPA-160.1

7/6/17





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-14-1
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-08</u>
Sampled: <u>04/28/17 13:00</u>	Prepared: <u>05/04/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BIE0535</u>	Sequence: <u>1708361</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>
	File ID:
	Analyzed: <u>05/04/17 13:00</u>
	Initial/Final: <u>100 ml / 100 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	870	5	D	EPA-160.1

*7/6/17*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-14-2
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-09</u>
Sampled: <u>04/28/17 12:00</u>	Prepared: <u>05/04/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BIE0535</u>	Sequence: <u>1708361</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	820	5	D	EPA-160.1

7/6/17





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-160.1

MW-14-4
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-11</u>
Sampled: <u>04/28/17 10:45</u>	Prepared: <u>05/04/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BIE0535</u>	Sequence: <u>1708361</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	410	2	D	EPA-160.1

7/6/17 *[Signature]*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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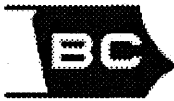
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-14-5
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-12</u>
Sampled: <u>04/28/17 10:20</u>	Prepared: <u>05/04/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BIE0534</u>	Sequence: <u>1708361</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	240	2	D	EPA-160.1

7/6/17 9



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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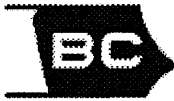
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

DUP-8-2Q17

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-13</u>
Sampled: <u>04/28/17 12:10</u>	Prepared: <u>05/04/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BJE0534</u>	Sequence: <u>1708361</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	850	5	D	EPA-160.1

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

EB-9-042817

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-14</u>
Sampled: <u>04/28/17 13:30</u>	Prepared: <u>05/04/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BJE0534</u>	Sequence: <u>1708361</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	6.7	0.667	UD	EPA-160.1

7/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

MW-23-1

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-02RE1

File ID: E042917.seq-09

Sampled: 04/28/17 09:05

Prepared: 04/29/17 14:00

Analyzed: 04/29/17 16:39

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE0048

Sequence: 1707501

Calibration: UNASSIGNED

Instrument: IC5

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	97	1		EPA-300.0
14797-55-8	Nitrate as N	11	1		EPA-300.0
14808-79-8	Sulfate	170	1		EPA-300.0

7/6/17 *[Signature]*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

MW-23-2
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-03RE1</u>
Sampled: <u>04/28/17 08:25</u>	Prepared: <u>04/29/17 14:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B/E0048</u>	Sequence: <u>1707501</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>IC5</u>
	File ID: <u>E042917.seq-11</u>
	Analyzed: <u>04/29/17 17:14</u>
	Initial/Final: <u>20 ml / 20 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	110	1		EPA-300.0
14797-55-8	Nitrate as N	13	1		EPA-300.0
14808-79-8	Sulfate	170	1		EPA-300.0

7/6/17





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

MW-23-3
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-04</u>	File ID: <u>E042917.seq-12</u>	
Sampled: <u>04/28/17 08:05</u>	Prepared: <u>04/29/17 14:00</u>	Analyzed: <u>04/29/17 17:32</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BIE0048</u>	Sequence: <u>1707501</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC5</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	37	1		EPA-300.0
14797-55-8	Nitrate as N	9.6	1		EPA-300.0
14808-79-8	Sulfate	31	1		EPA-300.0

7/6/17







Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

DUP-7-2Q17

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-07</u>
Sampled: <u>04/28/17 07:10</u>	Prepared: <u>04/29/17 14:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BIE0048</u>	Sequence: <u>1707501</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>IC5</u>
	File ID: <u>E042917.seq-17</u>
	Analyzed: <u>04/29/17 19:02</u>
	Initial/Final: <u>20 ml / 20 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	12	1		EPA-300.0
14797-55-8	Nitrate as N	4.0	1		EPA-300.0
14808-79-8	Sulfate	10	1		EPA-300.0

7/6/17


Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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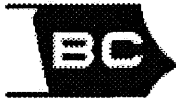
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

MW-14-1
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-08RE1</u>	File ID: <u>E042917.seq-42</u>	
Sampled: <u>04/28/17 13:00</u>	Prepared: <u>04/29/17 14:00</u>	Analyzed: <u>04/30/17 13:09</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BIE0048</u>	Sequence: <u>1707501</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC5</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	130	1		EPA-300.0
14797-55-8	Nitrate as N	12	1	<u>5</u>	EPA-300.0
14808-79-8	Sulfate	200	1		EPA-300.0

*7/16/17* 



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

MW-14-2

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-09RE1

File ID: E042917.seq-41

Sampled: 04/28/17 12:00

Prepared: 04/29/17 14:00

Analyzed: 04/30/17 12:51

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE0048

Sequence: 1707501

Calibration: UNASSIGNED

Instrument: IC5

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	120	1		EPA-300.0
14797-55-8	Nitrate as N	11	1	J	EPA-300.0
14808-79-8	Sulfate	180	1		EPA-300.0

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

MW-14-3

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-10</u>
Sampled: <u>04/28/17 11:30</u>	Prepared: <u>04/29/17 14:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BIE0048</u>	Sequence: <u>1707501</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>IC5</u>
	File ID: <u>E042917.seq-20</u>
	Analyzed: <u>04/29/17 19:56</u>
	Initial/Final: <u>20 ml / 20 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	110	1		EPA-300.0
14797-55-8	Nitrate as N	13	1		EPA-300.0
14808-79-8	Sulfate	170	1		EPA-300.0

7/6/17







Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

MW-14-5
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-12</u>	File ID: <u>E042917.seq-29</u>	
Sampled: <u>04/28/17 10:20</u>	Prepared: <u>04/29/17 14:00</u>	Analyzed: <u>04/29/17 22:37</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BIE0049</u>	Sequence: <u>1707501</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC5</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	11	1		EPA-300.0
14797-55-8	Nitrate as N	0.096	1	J	EPA-300.0
14808-79-8	Sulfate	19	1		EPA-300.0

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

**DUP-8-2Q17**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-13</u>
Sampled: <u>04/28/17 12:10</u>	Prepared: <u>04/29/17 14:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BIE0049</u>	Sequence: <u>1707501</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>IC5</u>
	File ID: <u>E042917.seq-30</u>
	Analyzed: <u>04/29/17 22:54</u>
	Initial/Final: <u>20 ml / 20 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	120	1		EPA-300.0
14797-55-8	Nitrate as N	11	1		EPA-300.0
14808-79-8	Sulfate	180	1		EPA-300.0

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

EB-9-042817

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-14</u>
	File ID: <u>E042917.seq-32</u>
Sampled: <u>04/28/17 13:30</u>	Prepared: <u>04/29/17 14:00</u>
	Analyzed: <u>04/29/17 23:30</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>20 ml / 20 ml</u>
Batch: <u>BIE0049</u>	Sequence: <u>1707501</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>IC5</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	0.18	1	J	EPA-300.0
14797-55-8	Nitrate as N	0.021	1	U	EPA-300.0
14808-79-8	Sulfate	0.13	1	U	EPA-300.0

*7/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

**MW-23-1**

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-02

File ID: F051517A.seq-12.0000.txt

Sampled: 04/28/17 09:05

Prepared: 05/15/17 20:30

Analyzed: 05/16/17 01:14

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE1766

Sequence: 1708654

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	2.9	1	J	EPA-314.0

7/6/17

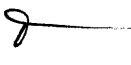
Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-23-2
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-03</u>	File ID: <u>F051517A.seq-34.0000.txt</u>	
Sampled: <u>04/28/17 08:25</u>	Prepared: <u>05/15/17 20:30</u>	Analyzed: <u>05/16/17 09:35</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BIE1766</u>	Sequence: <u>1708654</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC6</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	3.6	1	J	EPA-314.0

7/6/17 



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-23-3

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-04

File ID: F051517A.seq-17.0000.txt

Sampled: 04/28/17 08:05

Prepared: 05/15/17 20:30

Analyzed: 05/16/17 02:20

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B/E1766

Sequence: 1708654

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	3.0	1	J	EPA-314.0

7/6/17


Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-23-4
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-05</u>	File ID: <u>F051517A.seq-20.0000.txt</u>	
Sampled: <u>04/28/17 07:00</u>	Prepared: <u>05/15/17 20:30</u>	Analyzed: <u>05/16/17 03:00</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B/E1766</u>	Sequence: <u>1708654</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC6</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.94	1	J	EPA-314.0

*7/6/17* 



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-23-5

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-06

File ID: F051517A.seq-21.0000.txt

Sampled: 04/28/17 06:40

Prepared: 05/15/17 20:30

Analyzed: 05/16/17 03:14

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B/E1766

Sequence: 1708654

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

7/6/17 Y







Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-14-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-08</u>
File ID: <u>F051517A.seq-23.0000.txt</u>	
Sampled: <u>04/28/17 13:00</u>	Prepared: <u>05/15/17 20:30</u>
Analyzed: <u>05/16/17 03:40</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BIE1766</u>	Sequence: <u>1708654</u>
Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC6</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	2.6	1	J	EPA-314.0

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-14-2
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-09</u>	File ID: <u>F051517A.seq-24.0000.txt</u>	
Sampled: <u>04/28/17 12:00</u>	Prepared: <u>05/15/17 20:30</u>	Analyzed: <u>05/16/17 03:54</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BIE1766</u>	Sequence: <u>1708654</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC6</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	4.8	1		EPA-314.0

*7/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-14-3

Laboratory: BC Laboratories SDG: 17-11489  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711489-10 File ID: F051517A.seq-25.0000.txt  
Sampled: 04/28/17 11:30 Prepared: 05/15/17 20:30 Analyzed: 05/16/17 04:07  
Solids: 0.00 Preparation: No Prep Initial/Final: 20 ml / 20 ml  
Batch: BIE1766 Sequence: 1708654 Calibration: UNASSIGNED Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	5.0	1		EPA-314.0

7/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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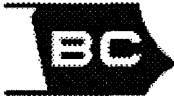
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-14-4
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-11</u>	File ID: <u>F051517A.seq-26.0000.txt</u>	
Sampled: <u>04/28/17 10:45</u>	Prepared: <u>05/15/17 20:30</u>	Analyzed: <u>05/16/17 04:20</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BJE1766</u>	Sequence: <u>1708654</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC6</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	3.7	1	J	EPA-314.0

7/6/17



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-14-5
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-12</u>
Sampled: <u>04/28/17 10:20</u>	Prepared: <u>05/15/17 20:30</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BJE1766</u>	Sequence: <u>1708654</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>IC6</u>
	File ID: <u>F051517A.seq-27.0000.txt</u>
	Analyzed: <u>05/16/17 04:34</u>
	Initial/Final: <u>20 ml / 20 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

7/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

DUP-8-2Q17

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-13

File ID: F051517A.seq-28.0000.txt

Sampled: 04/28/17 12:10

Prepared: 05/15/17 20:30

Analyzed: 05/16/17 04:47

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE1766

Sequence: 1708654

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	3.8	1	J	EPA-314.0

*2/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

EB-9-042817

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-14</u>
File ID: <u>F051517A.seq-29.0000.txt</u>	
Sampled: <u>04/28/17 13:30</u>	Prepared: <u>05/15/17 20:30</u>
Analyzed: <u>05/16/17 05:00</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B/E1766</u>	Sequence: <u>1708654</u>
Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC6</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

7/6/17





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-23-1

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-02

File ID: 170428 2105 NO2-181

Sampled: 04/28/17 09:05

Prepared: 04/29/17 13:19

Analyzed: 04/29/17 13:19

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE0571

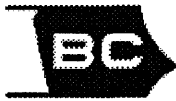
Sequence: 1707765

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

7/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-23-2

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-03

File ID: 170428 2105 NO2-185

Sampled: 04/28/17 08:25

Prepared: 04/29/17 13:19

Analyzed: 04/29/17 13:19

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE0571

Sequence: 1707765

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.013	1	J	EPA-353.2

2/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-23-3
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-04</u>	File ID: <u>170428 2105 NO2-186</u>	
Sampled: <u>04/28/17 08:05</u>	Prepared: <u>04/29/17 13:19</u>	Analyzed: <u>04/29/17 13:19</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B[E0571</u>	Sequence: <u>1707765</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

7/6/17

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-23-4

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-05</u>	File ID: <u>170428 2105 NO2-187</u>	
Sampled: <u>04/28/17 07:00</u>	Prepared: <u>04/29/17 13:19</u>	Analyzed: <u>04/29/17 13:19</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BIE0571</u>	Sequence: <u>1707765</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

7/6/17 *J*



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-23-5

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-06

File ID: 170428 2105 NO2-188

Sampled: 04/28/17 06:40

Prepared: 04/29/17 13:19

Analyzed: 04/29/17 13:19

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJE0571

Sequence: 1707765

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

7/6/17 *J*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-353.2

DUP-7-2Q17

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-07</u>
Sampled: <u>04/28/17 07:10</u>	File ID: <u>170428 2105 NO2-191</u>
Solids: <u>0.00</u>	Prepared: <u>04/29/17 13:19</u>
Batch: <u>B/E0571</u>	Sequence: <u>1707765</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>
	Initial/Final: <u>20 ml / 20 ml</u>
	Analyzed: <u>04/29/17 13:24</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

7/6/17 8

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-14-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-08</u>
File ID: <u>170428 2105 NO2-218</u>	
Sampled: <u>04/28/17 13:00</u>	Prepared: <u>04/29/17 13:19</u>
Analyzed: <u>04/29/17 14:03</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BIE0571</u>	Sequence: <u>1707765</u>
Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	J	EPA-353.2

*7/6/17 9*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-14-2

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-09

File ID: 170428 2105 NO2-212

Sampled: 04/28/17 12:00

Prepared: 04/29/17 13:19

Analyzed: 04/29/17 13:33

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE0571

Sequence: 1707765

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	1.4	5	D	EPA-353.2

7/6/17 Q



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-14-3

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-10</u>
	File ID: <u>170428 2105 NO2-194</u>
Sampled: <u>04/28/17 11:30</u>	Prepared: <u>04/29/17 13:19</u>
	Analyzed: <u>04/29/17 13:24</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>20 ml / 20 ml</u>
Batch: <u>BIE0571</u>	Sequence: <u>1707765</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.51	1		EPA-353.2

7/6/17 

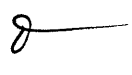
Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-353.2

MW-14-4

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-11</u>
File ID: <u>170428 2105 NO2-195</u>	
Sampled: <u>04/28/17 10:45</u>	Prepared: <u>04/29/17 13:19</u>
Analyzed: <u>04/29/17 13:24</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BIE0571</u>	Sequence: <u>1707765</u>
Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*7/6/17* 



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-14-5

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-12

File ID: 170428 2105 NO2-196

Sampled: 04/28/17 10:20

Prepared: 04/29/17 13:19

Analyzed: 04/29/17 13:24

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE0572

Sequence: 1707765

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

7/6/17

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

DUP-8-2Q17

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-13</u>
File ID: <u>170428 2105 NO2-213</u>	
Sampled: <u>04/28/17 12:10</u>	Prepared: <u>04/29/17 13:19</u>
Analyzed: <u>04/29/17 13:33</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BIE0572</u>	Sequence: <u>1707765</u>
Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	1.6	5	D	EPA-353.2

7/6/17 



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

**EB-9-042817**

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-14

File ID: 170428 2105 NO2-198

Sampled: 04/28/17 13:30

Prepared: 04/29/17 13:19

Analyzed: 04/29/17 13:24

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE0572

Sequence: 1707765

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	J	EPA-353.2

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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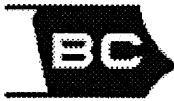
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-23-1
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-02</u>	File ID: <u>170428 2325 CR6-123</u>	
Sampled: <u>04/28/17 09:05</u>	Prepared: <u>04/28/17 23:25</u>	Analyzed: <u>04/28/17 23:48</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BJE0309</u>	Sequence: <u>1707720</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

7/4/17 Q



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-23-2
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-03</u>
File ID: <u>170428 2325 CR6-141</u>	
Sampled: <u>04/28/17 08:25</u>	Prepared: <u>04/28/17 23:25</u>
Analyzed: <u>04/29/17 00:07</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B[E]0309</u>	Sequence: <u>1707720</u>
Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0014	1	J U	EPA-7196

7/6/17 8

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-23-3

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-04</u>
	File ID: <u>170428 2325 CR6-128</u>
Sampled: <u>04/28/17 08:05</u>	Prepared: <u>04/28/17 23:25</u>
	Analyzed: <u>04/28/17 23:48</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>20 ml / 20 ml</u>
Batch: <u>BIE0309</u>	Sequence: <u>1707720</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0029	1	U	EPA-7196

7/6/17 





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-23-4
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-05</u>	File ID: <u>170428 2325 CR6-143</u>	
Sampled: <u>04/28/17 07:00</u>	Prepared: <u>04/28/17 23:25</u>	Analyzed: <u>04/29/17 00:07</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BJE0309</u>	Sequence: <u>1707720</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0032	1	U	EPA-7196

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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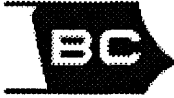
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-23-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-06</u>
File ID: <u>170428 2325 CR6-130</u>	
Sampled: <u>04/28/17 06:40</u>	Prepared: <u>04/28/17 23:25</u>
Analyzed: <u>04/28/17 23:48</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B[E]0309</u>	Sequence: <u>1707720</u>
Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

7/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

DUP-7-2Q17

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-07

File ID: 170428 2325 CR6-113

Sampled: 04/28/17 07:10

Prepared: 04/28/17 23:25

Analyzed: 04/28/17 23:28

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BIE0309

Sequence: 1707720

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0036	1	U	EPA-7196

7/6/17 *[Signature]*

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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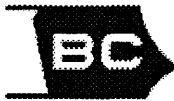
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-14-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-08</u>
File ID: <u>170428 2325 CR6-134</u>	
Sampled: <u>04/28/17 13:00</u>	Prepared: <u>04/28/17 23:25</u>
Analyzed: <u>04/28/17 23:52</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BIE0309</u>	Sequence: <u>1707720</u>
Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00080	1	JU	EPA-7196

7/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-14-2
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-09</u>	File ID: <u>170428 2325 CR6-135</u>	
Sampled: <u>04/28/17 12:00</u>	Prepared: <u>04/28/17 23:25</u>	Analyzed: <u>04/28/17 23:52</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BIE0309</u>	Sequence: <u>1707720</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0018	1	JU	EPA-7196

7/6/17 Q



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-14-3
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-10</u>	File ID: <u>170428 2325 CR6-146</u>	
Sampled: <u>04/28/17 11:30</u>	Prepared: <u>04/28/17 23:25</u>	Analyzed: <u>04/29/17 00:07</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BJE0309</u>	Sequence: <u>1707720</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0010	1	JU	EPA-7196

7/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-14-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-12</u>
	File ID: <u>170428 2325 CR6-158</u>
Sampled: <u>04/28/17 10:20</u>	Prepared: <u>04/28/17 23:25</u>
	Analyzed: <u>04/29/17 00:30</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>20 ml / 20 ml</u>
Batch: <u>BIE0310</u>	Sequence: <u>1707720</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

*7/6/17 9*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

DUP-8-2Q17

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-13</u>
	File ID: <u>170428 2325 CR6-159</u>
Sampled: <u>04/28/17 12:10</u>	Prepared: <u>04/28/17 23:25</u>
	Analyzed: <u>04/29/17 00:30</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>20 ml / 20 ml</u>
Batch: <u>BIE0310</u>	Sequence: <u>1707720</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0017	1	J	EPA-7196

7/6/17 *[Signature]*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

EB-9-042817
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-14</u>
	File ID: <u>170428 2325 CR6-153</u>
Sampled: <u>04/28/17 13:30</u>	Prepared: <u>04/28/17 23:25</u>
	Analyzed: <u>04/29/17 00:30</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>20 ml / 20 ml</u>
Batch: <u>BIE0310</u>	Sequence: <u>1707720</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

7/6/17 &

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-23-1
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-02</u>
	File ID: <u>Tiamo050217-116</u>
Sampled: <u>04/28/17 09:05</u>	Prepared: <u>05/02/17 09:00</u>
	Analyzed: <u>05/02/17 18:37</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>50 ml / 50 ml</u>
Batch: <u>BIE0186</u>	Sequence: <u>1707646</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	300	2	D	SM-2320B
3812-32-6	Carbonate	5.0	2	UD	SM-2320B
---	Total Alkalinity as CaCO3	250	2	D	SM-2320B

*7/2/17* 


Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-23-2

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-03</u>
Sampled: <u>04/28/17 08:25</u>	Prepared: <u>05/02/17 09:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BIE0186</u>	Sequence: <u>1707646</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>
	File ID: <u>Tiamo050217-117</u>
	Analyzed: <u>05/02/17 18:43</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	280	2	D	SM-2320B
3812-32-6	Carbonate	5.0	2	UD	SM-2320B
---	Total Alkalinity as CaCO3	230	2	D	SM-2320B

7/6/17 



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-23-3
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-04</u>
	File ID: <u>Tiamo050217-118</u>
Sampled: <u>04/28/17 08:05</u>	Prepared: <u>05/02/17 09:00</u>
	Analyzed: <u>05/02/17 18:48</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>50 ml / 50 ml</u>
Batch: <u>BIE0186</u>	Sequence: <u>1707646</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	180	1		SM-2320B
3812-32-6	Carbonate	2.5	1	U	SM-2320B
---	Total Alkalinity as CaCO3	140	1		SM-2320B

7/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-23-4

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-05

File ID: Tiamo050217-123

Sampled: 04/28/17 07:00

Prepared: 05/02/17 09:00

Analyzed: 05/02/17 19:10

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BIE0187

Sequence: 1707646

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	170	1		SM-2320B
3812-32-6	Carbonate	4.7	1		SM-2320B
---	Total Alkalinity as CaCO3	150	1		SM-2320B

7/6/17 9



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-23-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-06</u>
File ID: <u>Tiamo050217-125</u>	
Sampled: <u>04/28/17 06:40</u>	Prepared: <u>05/02/17 09:00</u>
Analyzed: <u>05/02/17 19:21</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE0187</u>	Sequence: <u>1707646</u>
Calibration: <u>UNASSIGNED</u>	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	110	1		SM-2320B
3812-32-6	Carbonate	41	1		SM-2320B
---	Total Alkalinity as CaCO3	160	1		SM-2320B

*4/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

DUP-7-2Q17

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-07

File ID: Tiamo050217-126

Sampled: 04/28/17 07:10

Prepared: 05/02/17 09:00

Analyzed: 05/02/17 19:27

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BIE0187

Sequence: 1707646

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	180	1		SM-2320B
3812-32-6	Carbonate	2.5	1	U	SM-2320B
---	Total Alkalinity as CaCO3	150	1		SM-2320B

7/16/17 8





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
--	---

**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-14-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-08</u>
Sampled: <u>04/28/17 13:00</u>	Prepared: <u>05/02/17 09:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E0187</u>	Sequence: <u>1707646</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>
	File ID: <u>Tiamo050217-127</u>
	Analyzed: <u>05/02/17 19:33</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	300	2	D	SM-2320B
3812-32-6	Carbonate	5.0	2	UD	SM-2320B
---	Total Alkalinity as CaCO3	250	2	D	SM-2320B

7/6/17 *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/19/2017 2:40:38PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-14-2

Laboratory: BC Laboratories

SDG: 17-11489

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711489-09

File ID: Tiamo050217-128

Sampled: 04/28/17 12:00

Prepared: 05/02/17 09:00

Analyzed: 05/02/17 19:39

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: B/E0187

Sequence: 1707646

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	300	2	D	SM-2320B
3812-32-6	Carbonate	5.0	2	UD	SM-2320B
---	Total Alkalinity as CaCO3	250	2	D	SM-2320B

7/6/17 8

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-14-3

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-10</u>	File ID: <u>Tiamo050217-129</u>	
Sampled: <u>04/28/17 11:30</u>	Prepared: <u>05/02/17 09:00</u>	Analyzed: <u>05/02/17 19:45</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>B/E0187</u>	Sequence: <u>1707646</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	270	2	D	SM-2320B
3812-32-6	Carbonate	5.0	2	UD	SM-2320B
---	Total Alkalinity as CaCO3	220	2	D	SM-2320B

*5/6/17 8*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-14-4

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-11</u>
File ID: <u>Tiamo050217-130</u>	
Sampled: <u>04/28/17 10:45</u>	Prepared: <u>05/02/17 09:00</u>
Analyzed: <u>05/02/17 19:50</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>B/E0187</u>	Sequence: <u>1707646</u>
Calibration: <u>UNASSIGNED</u>	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	180	1		SM-2320B
3812-32-6	Carbonate	2.5	1	U	SM-2320B
---	Total Alkalinity as CaCO3	150	1		SM-2320B

7/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET  
SM-2320B**

**MW-14-5**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-12</u>
	File ID: <u>Tiamo050217-131</u>
Sampled: <u>04/28/17 10:20</u>	Prepared: <u>05/02/17 09:00</u>
	Analyzed: <u>05/02/17 19:55</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
	Initial/Final: <u>50 ml / 50 ml</u>
Batch: <u>BIE0187</u>	Sequence: <u>1707646</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	140	1		SM-2320B
3812-32-6	Carbonate	6.6	1		SM-2320B
---	Total Alkalinity as CaCO <sub>3</sub>	130	1		SM-2320B

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/19/2017 2:40:38PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

DUP-8-2Q17

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11489</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711489-13</u>
Sampled: <u>04/28/17 12:10</u>	Prepared: <u>05/02/17 09:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BIE0187</u>	Sequence: <u>1707646</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>
	File ID: <u>Tiamo050217-132</u>
	Analyzed: <u>05/02/17 20:01</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	300	2	D	SM-2320B
3812-32-6	Carbonate	5.0	2	UD	SM-2320B
---	Total Alkalinity as CaCO3	250	2	D	SM-2320B

*7/16/17 8*



LDC #: 38952D6

## VALIDATION COMPLETENESS WORKSHEET


Date: 7/6/17

SDG #: 17-11489

Level III/IV

Page: 1 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: 2nd Reviewer: 

**METHOD: (Analyte)** Alkalinity (SM2320B), Chloride, Nitrate-N, Sulfate (EPA Method 300.0), Nitrite-N (EPA Method 353.2), Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), pH EPA Method 150.1), TDS (EPA Method 160.1)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / SW	
II.	Initial calibration	A	
III.	Calibration verification	A	
IV.	Laboratory Blanks	SW	
V.	Field blanks	SW	EB = 13
VI.	Matrix Spike/Matrix Spike Duplicates	A	
VII.	Duplicate sample analysis	A	
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	SW	(4, 6) (8, 12)
X.	Sample result verification	A	Not reviewed for Level III validation.
XI.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB = Source blank  
OTHER:

\*\* Indicates sample was underwent Level IV review

	Client ID	Lab ID	Matrix	Date
1	MW-23-1**	1711489-02**	Water	04/28/17
2	MW-23-2	1711489-03	Water	04/28/17
3	MW-23-3	1711489-04	Water	04/28/17
4	MW-23-4	1711489-05	Water	04/28/17
5	MW-23-5	1711489-06	Water	04/28/17
6	DUP-7-2Q17	1711489-07	Water	04/28/17
7	MW-14-1	1711489-08	Water	04/28/17
8	MW-14-2	1711489-09	Water	04/28/17
9	MW-14-3**	1711489-10**	Water	04/28/17
10	MW-14-4	1711489-11	Water	04/28/17
11	MW-14-5	1711489-12	Water	04/28/17
12	DUP-8-2Q17	1711489-13	Water	04/28/17
13	EB-9-042817	1711489-14	Water	04/28/17
14	MW-23-1MS <sup>3 C.N.</sup>	1711489-02MS	Water	04/28/17
15	MW-23-1MSD	1711489-02MSD	Water	04/28/17
16	MW-23-1DUP T	1711489-02DUP	Water	04/28/17
17	MW-23-4DUP <sup>PH</sup>	1711489-05DUP	Water	04/28/17



LDC #: 38952D6  
SDG #: 17-11489  
Laboratory: BC Laboratories, Inc.

### VALIDATION COMPLETENESS WORKSHEET

Level III/IV

Date: 7/6/17  
Page: 2 of 2  
Reviewer: [Signature]  
2nd Reviewer: [Signature]

**METHOD: (Analyte)** Alkalinity (SM2320B), Chloride, Nitrate-N, Sulfate (EPA Method 300.0), Nitrite-N (EPA Method 353.2), Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), pH EPA Method 150.1, TDS (EPA Method 160.1)

	Client ID	Lab ID	Matrix	Date
18	MW-14-4MS <sup>3</sup>	1711489-11MS	Water	04/28/17
19	MW-14-4MSD	1711489-11MSD	Water	04/28/17
20	MW-14-4DUP	1711489-11DUP	Water	04/28/17
21	EB-9-042817MS	1711489-14MS	Water	04/28/17
22	EB-9-042817MSD	1711489-14MSD	Water	04/28/17
23	EB-9-042817DUP	1711489-14DUP	Water	04/28/17
24				
25				
26				
27				
28				

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Method:** Inorganics (EPA Method See Cover)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
All technical holding times were met.		✓		
<b>II. Calibration</b>				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients $\geq 0.995$ ?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)	✓			
Were balance checks performed as required? (Level IV only)	✓			
<b>III. Blanks</b>				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
<b>IV. Matrix spike/Matrix spike duplicates and Duplicates</b>				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) $\leq 20\%$ for waters and $\leq 35\%$ for soil samples? A control limit of $\leq \text{CRDL}$ ( $\leq 2\text{X CRDL}$ for soil) was used for samples that were $\leq 5\text{X}$ the CRDL, including when only one of the duplicate sample values were $\leq 5\text{X}$ the CRDL.	✓			
<b>V. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
<b>VI. Regional Quality Assurance and Quality Control</b>				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

**VALIDATION FINDINGS CHECKLIST**

Validation Area	Yes	No	NA	Findings/Comments
<b>VII. Sample Result Verification</b>				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
<b>VIII. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	✓			
<b>IX. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
<b>X. Field blanks</b>				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.	✓			

**VALIDATION FINDINGS WORKSHEET**  
**Sample Specific Analysis Reference**

All circled methods are applicable to each sample.

Sample ID	Parameter
1-13	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
00	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
14-15	pH TDS (Cl) F (NO <sub>3</sub> ) (NO <sub>2</sub> ) (SO <sub>4</sub> ) O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC (Cr6+) (ClO <sub>4</sub> )
16	pH TDS (Cl) F (NO <sub>3</sub> ) (NO <sub>2</sub> ) (SO <sub>4</sub> ) O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC (Cr6+) (ClO <sub>4</sub> )
17	(pH) TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> (Alk) CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
18-20	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
21-24	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC (Cr6+) ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>
	pH TDS Cl F NO <sub>3</sub> NO <sub>2</sub> SO <sub>4</sub> O-PO <sub>4</sub> Alk CN NH <sub>3</sub> TKN TOC Cr6+ ClO <sub>4</sub>

Comments: \_\_\_\_\_

## VALIDATION FINDINGS WORKSHEET

### Technical Holding Times

All circled dates have exceeded the technical holding time.

Y N N/A Were all samples preserved as applicable to each method?

Y N N/A Were all cooler temperatures within validation criteria?

Method:		EPA 150.1					
Parameters:		pH					
Technical holding time:		48 hours					
Sample ID	Sampling date	Analysis date	Total Time	Qualifier	Analysis date	Total Time	Qualifier
1	4/28/17	5/2/17	4 days	J/UJ/P			
2	4/28/17	5/2/17	4 days	J/UJ/P			
3	4/28/17	5/2/17	4 days	J/UJ/P			
4	4/28/17	5/2/17	4 days	J/UJ/P			
5	4/28/17	5/2/17	4 days	J/UJ/P			
6	4/28/17	5/2/17	4 days	J/UJ/P			
7	4/28/17	5/2/17	4 days	J/UJ/P			
8	4/28/17	5/2/17	4 days	J/UJ/P			
9	4/28/17	5/2/17	4 days	J/UJ/P			
10	4/28/17	5/2/17	4 days	J/UJ/P			
11	4/28/17	5/2/17	4 days	J/UJ/P			
12	4/28/17	5/2/17	4 days	J/UJ/P			
13	4/28/17	5/2/17	4 days	J/UJ/P			

Method:		EPA 300.0					
Parameters:		Nitrate as N					
Technical holding time:		48 hours					
Sample ID	Sampling date	Analysis date	Total Time	Qualifier	Analysis date	Total Time	Qualifier
7	4/28/17 13:00	4/29/17 13:09	48.15	J/UJ/P (det)			
8	4/28/17 12:00	4/29/17 12:51	48.85	J/UJ/P (det)			

## VALIDATION FINDINGS WORKSHEET

### Blanks

METHOD: Inorganics, Method See Cover

Conc. units: mg/L Associated Samples: 1 - 9

Analyte	Blank ID	Blank ID	Blank Action Limit													
				2	3	4	6	7	8	9						
	PB	ICB/CCB (mg/L)														
Cr6+	0.00091900		0.004595	0.0014	0.0029	0.0032	0.0036	0.00080	0.0018	0.0010						

Conc. units: mg/L Associated Samples: 6

Analyte	Blank ID	Blank ID	Blank Action Limit													
				6												
	PB	ICB/CCB (mg/L)														
Cr6+		0.00098800	0.00494	0.0036												

Conc. units: mg/L Associated Samples: 2, 4, 9

Analyte	Blank ID	Blank ID	Blank Action Limit													
				2	4	9										
	PB	ICB/CCB (mg/L)														
Cr6+		0.00085000	0.00425	0.0014	0.0032	0.0010										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
 All contaminants within five times the method blank concentration were qualified as not detected, "U".



**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**

**Inorganics:** Method See Cover

Analyte	Concentration (mg/L)		RPD
	4	6	
Chloride	12	12	0
Sulfate	10	10	0
Nitrate as N	4.0	4.0	0
Perchlorate	0.94 <i>µg/L</i>	0.67 <i>µg/L</i>	34
Hexavalent Chromium	0.0032	0.0036	12
Alkalinity total	150	150	0
pH	8.36 <i>(pH units)</i>	8.29 <i>(pH units)</i>	1
TDS	230	240	4

Analyte	Concentration (mg/L)		RPD
	8	12	
Chloride	120	120	0
Sulfate	180	180	0
Nitrate as N	11	11	0
Perchlorate	4.8 <i>µg/L</i>	3.8 <i>µg/L</i>	23
Nitrite as N	1.4	1.6	13
Hexavalent Chromium	0.0018	0.0017	6
Alkalinity total	250	250	0
pH	7.92 <i>(pH units)</i>	8.09 <i>(pH units)</i>	2
TDS	820	850	4



LDC #: 38952DL

**Validation Findings Worksheet  
Initial and Continuing Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

**Method:** Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of Cr<sup>6+</sup> was recalculated. Calibration date: 4/19/17

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution  
 True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (ug/L)	Area	Recalculated	Reported	Acceptable (Y/N)
					r or r <sup>2</sup>	r or r <sup>2</sup>	
Initial calibration	Cr <sup>6+</sup>	s1	0	-0.00008	0.999817	0.999817	Y
		s2	0.002	0.00131			
		s3	0.005	0.00354			
		s4	0.025	0.01847			
		s5	0.05	0.03756			
		s6	0.1	0.07325			
Calibration verification	SO <sub>4</sub> <sup>-</sup>	ICV	99.538mg/L	100.00mg/L	99.57%	98.37%	Y
Calibration verification	NO <sub>2</sub>	CCV	0.50986mg/L	0.50000mg/L	102.7%	102.7%	Y
Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Level IV Recalculation Worksheet**

**METHOD:** Inorganics, Method See Cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$
 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).  
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$
 Where, S = Original sample concentration  
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD	%R / RPD	
LCS	Laboratory control sample	Cr <sup>6+</sup>	0.0516 mg/L	0.050000 mg/L	103%	103%	Y
MS	Matrix spike sample 23-1	NO <sub>3</sub>	SR = 10.618 mg/L (SSR-SR) 21.1834 - 10.618 = 10.5654 mg/L	10.101 mg/L	105%	105%	Y
MSD	Duplicate sample	NO <sub>3</sub>	21.2622 mg/L	Found: 21.1834 mg/L	0.155% RPD	0.362% RPD	Y

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**VALIDATION FINDINGS WORKSHEET**  
**Sample Calculation Verification**

**METHOD:** Inorganics, Method See Cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- Y N N/A Have results been reported and calculated correctly?
- Y N N/A Are results within the calibrated range of the instruments?
- Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for Cl<sup>-</sup> reported with a positive detect were recalculated and verified using the following equation:

Concentration =

Recalculation:

$$Cl^- = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

a = 0.0003  
 b = 0.1959  
 c = -0.0154

Cl<sup>-</sup> = 96.6362 mg/L

#	Sample ID	Analyte	Reported Concentration ( )	Calculated Concentration ( )	Acceptable (Y/N)
	1	pH	7.62 pttunits	7.62 pttunits	Y
	1	TDS	770 mg/L	770 mg/L	Y
	1	Cl <sup>-</sup>	97 mg/L	97 mg/L	Y
	1	NO <sub>3</sub>	11 mg/L	11 mg/L	Y
	1	SO <sub>4</sub>	170 mg/L	170 mg/L	Y
	9	ClO <sub>4</sub> <sup>-</sup>	5.0 ug/L	5.0 ug/L	Y
	9	NO <sub>2</sub>	0.51 mg/L	0.51 mg/L	Y
	9	Cr <sup>6+</sup>	0.0010 mg/L	0.0013 mg/L	Y
	9	Alk <sup>-</sup>	220 mg/L	220 mg/L	Y

Note: \_\_\_\_\_

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 2Q2017

**LDC Report Date:** July 6, 2017

**Parameters:** Volatiles

**Validation Level:** Level III & IV

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-11629

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
TB-11-050117	1711629-01	Water	05/01/17
MW-11-1	1711629-02	Water	05/01/17
MW-11-2	1711629-03	Water	05/01/17
MW-11-3**	1711629-04**	Water	05/01/17
MW-11-4	1711629-05	Water	05/01/17
MW-11-5	1711629-06	Water	05/01/17
MW-12-1	1711629-07	Water	05/01/17
MW-12-2	1711629-08	Water	05/01/17
MW-12-3	1711629-09	Water	05/01/17
MW-12-4	1711629-10	Water	05/01/17
MW-12-5	1711629-11	Water	05/01/17
MW-24-1	1711629-12	Water	05/01/17
EB-10-050117	1711629-13	Water	05/01/17
MW-11-2MS	1711629-03MS	Water	05/01/17
MW-11-2MSD	1711629-03MSD	Water	05/01/17
MW-12-3MS	1711629-09MS	Water	05/01/17
MW-12-3MSD	1711629-09MSD	Water	05/01/17

\*\*Indicates sample underwent Level IV review

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method 524.2

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV evaluation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Date	Compound	%D	Associated Samples	Flag	A or P
05/07/17 (07MAY02)	Methyl iodide	43.5	TB-11-050117 MW-11-1 MW-11-2 MW-11-3** MW-11-4 MW-11-5 MW-12-1	UJ (all non-detects)	P
05/08/17 (08MAY02)	Bromomethane	63.1	MW-12-2 MW-12-3 MW-12-4 MW-12-5 MW-24-1 EB-10-050117	UJ (all non-detects)	P
05/08/17 (08MAY03)	trans-1,4-Dichloro-2-butene Methyl iodide	53.3 49.3	MW-12-2 MW-12-3 MW-12-4 MW-12-5 MW-24-1 EB-10-050117	UJ (all non-detects) UJ (all non-detects)	P

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## VI. Field Blanks

Sample TB-11-050117 was identified as a trip blank. No contaminants were found.

Sample EB-10-050117 was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Compound	Concentration
EB-10-050117	Chloroform	9.1 ug/L

## VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **IX. Laboratory Control Samples**

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

## **X. Field Duplicates**

No field duplicates were identified in this SDG.

## **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

## **XII. Compound Quantitation**

All compound quantitations met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

## **XIII. Target Compound Identifications**

All target compound identifications met validation criteria for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

## **XIV. System Performance**

The system performance was acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

## **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due ICV %D and continuing calibration %D, data were qualified as estimated in thirteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**NASA JPL, 2Q2017**

**Volatiles - Data Qualification Summary - SDG 17-11629**

Sample	Compound	Flag	A or P	Reason
TB-11-050117 MW-11-1 MW-11-2 MW-11-3** MW-11-4 MW-11-5 MW-12-1 MW-12-2 MW-12-3 MW-12-4 MW-12-5 MW-24-1 EB-10-050117	Pentachloroethane	UJ (all non-detects)	P	Initial calibration verification (%D)
TB-11-050117 MW-11-1 MW-11-2 MW-11-3** MW-11-4 MW-11-5 MW-12-1	Bromomethane Methyl iodide	UJ (all non-detects)	P	Continuing calibration (%D)
MW-12-2 MW-12-3 MW-12-4 MW-12-5 MW-24-1 EB-10-050117	Bromomethane trans-1,4-Dichloro-2-butene Methyl iodide	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	P	Continuing calibration (%D)

**NASA JPL, 2Q2017**

**Volatiles - Laboratory Blank Data Qualification Summary - SDG 17-11629**

No Sample Data Qualified in this SDG







Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

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Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

TB-11-050117

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-01 File ID: 07MAY15.D  
Sampled: 05/01/17 06:30 Prepared: 05/07/17 10:06 Analyzed: 05/07/17 11:51  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIE0786 Sequence: 1707891 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

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Project Number: 2Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

TB-11-050117

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-01 File ID: 07MAY15.D  
Sampled: 05/01/17 06:30 Prepared: 05/07/17 10:06 Analyzed: 05/07/17 11:51  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIE0786 Sequence: 1707891 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>US</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>US</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.5200	95.2	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.7700	97.7	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.2400	92.4	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	214789	6.58	205570	6.58	
Chlorobenzene-d5 (IS)	79524	9.62	83858	9.62	
1,4-Difluorobenzene (IS)	329069	7.39	323277	7.39	

\* Values outside of QC limits

*Handwritten signature/initials*



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Powell, OH 43065

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Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

TB-11-050117

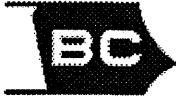
Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-01 File ID: 07MAY15.D  
Sampled: 05/01/17 06:30 Prepared: 05/07/17 10:06 Analyzed: 05/07/17 11:51  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIE0786 Sequence: 1707891 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits







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Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

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Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-11-1

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-02 File ID: 07MAY16.D  
Sampled: 05/01/17 14:45 Prepared: 05/07/17 10:06 Analyzed: 05/07/17 12:14  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B/E0786 Sequence: 1707891 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>U</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>U</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.6800	96.8	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.9100	99.1	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.2400	92.4	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	212338	6.58	205570	6.58	
Chlorobenzene-d5 (IS)	79428	9.62	83858	9.62	
1,4-Difluorobenzene (IS)	311249	7.39	323277	7.39	

\* Values outside of QC limits











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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-11-2

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-03 File ID: 07MAY14.D  
Sampled: 05/01/17 14:20 Prepared: 05/07/17 10:06 Analyzed: 05/07/17 11:28  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B/E0786 Sequence: 1707891 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>UT</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.0400	90.4	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.8200	98.2	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.9700	99.7	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	218225	6.58	205570	6.58	
Chlorobenzene-d5 (IS)	78361	9.62	83858	9.62	
1,4-Difluorobenzene (IS)	323026	7.39	323277	7.39	

\* Values outside of QC limits

*7/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-11-2

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-03 File ID: 07MAY14.D  
Sampled: 05/01/17 14:20 Prepared: 05/07/17 10:06 Analyzed: 05/07/17 11:28  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIE0786 Sequence: 1707891 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

7/6/17





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-11-3

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-04 File ID: 07MAY17.D  
Sampled: 05/01/17 13:40 Prepared: 05/07/17 10:06 Analyzed: 05/07/17 12:38  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B/E0786 Sequence: 1707891 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.19	J
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.30	J
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.79	
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.29	J
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.42	J
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

7/6/17





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-11-3

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-04 File ID: 07MAY17.D  
Sampled: 05/01/17 13:40 Prepared: 05/07/17 10:06 Analyzed: 05/07/17 12:38  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIE0786 Sequence: 1707891 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

7/6/17 *[Signature]*













**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-11-5

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-06 File ID: 07MAY19.D  
Sampled: 05/01/17 12:25 Prepared: 05/07/17 10:06 Analyzed: 05/07/17 13:24  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B/E0786 Sequence: 1707891 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>UT</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

*7/6/17 9*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 11:11:22AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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
**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-11-5

Laboratory:	<u>BC Laboratories</u>	SDG:	<u>17-11629</u>				
Client:	<u>Tidewater Inc.</u>	Project:	<u>JPL- GW Monitoring Wells</u>				
Matrix:	<u>Water</u>	Laboratory ID:	<u>1711629-06</u>	File ID:	<u>07MAY19.D</u>		
Sampled:	<u>05/01/17 12:25</u>	Prepared:	<u>05/07/17 10:06</u>	Analyzed:	<u>05/07/17 13:24</u>		
Solids:		Preparation:	<u>EPA 5030 Water MS</u>	Initial/Final:	<u>25 ml / 25 ml</u>		
Batch:	<u>BIE0786</u>	Sequence:	<u>1707891</u>	Calibration:	<u>1704006</u>	Instrument:	<u>MS-V5</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

*7/6/17* 









Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET

EPA-524.2

MW-12-1

Laboratory: BC Laboratories      SDG: 17-11629  
Client: Tidewater Inc.      Project: JPL- GW Monitoring Wells  
Matrix: Water      Laboratory ID: 1711629-07      File ID: 07MAY20.D  
Sampled: 05/01/17 09:15      Prepared: 05/07/17 10:06      Analyzed: 05/07/17 13:47  
Solids:      Preparation: EPA 5030 Water MS      Initial/Final: 25 ml / 25 ml  
Batch: BIE0786      Sequence: 1707891      Calibration: 1704006      Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>u</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>u</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.000	100	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.5900	95.9	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	8.9300	89.3	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	200767	6.58	205570	6.58	
Chlorobenzene-d5 (IS)	79394	9.62	83858	9.62	
1,4-Difluorobenzene (IS)	307397	7.39	323277	7.39	

\* Values outside of QC limits





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Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-12-2

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-08 File ID: 08MAY13.D  
Sampled: 05/01/17 08:45 Prepared: 05/07/17 10:06 Analyzed: 05/08/17 11:01  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIE0786 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>US</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.14	U
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U





Tidewater Inc.
3761 Attucks Drive
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM
Project: JPL- GW Monitoring Wells
Project Number: 2Q17
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET
EPA-524.2

MW-12-2

Laboratory: BC Laboratories SDG: 17-11629
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells
Matrix: Water Laboratory ID: 1711629-08 File ID: 08MAY13.D
Sampled: 05/01/17 08:45 Prepared: 05/07/17 10:06 Analyzed: 05/08/17 11:01
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml
Batch: BIE0786 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

Table with 5 columns: CAS NO., COMPOUND, DILUTION, CONC. (ug/L), Q. Lists various compounds like Carbon disulfide, trans-1,4-Dichloro-2-butene, Diethyl ether, etc.

Table with 6 columns: SYSTEM MONITORING COMPOUND, ADDED (ug/L), CONC (ug/L), % REC, QC LIMITS, Q. Lists surrogate compounds like 1,2-Dichloroethane-d4.

Table with 6 columns: INTERNAL STANDARD, AREA, RT, REF AREA, REF RT, Q. Lists internal standards like Pentafluorobenzene (IS).

\* Values outside of QC limits

Handwritten signature/initials: 7/6/17







Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

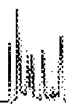
ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-12-3

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-09 File ID: 08MAY07.D  
Sampled: 05/01/17 08:15 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 08:42  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIE0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U <i>US</i>
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.53	
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	0.58	
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

2/6/17 9



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

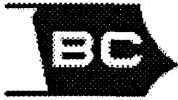
ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-12-3

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-09 File ID: 08MAY07.D  
Sampled: 05/01/17 08:15 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 08:42  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B/E0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

7/6/17



Tidewater Inc.
3761 Attucks Drive
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM
Project: JPL- GW Monitoring Wells
Project Number: 2Q17
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET
EPA-524.2

MW-12-3

Laboratory: BC Laboratories SDG: 17-11629
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells
Matrix: Water Laboratory ID: 1711629-09 File ID: 08MAY07.D
Sampled: 05/01/17 08:15 Prepared: 05/08/17 07:00 Analyzed: 05/08/17 08:42
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml
Batch: B/E0790 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

Table with 5 columns: CAS NO., COMPOUND, DILUTION, CONC. (ug/L), Q. Lists various compounds like Carbon disulfide, trans-1,4-Dichloro-2-butene, Diethyl ether, etc.

Table with 6 columns: SYSTEM MONITORING COMPOUND, ADDED (ug/L), CONC (ug/L), % REC, QC LIMITS, Q. Lists surrogate compounds like 1,2-Dichloroethane-d4.

Table with 6 columns: INTERNAL STANDARD, AREA, RT, REF AREA, REF RT, Q. Lists internal standards like Pentafluorobenzene (IS).

\* Values outside of QC limits

Handwritten signature/initials







Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-12-4

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-10 File ID: 08MAY14.D  
Sampled: 05/01/17 07:35 Prepared: 05/07/17 10:06 Analyzed: 05/08/17 11:24  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B/E0786 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethane	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

7/6/17 D



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

MW-12-4

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-10 File ID: 08MAY14.D  
Sampled: 05/01/17 07:35 Prepared: 05/07/17 10:06 Analyzed: 05/08/17 11:24  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B/E0786 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>UT</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>UT</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>UT</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.8000	98.0	75 - 125	
Toluene-d8 (Surrogate)	10.000	10.080	101	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.7100	97.1	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	186335	6.58	191226	6.58	
Chlorobenzene-d5 (IS)	67620	9.62	75608	9.62	
1,4-Difluorobenzene (IS)	281473	7.39	295651	7.38	

\* Values outside of QC limits

*7/6/17*









**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-12-5

Laboratory: BC Laboratories SDG: 17-11629  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711629-11 File ID: 08MAY15.D  
 Sampled: 05/01/17 07:15 Prepared: 05/07/17 10:06 Analyzed: 05/08/17 11:47  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: B/E0786 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethane	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

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Powell, OH 43065

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Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-24-1

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-12 File ID: 08MAY16.D  
Sampled: 05/01/17 10:30 Prepared: 05/07/17 10:06 Analyzed: 05/08/17 12:10  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIE0786 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
71-43-2	Benzene	1	0.11	U
108-86-1	Bromobenzene	1	0.15	U
74-97-5	Bromochloromethane	1	0.27	U
75-27-4	Bromodichloromethane	1	0.20	U
75-25-2	Bromoform	1	0.46	U
74-83-9	Bromomethane	1	0.20	U UT
104-51-8	n-Butylbenzene	1	0.15	U
135-98-8	sec-Butylbenzene	1	0.13	U
98-06-6	tert-Butylbenzene	1	0.18	U
56-23-5	Carbon tetrachloride	1	0.17	U
108-90-7	Chlorobenzene	1	0.14	U
75-00-3	Chloroethane	1	0.17	U
67-66-3	Chloroform	1	2.4	
74-87-3	Chloromethane	1	0.11	U
95-49-8	2-Chlorotoluene	1	0.14	U
106-43-4	4-Chlorotoluene	1	0.093	U
124-48-1	Dibromochloromethane	1	0.22	U
96-12-8	1,2-Dibromo-3-chloropropane	1	0.89	U
106-93-4	1,2-Dibromoethane	1	0.22	U
74-95-3	Dibromomethane	1	0.23	U
95-50-1	1,2-Dichlorobenzene	1	0.21	U
541-73-1	1,3-Dichlorobenzene	1	0.16	U
106-46-7	1,4-Dichlorobenzene	1	0.15	U
75-71-8	Dichlorodifluoromethane	1	0.15	U
75-34-3	1,1-Dichloroethane	1	0.15	U
107-06-2	1,2-Dichloroethane	1	0.17	U
75-35-4	1,1-Dichloroethene	1	0.27	U
156-59-2	cis-1,2-Dichloroethene	1	0.27	U
156-60-5	trans-1,2-Dichloroethene	1	0.17	U
78-87-5	1,2-Dichloropropane	1	0.15	U
142-28-9	1,3-Dichloropropane	1	0.13	U
594-20-7	2,2-Dichloropropane	1	0.18	U

7/6/17 8



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Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-24-1

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-12 File ID: 08MAY16.D  
Sampled: 05/01/17 10:30 Prepared: 05/07/17 10:06 Analyzed: 05/08/17 12:10  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIE0786 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

7/6/17 [Signature]



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

MW-24-1

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-12 File ID: 08MAY16.D  
Sampled: 05/01/17 10:30 Prepared: 05/07/17 10:06 Analyzed: 05/08/17 12:10  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B/E0786 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>US</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>US</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>US</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	10.030	100	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.9400	99.4	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	8.9500	89.5	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	185482	6.58	191226	6.58	
Chlorobenzene-d5 (IS)	73659	9.62	75608	9.62	
1,4-Difluorobenzene (IS)	276762	7.38	295651	7.38	

\* Values outside of QC limits

*7/6/17*









**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

EB-10-050117

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-13 File ID: 08MAY17.D  
Sampled: 05/01/17 15:00 Prepared: 05/07/17 10:06 Analyzed: 05/08/17 12:33  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: B/E0786 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
563-58-6	1,1-Dichloropropene	1	0.19	U
10061-01-5	cis-1,3-Dichloropropene	1	0.14	U
10061-02-6	trans-1,3-Dichloropropene	1	0.13	U
100-41-4	Ethylbenzene	1	0.15	U
87-68-3	Hexachlorobutadiene	1	0.20	U
98-82-8	Isopropylbenzene	1	0.14	U
99-87-6	p-Isopropyltoluene	1	0.14	U
75-09-2	Methylene chloride	1	0.21	U
1634-04-4	Methyl t-butyl ether	1	0.14	U
91-20-3	Naphthalene	1	0.16	U
103-65-1	n-Propylbenzene	1	0.12	U
100-42-5	Styrene	1	0.12	U
630-20-6	1,1,1,2-Tetrachloroethane	1	0.21	U
79-34-5	1,1,2,2-Tetrachloroethane	1	0.17	U
127-18-4	Tetrachloroethene	1	0.23	U
108-88-3	Toluene	1	0.17	U
87-61-6	1,2,3-Trichlorobenzene	1	0.19	U
120-82-1	1,2,4-Trichlorobenzene	1	0.15	U
71-55-6	1,1,1-Trichloroethane	1	0.21	U
79-00-5	1,1,2-Trichloroethane	1	0.21	U
79-01-6	Trichloroethene	1	0.19	U
75-69-4	Trichlorofluoromethane	1	0.14	U
96-18-4	1,2,3-Trichloropropane	1	0.78	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1	0.19	U
95-63-6	1,2,4-Trimethylbenzene	1	0.17	U
108-67-8	1,3,5-Trimethylbenzene	1	0.14	U
75-01-4	Vinyl chloride	1	0.18	U
67-64-1	Acetone	1	6.6	U
107-13-1	Acrylonitrile	1	1.5	U
107-05-1	Allyl chloride	1	0.47	U
994-05-8	t-Amyl Methyl ether	1	0.19	U
75-65-0	t-Butyl alcohol	1	9.4	U

7/4/17 9



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

ORGANIC ANALYSIS DATA SHEET  
EPA-524.2

EB-10-050117

Laboratory: BC Laboratories SDG: 17-11629  
Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
Matrix: Water Laboratory ID: 1711629-13 File ID: 08MAY17.D  
Sampled: 05/01/17 15:00 Prepared: 05/07/17 10:06 Analyzed: 05/08/17 12:33  
Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
Batch: BIE0786 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
75-15-0	Carbon disulfide	1	0.48	U
110-57-6	trans-1,4-Dichloro-2-butene	1	1.8	U <i>US</i>
60-29-7	Diethyl ether	1	0.33	U
97-63-2	Ethyl methacrylate	1	1.3	U
637-92-3	Ethyl t-butyl ether	1	0.32	U
67-72-1	Hexachloroethane	1	0.11	U
591-78-6	2-Hexanone	1	5.0	U
126-98-7	Methacrylonitrile	1	2.3	U
78-93-3	Methyl ethyl ketone	1	3.3	U
74-88-4	Methyl iodide	1	1.1	U <i>US</i>
108-10-1	Methyl isobutyl ketone	1	2.4	U
80-62-6	Methyl methacrylate	1	1.2	U
76-01-7	Pentachloroethane	1	0.63	U <i>US</i>
107-12-0	Propionitrile	1	6.2	U
109-99-9	Tetrahydrofuran	1	5.2	U
179601-23-1	p- & m-Xylenes	1	0.34	U
95-47-6	o-Xylene	1	0.13	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
1,2-Dichloroethane-d4 (Surrogate)	10.000	9.9600	99.6	75 - 125	
Toluene-d8 (Surrogate)	10.000	9.9200	99.2	80 - 120	
4-Bromofluorobenzene (Surrogate)	10.000	9.3900	93.9	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene (IS)	191710	6.58	191226	6.58	
Chlorobenzene-d5 (IS)	70139	9.62	75608	9.62	
1,4-Difluorobenzene (IS)	287316	7.39	295651	7.38	

\* Values outside of QC limits

*7/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 11:11:22AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**ORGANIC ANALYSIS DATA SHEET**  
**EPA-524.2**

EB-10-050117

Laboratory: BC Laboratories SDG: 17-11629  
 Client: Tidewater Inc. Project: JPL- GW Monitoring Wells  
 Matrix: Water Laboratory ID: 1711629-13 File ID: 08MAY17.D  
 Sampled: 05/01/17 15:00 Prepared: 05/07/17 10:06 Analyzed: 05/08/17 12:33  
 Solids: Preparation: EPA 5030 Water MS Initial/Final: 25 ml / 25 ml  
 Batch: BIE0786 Sequence: 1707902 Calibration: 1704006 Instrument: MS-V5

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
107-14-2	Chloroacetonitrile	1		U
109-69-3	1-Chlorobutane	1		U
513-88-2	1,1-Dichloropropanone	1		U
96-33-3	Methyl acrylate	1		U
98-95-3	Nitrobenzene	1		U
79-46-9	2-Nitropropane	1		U

\* Values outside of QC limits

7/4/17 8

LDC #: 38952E1

## VALIDATION COMPLETENESS WORKSHEET

SDG #: 17-11629

Level III/IV

Laboratory: BC Laboratories, Inc.

Date: 4/20/17

Page: 1 of 2

Reviewer: J

2nd Reviewer: KK

METHOD: GC/MS Volatiles (EPA Method 524.2)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A MW	RSO ≤ 20%. $r^2$ 1 CV ≤ 30%
IV.	Continuing calibration	MW	CV ≤ 20%
V.	Laboratory Blanks	A	
VI.	Field blanks	NW	TB=1. EB=13
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for Level III validation.
XIII.	Target compound identification	A	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

\*\* Indicates sample was underwent Level IV review

	Client ID	Lab ID	Matrix	Date
1	TB-11-050117	1711629-01	Water	05/01/17
2	MW-11-1	1711629-02	Water	05/01/17
3	MW-11-2	1711629-03	Water	05/01/17
4	MW-11-3**	1711629-04**	Water	05/01/17
5	MW-11-4	1711629-05	Water	05/01/17
6	MW-11-5	1711629-06	Water	05/01/17
7	MW-12-1	1711629-07	Water	05/01/17
8	MW-12-2	1711629-08	Water	05/01/17
9	MW-12-3	1711629-09	Water	05/01/17
10	MW-12-4	1711629-10	Water	05/01/17
11	MW-12-5	1711629-11	Water	05/01/17
12	MW-24-1	1711629-12	Water	05/01/17
13	EB-10-050117	1711629-13	Water	05/01/17

LDC #: 38952E1

# VALIDATION COMPLETENESS WORKSHEET

SDG #: 17-11629

Level III/IV

Laboratory: BC Laboratories, Inc.

Date: 4/26/17

Page: 3 of 3

Reviewer: [Signature]

2nd Reviewer: KK

METHOD: GC/MS Volatiles (EPA Method 524.2)

	Client ID	Lab ID	Matrix	Date
14	MW-11-2MS	1711629-03MS	Water	05/01/17
15	MW-11-2MSD	1711629-03MSD	Water	05/01/17
16	MW-12-3MS	1711629-09MS	Water	05/01/17
17	MW-12-3MSD	1711629-09MSD	Water	05/01/17
18				
19				
20				
21				
22				

Notes:


**Method:** Volatiles (EPA Method 524.2)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
Were all technical holding times met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was cooler temperature criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>II. GC/MS Instrument performance check</b>				
Was a tune check performed prior to establishing and/or re-establishing an initial calibration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the BFB performance results reviewed and found to be within the specified criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>III. Initial calibration</b>				
Did the laboratory perform at least 5 point calibration prior to sample analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent relative standard deviations (%RSD) < 20%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IIIa. Initial Calibration Verification calibration</b>				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) < 30%?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>IV. Continuing calibration</b>				
Was a continuing calibration standard analyzed at the beginning of each analysis batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all percent differences (%D) of continuing calibration < 30%?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>V. Laboratory Blanks</b>				
Was a laboratory blank associated with every sample in this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was a laboratory blank analyzed with each analysis batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>VI. Field blanks</b>				
Field blanks were identified in this SDG.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Target compounds were detected in the field blanks.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>VII. Surrogate spikes</b>				
Were all surrogate %R within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>VIII. Matrix spike/Matrix spike duplicates</b>				
Was a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IX. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

LDC #: 387523/

**VALIDATION FINDINGS CHECKLIST**

Page: 2 of 2  
 Reviewer: [Signature]  
 2nd Reviewer: [Signature]

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were the LCS percent recoveries (%R) within 70-130%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>X. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Target compounds were detected in the field duplicates.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>XI. Internal standards</b>				
Were internal standard area counts within +/-30% of the area of the most recent continuing calibration standard and +/-50% of the average peak area in the initial calibration?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were retention times within +/-30 seconds of the associated calibration standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XII. Compound quantitation/CRQLs</b>				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) or regression equations used to quantitate the compound?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIII. Target compound identification</b>				
Were relative retention times (RRT's) within + 0.06 RRT units of the standard?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were chromatogram peaks verified and accounted for?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XIV. System performance</b>				
System performance was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>XV. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



## TARGET COMPOUND WORKSHEET

### METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl chloride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO. 1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3-Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methylcyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.





LDC #: 38902E1  
SDG #: \_\_\_\_\_

VALIDATION FINDINGS WORKSHEET  
Field Blanks

Page: 1 of 1  
Reviewer: Q  
2nd reviewer: KK

METHOD: GC/MS VOA (EPA SW-846 Method ~~8260B~~ 504.2)

Y  N  N/A Were field blanks identified in this SDG?  
 Y  N  N/A Were target compounds detected in the field blanks?

Sample: 1B Field Blank / Trip Blank / Rinsate / Other ZB (circle one)

Compound	Concentration Units ( <u>ug</u> )
<u>K</u>	<u>9.1</u>

Sample: \_\_\_\_\_ Field Blank / Trip Blank / Rinsate / Other \_\_\_\_\_ (circle one)

Compound	Concentration Units ( )

Sample: \_\_\_\_\_ Field Blank / Trip Blank / Rinsate / Other \_\_\_\_\_ (circle one)

Compound	Concentration Units ( )

**VALIDATION FINDINGS WORKSHEET**  
**Initial Calibration Calculation Verification**

METHOD: GCMS 524.2

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

$$\text{RRF} = (\text{Ax})(\text{Cis})/(\text{Ais})(\text{Cx})$$

$$\text{average RRF} = \text{sum of the RRFs}/\text{number of standards}$$

$$\% \text{RSD} = 100 * (\text{S}/\text{X})$$

Where:

Ax = Area of compound

Cx = Concentration of compound

S = Standard deviation of the RRFs

X = Mean of the RRFs

Ais = Area of associated internal standard

Cis = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported (RRF 10 std)	Recalculated (RRF 10 std)	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL	4/13/2017	C	0.6738509	0.6738509	0.6507252	0.6507252	5.77474	5.77474
			CC	0.7608310	0.7608310	0.7401395	0.7401395	4.89008	4.89008
			EE	1.7287610	1.7287610	1.6995870	1.6995870	8.26667	8.26667

#	Standard ID	Calibration Date	Compound	Reported (RRF 160/40/8 std)	Recalculated (RRF160/40/8 std)	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL	4/13/2017	F	0.0343799	0.0343799	0.03573499	0.03573499	12.094280	12.094280
			VVV	0.0704187	0.0704187	0.07240331	0.07240331	11.825840	11.825840
			ZZZ	0.5104179	0.5104179	0.48355100	0.48355100	10.086370	10.086370

## VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260C)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

$$\% \text{ Difference} = 100 * (\text{ave. RRF} - \text{RRF}) / \text{ave. RRF}$$

$$\text{RRF} = (A_x)(C_{is}) / (A_{is})(C_x)$$

Where: ave. RRF = initial calibration average RRF  
RRF = continuing calibration RRF  
A<sub>x</sub> = Area of compound,  
C<sub>x</sub> = Concentration of compound,  
A<sub>is</sub> = Area of associated internal standard  
C<sub>is</sub> = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	<u>OTMA/02</u>	<u>5/7/17</u>	<u>CC</u> (1st internal standard)	<u>0.650752</u>	<u>0.644358</u>	<u>0.644358</u>	<u>1.0</u>	<u>1.0</u>
			<u>CC</u> (2nd internal standard)	<u>0.7401395</u>	<u>0.7718904</u>	<u>0.7718903</u>	<u>4.3</u>	<u>4.3</u>
			<u>EE</u> (3rd internal standard)	<u>1.6995870</u>	<u>1.749114</u>	<u>1.749114</u>	<u>2.9</u>	<u>2.9</u>
			(4th internal standard)					
2	<u>OTMA/03</u>	<u>5/7/17</u>	<u>F</u> (1st internal standard)	<u>0.03573499</u>	<u>0.03563518</u>	<u>0.0356751</u>	<u>0.3</u>	<u>0.3</u>
			<u>VVVV</u> (2nd internal standard)	<u>0.07240331</u>	<u>0.07095424</u>	<u>0.0709572</u>	<u>2.0</u>	<u>2.0</u>
			<u>2222</u> (3rd internal standard)	<u>0.48355700</u>	<u>0.4758192</u>	<u>0.4758191</u>	<u>1.6</u>	<u>1.6</u>
			(4th internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the calculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Surrogate Results Verification**

**METHOD:** GC/MS VOA (EPA ~~8260~~ ~~846~~ Method ~~8260C~~ 524.2)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS \* 100

Where: SF = Surrogate Found  
 SS = Surrogate Spiked

Sample ID: 4

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4	10.00	10.03	100	100	0
Toluene-d8	↓	9.93	99.3	99.3	↓
Bromofluorobenzene	↓	9.53	95.3	95.3	↓

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID: \_\_\_\_\_

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates Results Verification**

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260G) 524.2)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* (SSC - SC)/SA

Where: SSC = Spiked sample concentration  
 SA = Spike added

SC = Sample concentration

RPD = | MSC - MSC | \* 2 / (MSC + MSC)

MSC = Matrix spike concentration

MSC = Matrix spike duplicate concentration

MS/MSD sample: 14/15

Compound	Spike Added		Sample Concentration	Spiked Sample Concentration		Matrix Spike		Matrix Spike Duplicate		MS/MSD	
	MS	MSD		MS	MSD	Percent Recovery		Percent Recovery		RPD	
						Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	25.000	25.000	ND	27.690	26.480	111	111	106	106	4.47	4.47
Trichloroethene	↓	↓	↓	26.130	25.420	105	105	102	102	2.75	2.75
Benzene	↓	↓	↓	26.940	26.730	108	108	107	107	0.783	0.783
Toluene	↓	↓	↓	27.790	27.070	111	111	108	108	2.62	2.62
Chlorobenzene	↓	↓	↓	27.360	25.460	109	109	102	102	6.80	6.80

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



LDC #: 389522

## VALIDATION FINDINGS WORKSHEET Laboratory Control Sample Results Verification

Page: 1 of 1  
Reviewer: [Signature]  
2nd Reviewer: [Signature]

**METHOD:** GC/MS VOA (EPA SW 846 Method 8260C)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 \* SSC/SA

Where: SSC = Spiked sample concentration  
SA = Spike added

RPD = |LCSC - LCSDC| \* 2 / (LCSC + LCSDC)

LCSC = Laboratory control sample concentration    LCSDC = Laboratory control sample duplicate concentration

LCS ID: B120786-BS1

Compound	Spike Added ( <u>µg/L</u> )		Spiked Sample Concentration ( <u>µg/L</u> )		LCS		LCSD		LCS/LCSD	
	LCS	LCSD	LCS	LCSD	Percent Recovery		Percent Recovery		RPD	
					Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene	<u>25.000</u>	<u>NA</u>	<u>25.590</u>	<u>NA</u>	<u>102</u>	<u>102</u>				
Trichloroethene	↓	↓	<u>26.500</u>	↓	<u>106</u>	<u>106</u>				
Benzene	↓	↓	<u>25.180</u>	↓	<u>101</u>	<u>101</u>				
Toluene	↓	↓	<u>26.340</u>	↓	<u>105</u>	<u>105</u>				
Chlorobenzene	↓	↓	<u>25.630</u>	↓	<u>103</u>	<u>103</u>				

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.



## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 2Q2017  
**LDC Report Date:** July 6, 2017  
**Parameters:** N-Nitrosodimethylamine  
**Validation Level:** Level III  
**Laboratory:** BC Laboratories, Inc./Weck Laboratories, Inc.  
**Sample Delivery Group (SDG):** 17-11629/7E04018

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
MW-24-1	1711629-12/7E04018-01	Water	05/01/17

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

N-Nitrosodimethylamine by Environmental Protection Agency (EPA) Method 1625M

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

Instrument performance was not required by the method.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## **VII. Surrogates**

Surrogates were not required by the method.

### **VIII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

### **IX. Laboratory Control Samples**

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

### **X. Field Duplicates**

No field duplicates were identified in this SDG.

### **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

### **XII. Compound Quantitation**

Raw data were not reviewed for Level III validation.

### **XIII. Target Compound Identifications**

Raw data were not reviewed for Level III validation.

### **XIV. System Performance**

Raw data were not reviewed for Level III validation.

### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**NASA JPL, 2Q2017**

**N-Nitrosodimethylamine - Data Qualification Summary - SDG 17-11629/7E04018**

No Sample Data Qualified in this SDG

**NASA JPL, 2Q2017**

**N-Nitrosodimethylamine - Laboratory Blank Data Qualification Summary - SDG  
17-11629/7E04018**

No Sample Data Qualified in this SDG



# Certificate of Analysis

FINAL REPORT

WECK LABORATORIES, INC.

Work Orders: 7E04018

Report Date: 5/10/2017

Project: 1711629

Received Date: 5/4/2017

Turnaround Time: Normal

Phones: (661) 327-4911

Fax: (661) 327-1918

Attn: Misty Orton

P.O. #:

Client: BC Laboratories  
4100 Atlas Court  
Bakersfield, CA 93308

Billing Code:

Dear Misty Orton,

Enclosed are the results of analyses for samples received 5/04/17 with the Chain-of-Custody document. The samples were received in good condition, at 1.1 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

## Sample Results

Sample:	1711629-12	Sampled: 05/01/17 10:30 by Client					
	7E04018-01 (Water)						
Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier	
Method: EPA 1625M N-Nitrosodimethylamine	Batch ID: W7E0230 Instr: GCMS09 ND	2.0	ng/l	1	Prepared: 05/04/17 08:51 05/08/17 23:12	Analyst: mld	



**METHOD:** GC/MS N-Nitrosodimethylamine (EPA Method 1625M)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	AA	$r^2, 1CV \leq 30\%$
IV.	Continuing calibration	A	$CV \leq 30\%$
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCB/D
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable      ND = No compounds detected      D = Duplicate      SB=Source blank  
 N = Not provided/applicable      R = Rinsate      TB = Trip blank      OTHER:  
 SW = See worksheet      FB = Field blank      EB = Equipment blank

	Client ID	Sub Lab ID	Lab ID	Matrix	Date
1	MW-24-1	7E04018-01	1711629-12	Water	05/01/17
2					
3					
4					
5					
6					
7					
8					

Notes:


**Laboratory Data Consultants, Inc.  
Data Validation Report**

**Project/Site Name:** NASA JPL, 2Q2017

**LDC Report Date:** July 6, 2017

**Parameters:** 1,4-Dioxane

**Validation Level:** Level III

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-11629

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
MW-24-1	1711629-12	Water	05/01/17

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270C

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered not detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. GC/MS Instrument Performance Check**

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

## **III. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination ( $r^2$ ) was greater than or equal to 0.990.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

## **IV. Continuing Calibration**

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## **VII. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

### **VIII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

### **IX. Laboratory Control Samples**

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

### **X. Field Duplicates**

No field duplicates were identified in this SDG.

### **XI. Internal Standards**

All internal standard areas and retention times were within QC limits.

### **XII. Compound Quantitation**

Raw data were not reviewed for Level III validation.

### **XIII. Target Compound Identifications**

Raw data were not reviewed for Level III validation.

### **XIV. System Performance**

Raw data were not reviewed for Level III validation.

### **XV. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

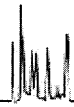
The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**NASA JPL, 2Q2017**  
**1,4-Dioxane - Data Qualification Summary - SDG 17-11629**

No Sample Data Qualified in this SDG

**NASA JPL, 2Q2017**  
**1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG 17-11629**

No Sample Data Qualified in this SDG



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 10:26:11AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**ORGANIC ANALYSIS DATA SHEET**  
**EPA-8270D**

MW-24-1
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-12</u>	File ID: <u>10MAY008.D</u>	
Sampled: <u>05/01/17 10:30</u>	Prepared: <u>05/04/17 18:20</u>	Analyzed: <u>05/10/17 15:37</u>	
Solids:	Preparation: <u>EPA 3510B</u>	Initial/Final: <u>1000 ml / 0.95 ml</u>	
Batch: <u>B/E1077</u>	Sequence: <u>1708245</u>	Calibration: <u>1705022</u>	Instrument: <u>MS-B4</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q
123-91-1	1,4-Dioxane	0.95	0.10	U

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Naphthalene-d8 (Surrogate)	40.000	43.880	110	70 - 130	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
1,4-Dioxane-d8 (IS)	465582	3.14	550509	3.14	

\* Values outside of QC limits

*Handwritten signature/initials*

**METHOD:** GC/MS 1,4-Dioxane (EPA SW846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A A	$r^2$ . 1 CV = 29/0
IV.	Continuing calibration	A	CV = 28/1
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank  
 N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:  
 SW = See worksheet FB = Field blank EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	MW-24-1	1711629-12	Water	05/01/17
2				
3				
4				
5				
6				
7				
8				

Notes:




## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 2Q2017

**LDC Report Date:** July 6, 2017

**Parameters:** Metals

**Validation Level:** Level III & IV

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-11629

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MW-11-1	1711629-02	Water	05/01/17
MW-11-2	1711629-03	Water	05/01/17
MW-11-3**	1711629-04**	Water	05/01/17
MW-11-4	1711629-05	Water	05/01/17
MW-11-5	1711629-06	Water	05/01/17
MW-12-1	1711629-07	Water	05/01/17
MW-12-2	1711629-08	Water	05/01/17
MW-12-3	1711629-09	Water	05/01/17
MW-12-4	1711629-10	Water	05/01/17
MW-12-5	1711629-11	Water	05/01/17
MW-24-1	1711629-12	Water	05/01/17
EB-10-050117	1711629-13	Water	05/01/17
MW-11-2MS	1711629-03MS	Water	05/01/17
MW-11-2MSD	1711629-03MSD	Water	05/01/17
MW-11-2DUP	1711629-03DUP	Water	05/01/17
MW-12-3MS	1711629-09MS	Water	05/01/17
MW-12-3MSD	1711629-09MSD	Water	05/01/17
MW-12-3DUP	1711629-09DUP	Water	05/01/17

\*\*Indicates sample underwent Level IV validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic, Calcium, Chromium, Iron, Lead, Magnesium, Potassium, and Sodium by Environmental Protection Agency (EPA) Methods 200.7/200.8

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

## II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

## III. Instrument Calibration

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits with the following exceptions:

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
05/06/17	CCV (05:02)	Chromium	114 (90-110)	MW-24-1 EB-10-050117	NA	-

## IV. ICP Interference Check Sample Analysis

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Sodium	0.080630 mg/L	MW-11-1 MW-11-2 MW-11-3** MW-11-5 MW-12-1 MW-12-4 MW-12-5
PB (prep blank)	Sodium	0.090068 mg/L	MW-11-4 MW-12-2 MW-12-3 MW-24-1

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Chromium	1.1780 mg/L	MW-24-1 EB-10-050117
ICB/CCB	Chromium Iron	1.6780 mg/L 0.040159 mg/L	MW-24-1 EB-10-050117
ICB/CCB	Iron	0.039803 mg/L	MW-12-3
ICB/CCB	Calcium Sodium	0.014907 mg/L 0.075155 mg/L	MW-11-1
ICB/CCB	Sodium	0.060590 mg/L	MW-11-2 MW-11-3** MW-11-5 MW-12-1 MW-12-4 MW-12-5
ICB/CCB	Potassium	0.11874 mg/L	EB-10-050117

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
MW-24-1	Chromium	4.7 ug/L	4.7U ug/L
EB-10-050117	Chromium Potassium	2.7 ug/L 0.14 mg/L	2.7U ug/L 0.14U mg/L

## VI. Field Blanks

Sample EB-10-050117 was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Analyte	Concentration
EB-10-050117	Chromium Potassium	2.7 ug/L 0.14 mg/L

## **VII. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. For MW-12-3MS/MSD, no data were qualified for Calcium percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration. Relative percent differences (RPD) were within QC limits.

## **VIII. Duplicate Sample Analysis**

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

## **IX. Serial Dilution**

Serial dilution analysis was performed on an associated project sample. Percent differences (%D) were within QC limits.

## **X. Laboratory Control Samples**

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

## **XI. Field Duplicates**

No field duplicates were identified in this SDG.

## **XII. Internal Standards (ICP-MS)**

All internal standard percent recoveries (%R) were within QC limits for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

## **XIII. Sample Result Verification**

All sample result verifications were acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

## **XIV. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to laboratory blank contamination, data were qualified as not detected in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

**NASA JPL, 2Q2017**  
**Metals - Data Qualification Summary - SDG 17-11629**

No Sample Data Qualified in this SDG

**NASA JPL, 2Q2017**  
**Metals - Laboratory Blank Data Qualification Summary - SDG 17-11629**

Sample	Analyte	Modified Final Concentration	A or P
MW-24-1	Chromium	4.7U ug/L	A
EB-10-050117	Chromium Potassium	2.7U ug/L 0.14U mg/L	A



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:57:08AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-11-1
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-02</u>	File ID: <u>PE2 170510-198</u>	
Sampled: <u>05/01/17 14:45</u>	Prepared: <u>05/09/17 12:15</u>	Analyzed: <u>05/10/17 18:39</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BJE1037</u>	Sequence: <u>1708326</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-OP2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	82	1		EPA-200.7

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:57:08AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

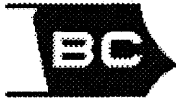
MW-11-2
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-03</u>	File ID: <u>PE2_170510-202</u>	
Sampled: <u>05/01/17 14:20</u>	Prepared: <u>05/09/17 12:15</u>	Analyzed: <u>05/10/17 18:49</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE1037</u>	Sequence: <u>1708326</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-OP2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	280	1		EPA-200.7

*7/6/17 9*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-11-3

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-04

File ID: PE2\_170510-203

Sampled: 05/01/17 13:40

Prepared: 05/09/17 12:15

Analyzed: 05/10/17 18:52

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE1037

Sequence: 1708326

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	210	1		EPA-200.7

7/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:57:08AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-11-4
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-05</u>	File ID: <u>PE2_170510-204</u>	
Sampled: <u>05/01/17 13:10</u>	Prepared: <u>05/09/17 12:15</u>	Analyzed: <u>05/10/17 18:54</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BJE1037</u>	Sequence: <u>1708326</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-OP2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	30	1	U	EPA-200.7

7/6/17 9



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:57:08AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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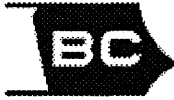
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-11-5
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-06</u>	File ID: <u>PE2 170510-205</u>	
Sampled: <u>05/01/17 12:25</u>	Prepared: <u>05/09/17 12:15</u>	Analyzed: <u>05/10/17 18:57</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE1037</u>	Sequence: <u>1708326</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-OP2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	840	1		EPA-200.7

*7/6/17*



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-12-1

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-07

File ID: PE2 170510-206

Sampled: 05/01/17 09:15

Prepared: 05/09/17 12:15

Analyzed: 05/10/17 19:00

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE1037

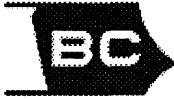
Sequence: 1708326

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	310	1		EPA-200.7

7/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:57:08AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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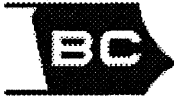
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-12-2
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-08</u>	File ID: <u>PE2 170510-207</u>	
Sampled: <u>05/01/17 08:45</u>	Prepared: <u>05/09/17 12:15</u>	Analyzed: <u>05/10/17 19:02</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BJE1037</u>	Sequence: <u>1708326</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-OP2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	700	1		EPA-200.7

7/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:57:08AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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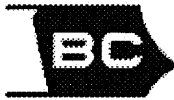
**INORGANIC ANALYSIS DATA SHEET**  
EPA-200.7

MW-12-3
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-09RE1</u>	File ID: <u>PE2_170517-063</u>	
Sampled: <u>05/01/17 08:15</u>	Prepared: <u>05/16/17 08:30</u>	Analyzed: <u>05/17/17 13:01</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE1726</u>	Sequence: <u>1708748</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-OP2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	30	1	U	EPA-200.7

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:57:08AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-12-4
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-10</u>	File ID: <u>PE2 170510-208</u>	
Sampled: <u>05/01/17 07:35</u>	Prepared: <u>05/09/17 12:15</u>	Analyzed: <u>05/10/17 19:05</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE1037</u>	Sequence: <u>1708326</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-OP2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	44	1	J	EPA-200.7

7/6/17



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Environmental Testing Laboratory Since 1949



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:57:08AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

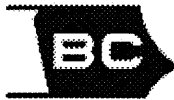
MW-12-5
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-11</u>	File ID: <u>PE2_170510-209</u>	
Sampled: <u>05/01/17 07:15</u>	Prepared: <u>05/09/17 12:15</u>	Analyzed: <u>05/10/17 19:07</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE1037</u>	Sequence: <u>1708326</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-OP2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	710	1		EPA-200.7

*7/6/17*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:57:08AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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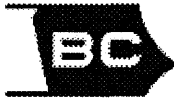
**INORGANIC ANALYSIS DATA SHEET**  
EPA-200.7

MW-24-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-12</u>	File ID: <u>PE2_170511-063</u>	
Sampled: <u>05/01/17 10:30</u>	Prepared: <u>05/10/17 08:00</u>	Analyzed: <u>05/11/17 16:04</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE1125</u>	Sequence: <u>1708385</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-OP2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	430	1		EPA-200.7

7/6/17 *[Signature]*



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Environmental Testing Laboratory Since 1949



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:57:08AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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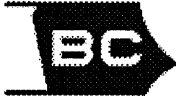
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

EB-10-050117
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-13</u>	File ID: <u>PE2 170511-060</u>	
Sampled: <u>05/01/17 15:00</u>	Prepared: <u>05/10/17 08:00</u>	Analyzed: <u>05/11/17 15:56</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BJE1125</u>	Sequence: <u>1708385</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-OP2</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7439-89-6	Total Recoverable Iron	30	1	U	EPA-200.7

*7/21/17*



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-11-1

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-02

File ID: PE-EL3\_170504-255

Sampled: 05/01/17 14:45

Prepared: 05/04/17 11:30

Analyzed: 05/05/17 02:46

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E0552

Sequence: 1707800

Calibration: UNASSIGNED

Instrument: PE-EL3

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8
7440-47-3	Total Recoverable Chromium	0.50	1	U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

7/6/17 8





**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-11-3

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-04

File ID: PE-EL3 170504-256

Sampled: 05/01/17 13:40

Prepared: 05/04/17 11:30

Analyzed: 05/05/17 02:49

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE0552

Sequence: 1707800

Calibration: UNASSIGNED

Instrument: PE-EL3

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8
7440-47-3	Total Recoverable Chromium	1.1	1	J	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

7/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-11-4

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-05

File ID: PE-EL3\_170504-257

Sampled: 05/01/17 13:10

Prepared: 05/04/17 11:30

Analyzed: 05/05/17 02:53

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B[E0552

Sequence: 1707800

Calibration: UNASSIGNED

Instrument: PE-EL3

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8
7440-47-3	Total Recoverable Chromium	1.2	1	J	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

7/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-11-5

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-06

File ID: PE-EL3 170504-258

Sampled: 05/01/17 12:25

Prepared: 05/04/17 11:30

Analyzed: 05/05/17 02:56

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E0552

Sequence: 1707800

Calibration: UNASSIGNED

Instrument: PE-EL3

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	6.1	1		EPA-200.8
7440-47-3	Total Recoverable Chromium	2.1	1	J	EPA-200.8
7439-92-1	Total Recoverable Lead	0.38	1	J	EPA-200.8

7/6/17



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-12-1

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-07

File ID: PE-EL3\_170504-259

Sampled: 05/01/17 09:15

Prepared: 05/04/17 11:30

Analyzed: 05/05/17 02:59

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE0552

Sequence: 1707800

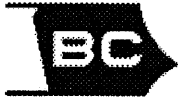
Calibration: UNASSIGNED

Instrument: PE-EL3

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8
7440-47-3	Total Recoverable Chromium	1.8	1	J	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

7/6/17 9





**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-12-2

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-08

File ID: PE-EL3\_170504-260

Sampled: 05/01/17 08:45

Prepared: 05/04/17 11:30

Analyzed: 05/05/17 03:03

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E0552

Sequence: 1707800

Calibration: UNASSIGNED

Instrument: PE-EL3

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8
7440-47-3	Total Recoverable Chromium	1.2	1	J	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

7/9/07



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-12-3

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-09

File ID: PE-EL3\_170504-261

Sampled: 05/01/17 08:15

Prepared: 05/04/17 11:30

Analyzed: 05/05/17 03:06

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E0552

Sequence: 1707800

Calibration: UNASSIGNED

Instrument: PE-EL3

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8
7440-47-3	Total Recoverable Chromium	0.94	1	J	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

4/6/17 9



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-12-4

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-10

File ID: PE-EL3 170504-262

Sampled: 05/01/17 07:35

Prepared: 05/04/17 11:30

Analyzed: 05/05/17 03:10

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE0552

Sequence: 1707800

Calibration: UNASSIGNED

Instrument: PE-EL3

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	1.4	1	J	EPA-200.8
7440-47-3	Total Recoverable Chromium	1.1	1	J	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

7/6/17



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-12-5

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-11

File ID: PE-EL3 170504-263

Sampled: 05/01/17 07:15

Prepared: 05/04/17 11:30

Analyzed: 05/05/17 03:13

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E0552

Sequence: 1707800

Calibration: UNASSIGNED

Instrument: PE-EL3

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	1.8	1	J	EPA-200.8
7440-47-3	Total Recoverable Chromium	1.8	1	J	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

7/6/17



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-24-1

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-12

File ID: PE\_EL2\_170505-278

Sampled: 05/01/17 10:30

Prepared: 05/04/17 11:30

Analyzed: 05/06/17 04:55

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E0553

Sequence: 1707911

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	4.7	1	U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

7/6/17



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

MW-24-1

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-12

File ID: PE\_EL2\_170509-186

Sampled: 05/01/17 10:30

Prepared: 05/04/17 11:30

Analyzed: 05/10/17 05:15

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B[E0553

Sequence: 1708142

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.92	1	J	EPA-200.8

7/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

**EB-10-050117**

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-13

File ID: PE\_EL2\_170505-279

Sampled: 05/01/17 15:00

Prepared: 05/04/17 11:30

Analyzed: 05/06/17 04:58

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E0553

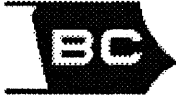
Sequence: 1707911

Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-47-3	Total Recoverable Chromium	2.7	1	J U	EPA-200.8
7439-92-1	Total Recoverable Lead	0.10	1	U	EPA-200.8

7/6/17 Q



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.8**

EB-10-050117

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-13

File ID: PE\_EL2\_170509-187

Sampled: 05/01/17 15:00

Prepared: 05/04/17 11:30

Analyzed: 05/10/17 05:18

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E0553

Sequence: 1708142

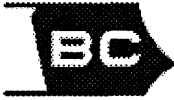
Calibration: UNASSIGNED

Instrument: PE-EL2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
7440-38-2	Total Recoverable Arsenic	0.70	1	U	EPA-200.8

7/6/17 2





**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-11-1

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-02

File ID: PE2 170510-198

Sampled: 05/01/17 14:45

Prepared: 05/09/17 12:15

Analyzed: 05/10/17 18:39

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE1037

Sequence: 1708326

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	68	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	23	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	30	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	3.5	1		EPA-200.7

7/6/17 *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-11-2

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-03

File ID: PE2 170510-202

Sampled: 05/01/17 14:20

Prepared: 05/09/17 12:15

Analyzed: 05/10/17 18:49

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE1037

Sequence: 1708326

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	57	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	21	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	25	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	3.2	1		EPA-200.7

7/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-11-3

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-04

File ID: PE2 170510-203

Sampled: 05/01/17 13:40

Prepared: 05/09/17 12:15

Analyzed: 05/10/17 18:52

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE1037

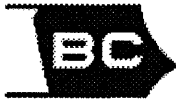
Sequence: 1708326

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	41	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	14	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	28	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	2.3	1		EPA-200.7

7/6/17



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-11-4

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-05RE1

File ID: PE2 170517-060

Sampled: 05/01/17 13:10

Prepared: 05/16/17 08:30

Analyzed: 05/17/17 12:53

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BJE1726

Sequence: 1708748

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	12	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	12	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	26	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	2.2	1		EPA-200.7

7/6/17 8

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:57:08AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-11-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-06</u>
Sampled: <u>05/01/17 12:25</u>	File ID: <u>PE2 170510-205</u>
Solids: <u>0.00</u>	Prepared: <u>05/09/17 12:15</u>
Batch: <u>BIE1037</u>	Analyzed: <u>05/10/17 18:57</u>
Sequence: <u>1708326</u>	Preparation: <u>EPA 200.2</u>
	Initial/Final: <u>50 ml / 50 ml</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-OP2</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	22	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	2.6	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	52	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	1.3	1		EPA-200.7

*7/6/17*



**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:57:08AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-200.7

MW-12-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-07</u>
Sampled: <u>05/01/17 09:15</u>	Prepared: <u>05/09/17 12:15</u>
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>
Batch: <u>BIE1037</u>	Sequence: <u>1708326</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>PE-OP2</u>
	File ID: <u>PE2_170510-206</u>
	Analyzed: <u>05/10/17 19:00</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	72	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	24	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	27	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	3.7	1		EPA-200.7

*6/21/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-12-2

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-08RE1

File ID: PE2 170517-062

Sampled: 05/01/17 08:45

Prepared: 05/16/17 08:30

Analyzed: 05/17/17 12:58

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE1726

Sequence: 1708748

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	60	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	20	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	25	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	3.4	1		EPA-200.7

7/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-12-3

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-09RE1

File ID: PE2 170517-063

Sampled: 05/01/17 08:15

Prepared: 05/16/17 08:30

Analyzed: 05/17/17 13:01

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E1726

Sequence: 1708748

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	51	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	15	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	26	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	2.8	1		EPA-200.7

7/6/17 8





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-12-4

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-10

File ID: PE2 170510-208

Sampled: 05/01/17 07:35

Prepared: 05/09/17 12:15

Analyzed: 05/10/17 19:05

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: BIE1037

Sequence: 1708326

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	62	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	16	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	25	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	2.3	1		EPA-200.7

7/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/21/2017 9:57:08AM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-12-5

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-11

File ID: PE2 170510-209

Sampled: 05/01/17 07:15

Prepared: 05/09/17 12:15

Analyzed: 05/10/17 19:07

Solids: 0.00

Preparation: EPA 200.2

Initial/Final: 50 ml / 50 ml

Batch: B/E1037

Sequence: 1708326

Calibration: UNASSIGNED

Instrument: PE-OP2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	56	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	15	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	34	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	2.4	1		EPA-200.7

7/6/17

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/21/2017 9:57:08AM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-200.7**

MW-24-1
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-12RE1</u>	File ID: <u>PE2 170517-065</u>	
Sampled: <u>05/01/17 10:30</u>	Prepared: <u>05/16/17 08:30</u>	Analyzed: <u>05/17/17 13:06</u>	
Solids: <u>0.00</u>	Preparation: <u>EPA 200.2</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>B/E1726</u>	Sequence: <u>1708748</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>PE-OP2</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7440-70-2	Total Recoverable Calcium	77	1		EPA-200.7
7439-95-4	Total Recoverable Magnesium	25	1		EPA-200.7
7440-23-5	Total Recoverable Sodium	45	1		EPA-200.7
7440-09-7	Total Recoverable Potassium	4.4	1		EPA-200.7



LDC #: 38952E4a

## VALIDATION COMPLETENESS WORKSHEET

Date: 7/6/17

SDG #: 17-11629

Level III/IV

Page: 1 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: J3

2nd Reviewer: [Signature]

METHOD: Metals (EPA Method 200.7/200.8)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	ICP/MS Tune	A	
III.	Instrument Calibration	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	SW	
VII.	Matrix Spike/Matrix Spike Duplicates	A	(13,14) ; (16;17) - Ca > 4x
VIII.	Duplicate sample analysis	A	
IX.	Serial Dilution	A	
X.	Laboratory control samples	A	les
XI.	Field Duplicates	N	
XII.	Internal Standard (ICP-MS)	A	
XIII.	Sample Result Verification	A	Not reviewed for Level III validation.
XIV.	Overall Assessment of Data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

\*\* Indicates sample was underwent Level IV review

	Client ID	Lab ID	Matrix	Date
1	MW-11-1	1711629-02	Water	05/01/17
2	MW-11-2	1711629-03	Water	05/01/17
3	MW-11-3**	1711629-04**	Water	05/01/17
4	MW-11-4	1711629-05	Water	05/01/17
5	MW-11-5	1711629-06	Water	05/01/17
6	MW-12-1	1711629-07	Water	05/01/17
7	MW-12-2	1711629-08	Water	05/01/17
8	MW-12-3	1711629-09	Water	05/01/17
9	MW-12-4	1711629-10	Water	05/01/17
10	MW-12-5	1711629-11	Water	05/01/17
11	MW-24-1	1711629-12	Water	05/01/17
12	EB-10-050117	1711629-13	Water	05/01/17
13	MW-11-2MS <sup>o</sup>	1711629-03MS	Water	05/01/17
14	MW-11-2MSD	1711629-03MSD	Water	05/01/17
15	MW-11-2DUP	1711629-03DUP	Water	05/01/17

LDC #: 38952E4a

### VALIDATION COMPLETENESS WORKSHEET

Date: 7/6/17

SDG #: 17-11629

Level III/IV

Page: 2 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: JS

2nd Reviewer: [Signature]

**METHOD:** Metals (EPA Method 200.7/200.8)

	Client ID	Lab ID	Matrix	Date
16	MW-12-3MS	1711629-09MS	Water	05/01/17
17	MW-12-3MSD	1711629-09MSD	Water	05/01/17
18	MW-12-3DUP	1711629-09DUP	Water	05/01/17
19				
20				
21				
22				
23				

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Method: Metals (EPA SW 846 Method 6010/6020/7000)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
<b>II. ICP/MS Tune</b>				
Were all isotopes in the tuning solution mass resolution within 0.1 amu?	✓			
Were %RSD of isotopes in the tuning solution ≤5%?	✓			
<b>III. Calibration</b>				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury) QC limits?		✓		
Were the low standard checks within 70-130%		✓		
Were all initial calibration correlation coefficients within limits as specified by the method?	✓			
<b>IV. Blanks</b>				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
<b>V. ICP Interference Check Sample</b>				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
<b>VI. Matrix spike/Matrix spike duplicates</b>				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were ≤ 5X the RL.	✓			
<b>VII. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			

Validation Area	Yes	No	NA	Findings/Comments
<b>VIII. Internal Standards (EPA SW 846 Method 6020/EPA 200.8)</b>				
Were all the percent recoveries (%R) within the 30-120% (6020)/60-125% (200.8) of the intensity of the internal standard in the associated initial calibration?	✓			
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
<b>IX. ICP Serial Dilution</b>				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the MDL (ICP)/>100X the MDL(ICP/MS)?	✓		✓	
Were all percent differences (%Ds) < 10%?	✓			
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.		✓		
<b>X. Sample Result Verification</b>				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
<b>XI. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	✓			
<b>XII. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
<b>XIII. Field blanks</b>				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.	✓			







METHOD: Trace metals (EPA SW 864 Method 6010B/6020/7000)

Soil preparation factor applied: NA

Sample Concentration units, unless otherwise noted: mg/L

Associated Samples: 1 - 3, 5, 6, 9, 10

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (mg/L)	Maximum ICB/CCB <sup>a</sup> (mg/L)	Action Level									
Na		0.080630		0.40315									

Sample Concentration units, unless otherwise noted: mg/L

Associated Samples: 4, 7, 8, 11

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (mg/L)	Maximum ICB/CCB <sup>a</sup> (mg/L)	Action Level									
Na		0.090068		0.45034									

Sample Concentration units, unless otherwise noted: ug/L

Associated Samples: 11, 12

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (mg/L)	Maximum ICB/CCB <sup>a</sup> (mg/L)	Action Level	11	12	11						
Cr		1.1780	1.6780	8.39	<del>0.82</del>	2.7	4.7 U						
Fe			0.040159	0.200795									

Sample Concentration units, unless otherwise noted: ug/L

Associated Samples: 8

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (mg/L)	Maximum ICB/CCB <sup>a</sup> (mg/L)	Action Level									
Fe			0.039803	0.199015									

Sample Concentration units, unless otherwise noted: mg/L Associated Samples: 1

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (mg/L)	Maximum ICB/CCB <sup>a</sup> (mg/L)	Action Level									
Ca			0.014907	0.07454									
Na			0.075155	0.375775									

Sample Concentration units, unless otherwise noted: mg/L Associated Samples: 2, 3, 5, 6, 9, 10

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (mg/L)	Maximum ICB/CCB <sup>a</sup> (mg/L)	Action Level									
Na			0.060590	0.30295									

Sample Concentration units, unless otherwise noted: mg/L Associated Samples: 12

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (mg/L)	Maximum ICB/CCB <sup>a</sup> (mg/L)	Action Level	12								
K			0.11874	0.5937	0.14								

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.



## VALIDATION FINDINGS WORKSHEET

### Initial and Continuing Calibration Calculation Verification

**METHOD:** Trace metals (EPA SW 846 Method 6010/6020/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution  
 True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated	Reported	Acceptable (Y/N)
					%R	%R	
ICV	ICP (Initial calibration) <sup>5:14</sup> 8:20	Cr	51.956 ug/L	50.000 ug/L	1047%	1047%	Y
ICV	ICP/MS (Initial calibration)	Mg	49.70 mg/L	50.000 ug/L	99.47%	99.47% <del>98.97%</del> JB	Y
	CVAA (Initial calibration)						
CCV <sub>2</sub>	ICP (Continuing calibration) <sup>10</sup> 13:42	Fe	50.91 mg/L	50.000 mg/L	1027%	1027%	Y
CCV	ICP/MS (Continuing calibration) <sup>5:11</sup> 5:25	As	102.352 ug/L	100.00 ug/L	1027%	1027%	Y
	CVAA (Continuing calibration)						

Comments:

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LDC #: 38952E4a

SDG #: 17-11629

## VALIDATION FINDINGS WORKSHEET

### Level IV Recalculation Worksheet

Page: 1 of 1

Reviewer: JB

2nd Reviewer: [Signature]

**METHOD:** Trace metals (EPA CLP SOW ILM02.1)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).  
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration  
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (ug/L)  
SDR = Serial Dilution Result (ug/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD / %D	%R / RPD / %D	
IFB	ICP interference check <sup>16:58</sup> <sub>511°</sub> 17:02	Ca	512.6 mg/L	500.00 mg/L	1037%	1037%	Y
LCS	Laboratory control sample 515 02:01	Pb	106.828 ug/L	100.00 ug/L	1077%	1077%	Y
MS	Matrix spike	Fe	<sup>SR = NP</sup> (SSR-SR) 1.12 mg/L	1000.0 ug/L	1117%	1117%	Y
MSD	Duplicate	Fe	1.124 mg/L	Found: 1.12 mg/L	1.077% RPD	1.11 RPD	Y
	ICP serial dilution						

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.





## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** NASA JPL, 2Q2017

**LDC Report Date:** July 6, 2017

**Parameters:** Wet Chemistry

**Validation Level:** Level III & IV

**Laboratory:** BC Laboratories, Inc.

**Sample Delivery Group (SDG):** 17-11629

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MW-11-1	1711629-02	Water	05/01/17
MW-11-2	1711629-03	Water	05/01/17
MW-11-3**	1711629-04**	Water	05/01/17
MW-11-4	1711629-05	Water	05/01/17
MW-11-5	1711629-06	Water	05/01/17
MW-12-1	1711629-07	Water	05/01/17
MW-12-2	1711629-08	Water	05/01/17
MW-12-3	1711629-09	Water	05/01/17
MW-12-4	1711629-10	Water	05/01/17
MW-12-5	1711629-11	Water	05/01/17
MW-24-1	1711629-12	Water	05/01/17
EB-10-050117	1711629-13	Water	05/01/17
MW-11-2MS	1711629-03MS	Water	05/01/17
MW-11-2MSD	1711629-03MSD	Water	05/01/17
MW-11-2DUP	1711629-03DUP	Water	05/01/17
MW-12-3MS	1711629-09MS	Water	05/01/17
MW-12-3MSD	1711629-09MSD	Water	05/01/17
MW-12-3DUP	1711629-09DUP	Water	05/01/17
MW-24-1DUP	1711629-12DUP	Water	05/01/17

\*\*Indicates sample underwent Level IV validation

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Alkalinity by Standard Method 2320B

Chloride, Nitrate as Nitrogen, and Sulfate by Environmental Protection Agency (EPA) Method 300.0

Nitrite as Nitrogen by EPA 353.2

Hexavalent Chromium by EPA SW 846 Method 7196

Orthophosphate by EPA Method 365.1

Perchlorate by EPA Method 314.0

pH by EPA Method 150.1

Total Dissolved Solids by EPA Method 160.1

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Level IV data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
MW-11-1	pH	49.47 hours	48 hours	J (all detects)	P
MW-11-2	pH	49.68 hours	48 hours	J (all detects)	P
MW-11-3**	pH	50.65 hours	48 hours	J (all detects)	P
MW-11-4	pH	51.25 hours	48 hours	J (all detects)	P
MW-11-5	pH	52.10 hours	48 hours	J (all detects)	P
MW-12-1	pH	55.37 hours	48 hours	J (all detects)	P
MW-12-2	pH	55.98 hours	48 hours	J (all detects)	P
MW-12-3	pH	56.58 hours	48 hours	J (all detects)	P
MW-12-4	pH	57.35 hours	48 hours	J (all detects)	P
MW-12-5	pH	57.78 hours	48 hours	J (all detects)	P
MW-24-1	pH	54.88 hours	48 hours	J (all detects)	P
EB-10-050117	pH	50.62 hours	48 hours	J (all detects)	P

## II. Initial Calibration

All criteria for the initial calibration of each method were met.

## III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Hexavalent chromium	0.00072900 mg/L	MW-11-1 MW-11-2 MW-11-3** MW-11-4 MW-11-5 MW-24-1 EB-10-050117

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
MW-11-2	Hexavalent chromium	0.00095 mg/L	0.00095U mg/L
MW-24-1	Hexavalent chromium	0.00099 mg/L	0.00099U mg/L

## V. Field Blanks

Sample EB-10-050117 was identified as an equipment blank. No contaminants were found with the following exceptions:

Blank ID	Analyte	Concentration
EB-10-050117	Chloride Nitrate as N	0.20 mg/L 0.069 mg/L

## VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

## VIII. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

## **IX. Field Duplicates**

No field duplicates were identified in this SDG.

## **X. Sample Result Verification**

All sample result verifications were acceptable for samples which underwent Level IV validation. Raw data were not reviewed for Level III validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to technical holding time, data were qualified as estimated in twelve samples.

Due to laboratory blank contamination, data were qualified as not detected in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**NASA JPL, 2Q2017  
Wet Chemistry - Data Qualification Summary - SDG 17-11629**

Sample	Analyte	Flag	A or P	Reason
MW-11-1 MW-11-2 MW-11-3** MW-11-4 MW-11-5 MW-12-1 MW-12-2 MW-12-3 MW-12-4 MW-12-5 MW-24-1 EB-10-050117	pH	J (all detects)	P	Technical holding times

**NASA JPL, 2Q2017  
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 17-11629**

Sample	Analyte	Modified Final Concentration	A or P
MW-11-2	Hexavalent chromium	0.00095U mg/L	A
MW-24-1	Hexavalent chromium	0.00099U mg/L	A



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

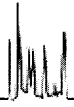
MW-11-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-02</u>
Sampled: <u>05/01/17 14:45</u>	Prepared: <u>05/03/17 08:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BJE0193</u>	Sequence: <u>1707737</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>
	File ID: <u>Tiamo050317-100</u>
	Analyzed: <u>05/03/17 16:13</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	280	1		SM-2320B
3812-32-6	Carbonate	2.5	1	U	SM-2320B
---	Total Alkalinity as CaCO3	230	1		SM-2320B

7/6/17 *[Signature]*





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Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-11-2

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-03

File ID: Tiamo050317-098

Sampled: 05/01/17 14:20

Prepared: 05/03/17 08:00

Analyzed: 05/03/17 16:01

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BJE0193

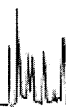
Sequence: 1707737

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	240	1		SM-2320B
3812-32-6	Carbonate	2.5	1	U	SM-2320B
---	Total Alkalinity as CaCO3	200	1		SM-2320B

7/6/17



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Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-11-3

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-04

File ID: Tiamo050317-101

Sampled: 05/01/17 13:40

Prepared: 05/03/17 08:00

Analyzed: 05/03/17 16:19

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: B[E0193

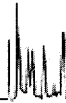
Sequence: 1707737

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	200	1		SM-2320B
3812-32-6	Carbonate	2.5	1	U	SM-2320B
---	Total Alkalinity as CaCO3	160	1		SM-2320B

7/6/17 *[Signature]*



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Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-11-4

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-05

File ID: Tiamo050317-102

Sampled: 05/01/17 13:10

Prepared: 05/03/17 08:00

Analyzed: 05/03/17 16:25

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: B[E0193

Sequence:

1707737

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	120	1		SM-2320B
3812-32-6	Carbonate	8.4	1		SM-2320B
---	Total Alkalinity as CaCO3	110	1		SM-2320B

7/6/17 8



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**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-11-5

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-06

File ID: Tiamo050317-103

Sampled: 05/01/17 12:25

Prepared: 05/03/17 08:00

Analyzed: 05/03/17 16:31

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BJE0193

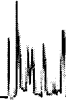
Sequence: 1707737

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	150	1		SM-2320B
3812-32-6	Carbonate	3.7	1		SM-2320B
---	Total Alkalinity as CaCO3	130	1		SM-2320B

*7/6/17*



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Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-12-1

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-07

File ID: Tiamo050317-104

Sampled: 05/01/17 09:15

Prepared: 05/03/17 08:00

Analyzed: 05/03/17 16:37

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: B[E0193

Sequence: 1707737

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	260	1		SM-2320B
3812-32-6	Carbonate	2.5	1	U	SM-2320B
---	Total Alkalinity as CaCO3	220	1		SM-2320B

7/6/17 ✓



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Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-12-2

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-08

File ID: Tiamo050317-105

Sampled: 05/01/17 08:45

Prepared: 05/03/17 08:00

Analyzed: 05/03/17 16:44

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BIE0193

Sequence: 1707737

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	240	1		SM-2320B
3812-32-6	Carbonate	2.5	1	U	SM-2320B
---	Total Alkalinity as CaCO3	200	1		SM-2320B

7/6/17 [Signature]



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Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-12-3

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-09

File ID: Tiamo050317-106

Sampled: 05/01/17 08:15

Prepared: 05/03/17 08:00

Analyzed: 05/03/17 16:50

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: B[E0193

Sequence: 1707737

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	220	1		SM-2320B
3812-32-6	Carbonate	2.5	1	U	SM-2320B
---	Total Alkalinity as CaCO3	180	1		SM-2320B

7/6/17



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Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**SM-2320B**

MW-12-4

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-10

File ID: Tiamo050317-107

Sampled: 05/01/17 07:35

Prepared: 05/03/17 08:00

Analyzed: 05/03/17 16:56

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BIE0193

Sequence: 1707737

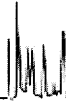
Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	240	1		SM-2320B
3812-32-6	Carbonate	2.5	1	U	SM-2320B
---	Total Alkalinity as CaCO3	200	1		SM-2320B

7/6/17 9





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Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

MW-12-5

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-11

File ID: Tiamo050317-108

Sampled: 05/01/17 07:15

Prepared: 05/03/17 08:00

Analyzed: 05/03/17 17:02

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BIE0193

Sequence: 1707737

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	230	1		SM-2320B
3812-32-6	Carbonate	2.5	1	U	SM-2320B
---	Total Alkalinity as CaCO3	190	1		SM-2320B

*Handwritten signature/initials*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**SM-2320B**

**MW-24-1**

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-12

File ID: Tiamo050317-113

Sampled: 05/01/17 10:30

Prepared: 05/03/17 08:00

Analyzed: 05/03/17 17:23

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BIE0194

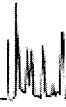
Sequence: 1707737

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	230	1		SM-2320B
3812-32-6	Carbonate	2.5	1	U	SM-2320B
---	Total Alkalinity as CaCO3	190	1		SM-2320B

*Handwritten signature and date: 6/20/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**SM-2320B**

**EB-10-050117**

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-13

File ID: Tiamo050317-116

Sampled: 05/01/17 15:00

Prepared: 05/03/17 08:00

Analyzed: 05/03/17 17:37

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BIE0194

Sequence:

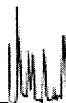
1707737

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
71-52-3	Bicarbonate	5.0	1	U	SM-2320B
3812-32-6	Carbonate	2.5	1	U	SM-2320B
---	Total Alkalinity as CaCO3	4.1	1	U	SM-2320B

7/6/17 9



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-300.0**

MW-11-1

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-02

File ID: B050117A.seq-16

Sampled: 05/01/17 14:45

Prepared: 05/01/17 23:00

Analyzed: 05/02/17 03:51

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[E0207

Sequence:

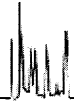
1707600

Calibration: UNASSIGNED

Instrument: IC2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	20	1		EPA-300.0
14797-55-8	Nitrate as N	0.35	1		EPA-300.0
14808-79-8	Sulfate	41	1		EPA-300.0

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

MW-11-2

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-03</u>
Sampled: <u>05/01/17 14:20</u>	Prepared: <u>05/01/17 23:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BJE0207</u>	Sequence: <u>1707600</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>IC2</u>
	File ID: <u>B050117A.seq-17</u>
	Analyzed: <u>05/02/17 04:08</u>
	Initial/Final: <u>20 ml / 20 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	16	1		EPA-300.0
14797-55-8	Nitrate as N	0.021	1	U	EPA-300.0
14808-79-8	Sulfate	35	1		EPA-300.0

*Handwritten signature/initials*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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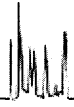
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

**MW-11-3**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-04</u>	File ID: <u>B050117A.seq-21</u>	
Sampled: <u>05/01/17 13:40</u>	Prepared: <u>05/01/17 23:00</u>	Analyzed: <u>05/02/17 05:16</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B[E]0208</u>	Sequence: <u>1707600</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC2</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	11	1		EPA-300.0
14797-55-8	Nitrate as N	0.042	1	J	EPA-300.0
14808-79-8	Sulfate	22	1		EPA-300.0

*7/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

MW-11-4

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-05

File ID: B050117A.seq-22

Sampled: 05/01/17 13:10

Prepared: 05/01/17 23:00

Analyzed: 05/02/17 05:33

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJE0208

Sequence: 1707600

Calibration: UNASSIGNED

Instrument: IC2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	11	1		EPA-300.0
14797-55-8	Nitrate as N	0.021	1	U	EPA-300.0
14808-79-8	Sulfate	1.1	1		EPA-300.0

7/6/17 2



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-300.0**

MW-11-5

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-06

File ID: B050117A.seq-23

Sampled: 05/01/17 12:25

Prepared: 05/01/17 23:00

Analyzed: 05/02/17 05:51

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[E]0208

Sequence: 1707600

Calibration: UNASSIGNED

Instrument: IC2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	10	1		EPA-300.0
14797-55-8	Nitrate as N	0.057	1	J	EPA-300.0
14808-79-8	Sulfate	18	1		EPA-300.0

7/6/17





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-300.0**

MW-12-1

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-07

File ID: B050117A.seq-24

Sampled: 05/01/17 09:15

Prepared: 05/01/17 23:00

Analyzed: 05/02/17 06:08

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[E0208

Sequence: 1707600

Calibration: UNASSIGNED

Instrument: IC2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	19	1		EPA-300.0
14797-55-8	Nitrate as N	0.91	1		EPA-300.0
14808-79-8	Sulfate	66	1		EPA-300.0

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

**MW-12-2**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-08</u>
Sampled: <u>05/01/17 08:45</u>	Prepared: <u>05/01/17 23:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E]0208</u>	Sequence: <u>1707600</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>IC2</u>
	File ID: <u>B050117A.seq-25</u>
	Analyzed: <u>05/02/17 06:25</u>
	Initial/Final: <u>20 ml / 20 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	17	1		EPA-300.0
14797-55-8	Nitrate as N	0.51	1		EPA-300.0
14808-79-8	Sulfate	38	1		EPA-300.0

*7/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-300.0**

MW-12-3

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-09

File ID: B050117A.seq-28

Sampled: 05/01/17 08:15

Prepared: 05/01/17 23:00

Analyzed: 05/02/17 07:16

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJE0208

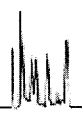
Sequence: 1707600

Calibration: UNASSIGNED

Instrument: IC2

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	16	1		EPA-300.0
14797-55-8	Nitrate as N	0.58	1		EPA-300.0
14808-79-8	Sulfate	29	1		EPA-300.0

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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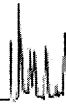
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

MW-12-4

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-10</u>
Sampled: <u>05/01/17 07:35</u>	Prepared: <u>05/01/17 23:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E]0208</u>	Sequence: <u>1707600</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>IC2</u>
	File ID: <u>B050117A.seq-32</u>
	Analyzed: <u>05/02/17 08:25</u>
	Initial/Final: <u>20 ml / 20 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	15	1		EPA-300.0
14797-55-8	Nitrate as N	1.3	1		EPA-300.0
14808-79-8	Sulfate	32	1		EPA-300.0

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-300.0**

MW-12-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-11</u>
Sampled: <u>05/01/17 07:15</u>	Prepared: <u>05/01/17 23:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B/E0208</u>	Sequence: <u>1707600</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>IC2</u>
	File ID: <u>B050117A.seq-33</u>
	Analyzed: <u>05/02/17 08:42</u>
	Initial/Final: <u>20 ml / 20 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	16	1		EPA-300.0
14797-55-8	Nitrate as N	1.6	1		EPA-300.0
14808-79-8	Sulfate	26	1		EPA-300.0

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-300.0**

MW-24-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-12</u>	File ID: <u>B050117A.seq-34</u>	
Sampled: <u>05/01/17 10:30</u>	Prepared: <u>05/01/17 23:00</u>	Analyzed: <u>05/02/17 08:59</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B[E]0208</u>	Sequence: <u>1707600</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC2</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	94	1		EPA-300.0
14797-55-8	Nitrate as N	1.5	1		EPA-300.0
14808-79-8	Sulfate	54	1		EPA-300.0

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-300.0**

EB-10-050117

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-13</u>
Sampled: <u>05/01/17 15:00</u>	Prepared: <u>05/01/17 23:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BJE0208</u>	Sequence: <u>1707600</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>IC2</u>
	File ID: <u>B050117A.seq-37</u>
	Analyzed: <u>05/02/17 09:50</u>
	Initial/Final: <u>20 ml / 20 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
16887-00-6	Chloride	0.20	1	J	EPA-300.0
14797-55-8	Nitrate as N	0.069	1	J	EPA-300.0
14808-79-8	Sulfate	0.13	1	U	EPA-300.0

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Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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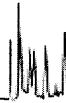
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-11-1
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-02</u>	File ID: <u>170502 0910 NO2-127</u>	
Sampled: <u>05/01/17 14:45</u>	Prepared: <u>05/02/17 09:10</u>	Analyzed: <u>05/02/17 10:30</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BJE0628</u>	Sequence: <u>1707969</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-11-2
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-03</u>	File ID: <u>170502 0910 NO2-123</u>	
Sampled: <u>05/01/17 14:20</u>	Prepared: <u>05/02/17 09:10</u>	Analyzed: <u>05/02/17 10:30</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B/E0628</u>	Sequence: <u>1707969</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-353.2

MW-11-3

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-04</u>	File ID: <u>170502 0910 NO2-128</u>	
Sampled: <u>05/01/17 13:40</u>	Prepared: <u>05/02/17 09:10</u>	Analyzed: <u>05/02/17 10:30</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BJE0628</u>	Sequence: <u>1707969</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*7/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-11-4

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-05

File ID: 170502 0910 NO2-129

Sampled: 05/01/17 13:10

Prepared: 05/02/17 09:10

Analyzed: 05/02/17 10:30

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B/E0628

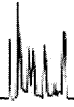
Sequence: 1707969

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*Handwritten signature/initials*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
--	---

**INORGANIC ANALYSIS DATA SHEET**  
EPA-353.2

MW-11-5
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-06</u>	File ID: <u>170502 0910 NO2-130</u>	
Sampled: <u>05/01/17 12:25</u>	Prepared: <u>05/02/17 09:10</u>	Analyzed: <u>05/02/17 10:30</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B[E]E0628</u>	Sequence: <u>1707969</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*7/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-12-1

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-07

File ID: 170502 0910 NO2-133

Sampled: 05/01/17 09:15

Prepared: 05/02/17 09:10

Analyzed: 05/02/17 10:36

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJE0628

Sequence: 1707969

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*Handwritten signature/initials*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-353.2

MW-12-2

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-08</u>	File ID: <u>170502 0910 NO2-134</u>	
Sampled: <u>05/01/17 08:45</u>	Prepared: <u>05/02/17 09:10</u>	Analyzed: <u>05/02/17 10:36</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B[E0628</u>	Sequence: <u>1707969</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.022	1	J	EPA-353.2

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-353.2

MW-12-3
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-09</u>	File ID: <u>170502 0910 NO2-137</u>	
Sampled: <u>05/01/17 08:15</u>	Prepared: <u>05/02/17 09:10</u>	Analyzed: <u>05/02/17 10:36</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BJE0629</u>	Sequence: <u>1707969</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*6/20/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-353.2

MW-12-4
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-10</u>	File ID: <u>170502 0910 NO2-141</u>	
Sampled: <u>05/01/17 07:35</u>	Prepared: <u>05/02/17 09:10</u>	Analyzed: <u>05/02/17 10:36</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BfE0629</u>	Sequence: <u>1707969</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

7/6/17 T





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-353.2

MW-12-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-11</u>
Sampled: <u>05/01/17 07:15</u>	Prepared: <u>05/02/17 09:10</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E]0629</u>	Sequence: <u>1707969</u>
	Calibration: <u>UNASSIGNED</u>
	File ID: <u>170502 0910 NO2-142</u>
	Analyzed: <u>05/02/17 10:36</u>
	Initial/Final: <u>20 ml / 20 ml</u>
	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

7/6/17 *[Signature]*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-353.2**

MW-24-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-12</u>	File ID: <u>170502 0910 NO2-145</u>	
Sampled: <u>05/01/17 10:30</u>	Prepared: <u>05/02/17 09:10</u>	Analyzed: <u>05/02/17 10:39</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B[E]0629</u>	Sequence: <u>1707969</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

7/6/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-353.2**

**EB-10-050117**

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-13

File ID: 170502 0910 NO2-146

Sampled: 05/01/17 15:00

Prepared: 05/02/17 09:10

Analyzed: 05/02/17 10:39

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJE0629

Sequence: 1707969

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
14797-65-0	Nitrite as N	0.010	1	U	EPA-353.2

*Handwritten signature/initials and date: 5/6/17*

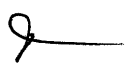
Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-365.1

MW-11-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-02</u>
Sampled: <u>05/01/17 14:45</u>	Prepared: <u>05/02/17 09:43</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BJE0649</u>	Sequence: <u>1707921</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>
	File ID: <u>170502 0943 PO4-200</u>
	Analyzed: <u>05/02/17 12:33</u>
	Initial/Final: <u>20 ml / 20 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	ortho-Phosphate as P	0.017	1	U	EPA-365.1

7/6/17 



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
EPA-365.1

MW-24-1
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-12</u>	File ID: <u>170502 0943 PO4-201</u>	
Sampled: <u>05/01/17 10:30</u>	Prepared: <u>05/02/17 09:43</u>	Analyzed: <u>05/02/17 12:33</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B[E0649</u>	Sequence: <u>1707921</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	ortho-Phosphate as P	0.017	1	U	EPA-365.1

7/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-11-1

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-02

File ID: 170501 2206 CR6-066

Sampled: 05/01/17 14:45

Prepared: 05/02/17 07:32

Analyzed: 05/02/17 07:53

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJE0623

Sequence: 1707815

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

7/6/17 *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

**MW-11-2**

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-03

File ID: 170501 2206 CR6-082

Sampled: 05/01/17 14:20

Prepared: 05/02/17 07:32

Analyzed: 05/02/17 08:15

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJE0623

Sequence: 1707815

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00095	1	JU	EPA-7196

7/6/17

Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-11-3
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-04</u>	File ID: <u>170501 2206 CR6-067</u>	
Sampled: <u>05/01/17 13:40</u>	Prepared: <u>05/02/17 07:32</u>	Analyzed: <u>05/02/17 07:53</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BJE0623</u>	Sequence: <u>1707815</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-11-4

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-05</u>	File ID: <u>170501 2206 CR6-068</u>	
Sampled: <u>05/01/17 13:10</u>	Prepared: <u>05/02/17 07:32</u>	Analyzed: <u>05/02/17 07:53</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BJE0623</u>	Sequence: <u>1707815</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

7/6/17 9



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-11-5

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-06

File ID: 170501 2206 CR6-069

Sampled: 05/01/17 12:25

Prepared: 05/02/17 07:32

Analyzed: 05/02/17 07:53

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJE0623

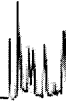
Sequence: 1707815

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

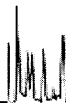
**EPA-7196**

MW-12-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-07</u>
Sampled: <u>05/01/17 09:15</u>	File ID: <u>170501 2206 CR6-017</u>
Solids: <u>0.00</u>	Prepared: <u>05/01/17 22:06</u>
Batch: <u>B[E0622</u>	Analyzed: <u>05/01/17 22:36</u>
Sequence: <u>1707815</u>	Initial/Final: <u>20 ml / 20 ml</u>
	Preparation: <u>No Prep</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

7/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-12-2

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-08

File ID: 170501 2206 CR6-010

Sampled: 05/01/17 08:45

Prepared: 05/01/17 22:06

Analyzed: 05/01/17 22:06

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJE0622

Sequence:

1707815

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

7/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-12-3

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-09

File ID: 170501 2206 CR6-005

Sampled: 05/01/17 08:15

Prepared: 05/01/17 22:06

Analyzed: 05/01/17 22:06

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[E0622

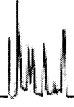
Sequence: 1707815

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00076	1	J	EPA-7196

*Handwritten signature/initials*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-12-4

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-10

File ID: 170501 2206 CR6-035

Sampled: 05/01/17 07:35

Prepared: 05/01/17 22:06

Analyzed: 05/01/17 23:21

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJE0622

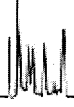
Sequence: 1707815

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00080	1	J	EPA-7196

7/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

MW-12-5

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-11

File ID: 170501 2206 CR6-019

Sampled: 05/01/17 07:15

Prepared: 05/01/17 22:06

Analyzed: 05/01/17 22:36

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B[E0622

Sequence:

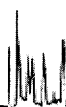
1707815

Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.0015	1	J	EPA-7196

7/6/17



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-7196**

MW-24-1

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-12

File ID: 170501 2206 CR6-072

Sampled: 05/01/17 10:30

Prepared: 05/02/17 07:32

Analyzed: 05/02/17 07:55

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJE0623

Sequence: 1707815

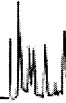
Calibration: UNASSIGNED

Instrument: KONE-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00099	1	J U	EPA-7196

7/6/17 8





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-7196**

EB-10-050117

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-13</u>	File ID: <u>170501 2206 CR6-073</u>	
Sampled: <u>05/01/17 15:00</u>	Prepared: <u>05/02/17 07:32</u>	Analyzed: <u>05/02/17 07:55</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B[E0623</u>	Sequence: <u>1707815</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>KONE-1</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
18540-29-9	Hexavalent Chromium	0.00070	1	U	EPA-7196

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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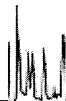
**INORGANIC ANALYSIS DATA SHEET**  
EPA-314.0

MW-11-1
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-02</u>	File ID: <u>F051617.seq-13.0000.txt</u>	
Sampled: <u>05/01/17 14:45</u>	Prepared: <u>05/16/17 14:00</u>	Analyzed: <u>05/16/17 17:21</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BJE1812</u>	Sequence: <u>1708784</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC6</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*7/14/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

MW-11-2

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-03

File ID: F051617.seq-19.0000.txt

Sampled: 05/01/17 14:20

Prepared: 05/16/17 14:00

Analyzed: 05/16/17 18:41

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJE1966

Sequence: 1708784

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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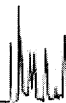
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

**MW-11-3**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-04</u>
Sampled: <u>05/01/17 13:40</u>	Prepared: <u>05/16/17 14:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BJE1812</u>	Sequence: <u>1708784</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>IC6</u>
	File ID: <u>F051617.seq-20.0000.txt</u>
	Analyzed: <u>05/16/17 18:54</u>
	Initial/Final: <u>20 ml / 20 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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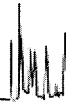
**INORGANIC ANALYSIS DATA SHEET**  
EPA-314.0

MW-11-4

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-05</u>	File ID: <u>F051617.seq-21.0000.txt</u>	
Sampled: <u>05/01/17 13:10</u>	Prepared: <u>05/16/17 14:00</u>	Analyzed: <u>05/16/17 19:08</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BJE1812</u>	Sequence: <u>1708784</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC6</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

MW-11-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-06</u>	File ID: <u>F051617.seq-22.0000.txt</u>	
Sampled: <u>05/01/17 12:25</u>	Prepared: <u>05/16/17 14:00</u>	Analyzed: <u>05/16/17 19:21</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>BJE1812</u>	Sequence: <u>1708784</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC6</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

5/16/17 8



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-12-1

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-07

File ID: F051617.seq-23.0000.txt

Sampled: 05/01/17 09:15

Prepared: 05/16/17 14:00

Analyzed: 05/16/17 19:34

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJE1812

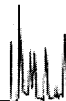
Sequence: 1708784

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*Handwritten signature and date: 6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-12-2

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-08

File ID: F051617.seq-24.0000.txt

Sampled: 05/01/17 08:45

Prepared: 05/16/17 14:00

Analyzed: 05/16/17 19:48

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B/E1812

Sequence: 1708784

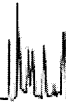
Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

7/6/17 *[Signature]*





Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-12-3

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-09RE1

File ID: F051617.seq-47.0000.txt

Sampled: 05/01/17 08:15

Prepared: 05/16/17 23:00

Analyzed: 05/17/17 00:54

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: BJE1812

Sequence: 1708784

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	4.2	1		EPA-314.0

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-12-4
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-10</u>	File ID: <u>F051617.seq-26.0000.txt</u>	
Sampled: <u>05/01/17 07:35</u>	Prepared: <u>05/16/17 14:00</u>	Analyzed: <u>05/16/17 20:14</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B[E]1812</u>	Sequence: <u>1708784</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC6</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	2.2	1	J	EPA-314.0

*7/6/17 9*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-314.0**

MW-12-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-11</u>	File ID: <u>F051617.seq-27.0000.txt</u>	
Sampled: <u>05/01/17 07:15</u>	Prepared: <u>05/16/17 14:00</u>	Analyzed: <u>05/16/17 20:28</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>20 ml / 20 ml</u>	
Batch: <u>B/E1812</u>	Sequence: <u>1708784</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>IC6</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	1.8	1	J	EPA-314.0

7/6/17 *[Signature]*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-314.0**

MW-24-1

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-12

File ID: F051617.seq-63.0000.txt

Sampled: 05/01/17 10:30

Prepared: 05/16/17 14:00

Analyzed: 05/17/17 11:28

Solids: 0.00

Preparation: No Prep

Initial/Final: 20 ml / 20 ml

Batch: B/E1812

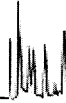
Sequence: 1708784

Calibration: UNASSIGNED

Instrument: IC6

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	58	10	D	EPA-314.0

7/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

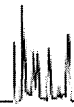
**EPA-314.0**

**EB-10-050117**

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-13</u>
Sampled: <u>05/01/17 15:00</u>	Prepared: <u>05/16/17 14:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E1812</u>	Sequence: <u>1708784</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>IC6</u>
	File ID: <u>F051617.seq-32.0000.txt</u>
	Analyzed: <u>05/16/17 21:34</u>
	Initial/Final: <u>20 ml / 20 ml</u>

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	Method
14797-73-0	Perchlorate	0.58	1	U	EPA-314.0

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-11-1
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-02</u>
Sampled: <u>05/01/17 14:45</u>	File ID: <u>Tiamo050317-100</u>
Solids: <u>0.00</u>	Prepared: <u>05/03/17 08:00</u>
Batch: <u>B[E0193</u>	Analyzed: <u>05/03/17 16:13</u>
Sequence: <u>1707737</u>	Initial/Final: <u>50 ml / 50 ml</u>
	Preparation: <u>No Prep</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.00	1	J	EPA-150.1

*7/6/17 J*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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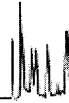
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-11-2
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-03</u>
Sampled: <u>05/01/17 14:20</u>	Prepared: <u>05/03/17 08:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E0193</u>	Sequence: <u>1707737</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>
	File ID: <u>Tiamo050317-098</u>
	Analyzed: <u>05/03/17 16:01</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.17	1	S	EPA-150.1

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

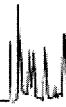
MW-11-3

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-04</u>
Sampled: <u>05/01/17 13:40</u>	File ID: <u>Tiamo050317-101</u>
Solids: <u>0.00</u>	Prepared: <u>05/03/17 08:00</u>
Batch: <u>B[E0193</u>	Analyzed: <u>05/03/17 16:19</u>
Sequence: <u>1707737</u>	Initial/Final: <u>50 ml / 50 ml</u>
	Preparation: <u>No Prep</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.22	1	J	EPA-150.1

7/6/07





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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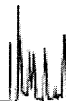
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-11-4

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-05</u>
File ID: <u>Tiamo050317-102</u>	
Sampled: <u>05/01/17 13:10</u>	Prepared: <u>05/03/17 08:00</u>
Analyzed: <u>05/03/17 16:25</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>BIE0193</u>	Sequence: <u>1707737</u>
Calibration: <u>UNASSIGNED</u>	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.71	1	J	EPA-150.1

*7/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**

**EPA-150.1**

**MW-11-5**

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-06

File ID: Tiamo050317-103

Sampled: 05/01/17 12:25

Prepared: 05/03/17 08:00

Analyzed: 05/03/17 16:31

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BJE0193

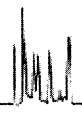
Sequence: 1707737

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.38	1	J	EPA-150.1

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

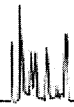
**EPA-150.1**

MW-12-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-07</u>
Sampled: <u>05/01/17 09:15</u>	File ID: <u>Tiamo050317-104</u>
Solids: <u>0.00</u>	Prepared: <u>05/03/17 08:00</u>
Batch: <u>B[E]0193</u>	Analyzed: <u>05/03/17 16:37</u>
Sequence: <u>1707737</u>	Initial/Final: <u>50 ml / 50 ml</u>
	Preparation: <u>No Prep</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	7.76	1	5	EPA-150.1

7/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-12-2
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-08</u>
Sampled: <u>05/01/17 08:45</u>	Prepared: <u>05/03/17 08:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>BIE0193</u>	Sequence: <u>1707737</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>
	File ID: <u>Tiamo050317-105</u>
	Analyzed: <u>05/03/17 16:44</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	7.77	1	J	EPA-150.1

*7/6/17*



Tidewater Inc.  
3761 Attucks Drive  
Powell, OH 43065

Reported: 6/20/2017 2:04:33PM  
Project: JPL- GW Monitoring Wells  
Project Number: 2Q17  
Project Manager: David Conner

**INORGANIC ANALYSIS DATA SHEET**  
**EPA-150.1**

MW-12-3

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-09

File ID: Tiamo050317-106

Sampled: 05/01/17 08:15

Prepared: 05/03/17 08:00

Analyzed: 05/03/17 16:50

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: BIE0193

Sequence: 1707737

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.26	1	J	EPA-150.1

7/6/17 0



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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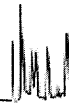
**INORGANIC ANALYSIS DATA SHEET**  
EPA-150.1

MW-12-4

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-10</u>
Sampled: <u>05/01/17 07:35</u>	Prepared: <u>05/03/17 08:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E0193</u>	Sequence: <u>1707737</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>
	File ID: <u>Tiamo050317-107</u>
	Analyzed: <u>05/03/17 16:56</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.20	1	J	EPA-150.1

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

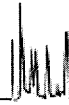
**EPA-150.1**

MW-12-5

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-11</u>
Sampled: <u>05/01/17 07:15</u>	Prepared: <u>05/03/17 08:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E0193</u>	Sequence: <u>1707737</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MET-1</u>
	File ID: <u>Tiamo050317-108</u>
	Analyzed: <u>05/03/17 17:02</u>
	Initial/Final: <u>50 ml / 50 ml</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	8.21	1	J	EPA-150.1

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-150.1**

MW-24-1

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>		
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>		
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-12</u>	File ID: <u>Tiamo050317-113</u>	
Sampled: <u>05/01/17 10:30</u>	Prepared: <u>05/03/17 08:00</u>	Analyzed: <u>05/03/17 17:23</u>	
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>	Initial/Final: <u>50 ml / 50 ml</u>	
Batch: <u>B[E0194</u>	Sequence: <u>1707737</u>	Calibration: <u>UNASSIGNED</u>	Instrument: <u>MET-1</u>

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	7.90	1	J	EPA-150.1

*Handwritten signature*





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

**EPA-150.1**

**EB-10-050117**

Laboratory: BC Laboratories

SDG: 17-11629

Client: Tidewater Inc.

Project: JPL- GW Monitoring Wells

Matrix: Water

Laboratory ID: 1711629-13

File ID: Tiamo050317-116

Sampled: 05/01/17 15:00

Prepared: 05/03/17 08:00

Analyzed: 05/03/17 17:37

Solids: 0.00

Preparation: No Prep

Initial/Final: 50 ml / 50 ml

Batch: B[E0194

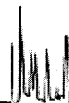
Sequence: 1707737

Calibration: UNASSIGNED

Instrument: MET-1

CAS NO.	Analyte	Concentration (pH Units)	Dilution Factor	Q	Method
---	pH	4.70	1	5	EPA-150.1

7/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-11-1
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-02</u>
Sampled: <u>05/01/17 14:45</u>	Prepared: <u>05/06/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E0782</u>	Sequence: <u>1708440</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>
	File ID:
	Analyzed: <u>05/06/17 13:00</u>
	Initial/Final: <u>100 ml / 100 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	320	2	D	EPA-160.1

*7/6/17* ✓



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**

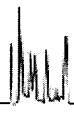
**EPA-160.1**

MW-11-2

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-03</u>
Sampled: <u>05/01/17 14:20</u>	Prepared: <u>05/06/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E0782</u>	Sequence: <u>1708440</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>
	File ID:
	Analyzed: <u>05/06/17 13:00</u>
	Initial/Final: <u>100 ml / 100 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	280	2	D	EPA-160.1

7/6/17 8



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

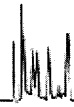
MW-11-3
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-04</u>
Sampled: <u>05/01/17 13:40</u>	Prepared: <u>05/06/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E0782</u>	Sequence: <u>1708440</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>
	File ID:
	Analyzed: <u>05/06/17 13:00</u>
	Initial/Final: <u>100 ml / 100 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	240	2	D	EPA-160.1

7/6/17 8





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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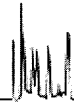
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-11-5
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-06</u>
Sampled: <u>05/01/17 12:25</u>	Prepared: <u>05/06/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E0782</u>	Sequence: <u>1708440</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>
	File ID:
	Analyzed: <u>05/06/17 13:00</u>
	Initial/Final: <u>100 ml / 100 ml</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	230	2	D	EPA-160.1

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
--	---

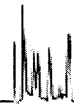
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-12-1
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-07</u>
Sampled: <u>05/01/17 09:15</u>	Prepared: <u>05/06/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E0782</u>	Sequence: <u>1708440</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	350	2	D	EPA-160.1

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

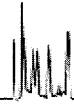
MW-12-2
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Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-08</u>
Sampled: <u>05/01/17 08:45</u>	Prepared: <u>05/06/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E0782</u>	Sequence: <u>1708440</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	300	2	D	EPA-160.1

7/2/17





Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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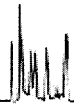
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-12-3
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-09</u>
Sampled: <u>05/01/17 08:15</u>	Prepared: <u>05/06/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E0783</u>	Sequence: <u>1708440</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	250	2	D	EPA-160.1

7/6/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-12-4

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-10</u>
Sampled: <u>05/01/17 07:35</u>	Prepared: <u>05/06/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E0782</u>	Sequence: <u>1708440</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	300	2	D	EPA-160.1

5/2/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-12-5
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-11</u>
Sampled: <u>05/01/17 07:15</u>	Prepared: <u>05/06/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E0782</u>	Sequence: <u>1708440</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	280	2	D	EPA-160.1

*7/6/17*



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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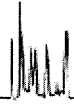
**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

MW-24-1
---------

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-12</u>
Sampled: <u>05/01/17 10:30</u>	Prepared: <u>05/06/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E0782</u>	Sequence: <u>1708440</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	470	3.33	D	EPA-160.1

7/2/17



Tidewater Inc. 3761 Attucks Drive Powell, OH 43065	Reported: 6/20/2017 2:04:33PM Project: JPL- GW Monitoring Wells Project Number: 2Q17 Project Manager: David Conner
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**INORGANIC ANALYSIS DATA SHEET**  
**EPA-160.1**

EB-10-050117

Laboratory: <u>BC Laboratories</u>	SDG: <u>17-11629</u>
Client: <u>Tidewater Inc.</u>	Project: <u>JPL- GW Monitoring Wells</u>
Matrix: <u>Water</u>	Laboratory ID: <u>1711629-13</u>
Sampled: <u>05/01/17 15:00</u>	Prepared: <u>05/06/17 13:00</u>
Solids: <u>0.00</u>	Preparation: <u>No Prep</u>
Batch: <u>B[E0783</u>	Sequence: <u>1708440</u>
	Calibration: <u>UNASSIGNED</u>
	Instrument: <u>MANUAL</u>

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
---	Total Dissolved Solids @ 180 C	6.7	0.667	UD	EPA-160.1

*7/6/17*

LDC #: 38952E6

**VALIDATION COMPLETENESS WORKSHEET**

Date: 7/6/17

SDG #: 17-11629

Level III/IV

Page: 1 of 2

Laboratory: BC Laboratories, Inc.

Reviewer: V3

2nd Reviewer: [Signature]

**METHOD: (Analyte)** Alkalinity (SM2320B), Chloride, Nitrate-N, Sulfate (EPA Method 300.0), Nitrite-N (EPA Method 353.2), Hexavalent Chromium (EPA SW846 Method 7196), Orthophosphate (EPA Method 365.1), Perchlorate (EPA Method 314.0), pH EPA Method 150.1), TDS (EPA Method 160.1)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A SW	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	
V	Field blanks	SW	
VI.	Matrix Spike/Matrix Spike Duplicates	A	
VII.	Duplicate sample analysis	A	
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	N	
X.	Sample result verification	A	Not reviewed for Level III validation.
XI	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

\*\* Indicates sample was underwent Level IV review

	Client ID	Lab ID	Matrix	Date
1	MW-11-1	1711629-02	Water	05/01/17
2	MW-11-2	1711629-03	Water	05/01/17
3	MW-11-3**	1711629-04**	Water	05/01/17
4	MW-11-4	1711629-05	Water	05/01/17
5	MW-11-5	1711629-06	Water	05/01/17
6	MW-12-1	1711629-07	Water	05/01/17
7	MW-12-2	1711629-08	Water	05/01/17
8	MW-12-3	1711629-09	Water	05/01/17
9	MW-12-4	1711629-10	Water	05/01/17
10	MW-12-5	1711629-11	Water	05/01/17
11	MW-24-1	1711629-12	Water	05/01/17
12	EB-10-050117	1711629-13	Water	05/01/17
13	MW-11-2MS	1711629-03MS	Water	05/01/17
14	MW-11-2MSD	1711629-03MSD	Water	05/01/17
15	MW-11-2DUP	1711629-03DUP	Water	05/01/17
16	MW-12-3MS	1711629-09MS	Water	05/01/17
17	MW-12-3MSD	1711629-09MSD	Water	05/01/17

LDC #: 38952E6  
SDG #: 17-11629  
Laboratory: BC Laboratories, Inc.

**VALIDATION COMPLETENESS WORKSHEET**

Level III/IV

Date: 7/6/17  
Page: 2 of 2  
Reviewer: JN  
2nd Reviewer: Q

**METHOD: (Analyte)** Alkalinity (SM2320B), Chloride, Nitrate-N, Sulfate (EPA Method 300.0), Nitrite-N (EPA Method 353.2), Hexavalent Chromium (EPA SW846 Method 7196), Orthophosphate (EPA Method 365.1), Perchlorate (EPA Method 314.0), pH EPA Method 150.1, TDS (EPA Method 160.1)

	Client ID	Lab ID	Matrix	Date
18	MW-12-3DUP	1711629-09DUP	Water	05/01/17
19	MW-24-1DUP	1711629-12DUP	Water	05/01/17
20				
21				
22				
23				
24				

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Method:** Inorganics (EPA Method See Cover)

Validation Area	Yes	No	NA	Findings/Comments
<b>I. Technical holding times</b>				
All technical holding times were met.		✓		
<b>II. Calibration</b>				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)	✓			
Were balance checks performed as required? (Level IV only)	✓			
<b>III. Blanks</b>				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
<b>IV. Matrix spike/Matrix spike duplicates and Duplicates</b>				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL (≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
<b>V. Laboratory control samples</b>				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
<b>VI. Regional Quality Assurance and Quality Control</b>				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	



**VALIDATION FINDINGS CHECKLIST**

Validation Area	Yes	No	NA	Findings/Comments
<b>VII. Sample Result Verification</b>				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/			
Were detection limits < RL?	/			
<b>VIII. Overall assessment of data</b>				
Overall assessment of data was found to be acceptable.	/			
<b>IX. Field duplicates</b>				
Field duplicate pairs were identified in this SDG.		/		
Target analytes were detected in the field duplicates.			/	
<b>X. Field blanks</b>				
Field blanks were identified in this SDG.	/			
Target analytes were detected in the field blanks.	/			



**VALIDATION FINDINGS WORKSHEET**  
**Technical Holding Times**

All circled dates have exceeded the technical holding time.

Y/N/N/A Were all samples preserved as applicable to each method?

Y/N/N/A Were all cooler temperatures within validation criteria?

Method:		EPA 150.1					
Parameters:		pH					
Technical holding time:		48 hours					
Sample ID	Sampling date	Analysis date	Total Time	Qualifier	Analysis date	Total Time	Qualifier
1	5/1/17 14:45	5/3/17 16:13	49.47	J/UJ/P			
2	5/1/17 14:20	5/3/17 16:01	49.68	J/UJ/P			
3	5/1/17 13:40	5/3/17 16:19	50.65	J/UJ/P			
4	5/1/17 13:10	5/3/17 16:25	51.25	J/UJ/P			
5	5/1/17 12:25	5/3/17 16:31	52.10	J/UJ/P			
6	5/1/17 09:15	5/3/17 16:37	55.37	J/UJ/P			
7	5/1/17 08:45	5/3/17 16:44	55.98	J/UJ/P			
8	5/1/17 08:15	5/3/17 16:50	56.58	J/UJ/P			
9	5/1/17 07:35	5/3/17 16:56	57.35	J/UJ/P			
10	5/1/17 07:15	5/3/17 17:02	57.78	J/UJ/P			
11	5/1/17 10:30	5/3/17 17:23	54.88	J/UJ/P			
12	5/1/17 15:00	5/3/17 17:37	50.62	J/UJ/P			

## VALIDATION FINDINGS WORKSHEET

### Blanks

METHOD: Inorganics, Method See Cover

Conc. units: mg/L

Associated Samples: 1 - 5, 11, 12

Analyte	Blank ID	Blank ID	Blank Action Limit												
	PB	ICB/CCB (mg/L)		2	<del>11</del>										
Cr6+	0.00072900		0.003645	0.00095	0.00099										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:  
 All contaminants within five times the method blank concentration were qualified as not detected, "U".



LDC #: 38952Ee

**Validation Findings Worksheet**  
**Initial and Continuing Calibration Calculation Verification**

Page: 1 of 1  
 Reviewer: JB  
 2nd Reviewer: Q

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of ORP<sub>4</sub> was recalculated. Calibration date: 2/5/17

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution  
 True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (ug/L)	Response	Recalculated	Reported	Acceptable (Y/N)
					r or r <sup>2</sup>	r or r <sup>2</sup>	
Initial calibration	Orthophosphate	s1	0	0.00715	0.999565	0.999565	Y
		s2	0.02	0.01614			
		s3	0.1	0.02608			
		s4	0.2	0.04522			
		s5	0.5	0.11701			
		s6	1	0.2293			
		s7	2	0.4541			
Calibration verification	SO <sub>4</sub>	ICV	103457mg/L	100.00mg/L	103%	102%	Y
Calibration verification	20:41 ClO <sub>4</sub>	CCV <sub>2</sub>	8.41078	10000 ug/L	84.1%	86.6%	Y
Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

**VALIDATION FINDINGS WORKSHEET**  
**Level IV Recalculation Worksheet**

**METHOD:** Inorganics, Method See Cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$
 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).  
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$
 Where, S = Original sample concentration  
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated	Reported	Acceptable (Y/N)
					%R / RPD	%R / RPD	
LCS	Laboratory control sample	TDS	640 mg/L	586.00 mg/L	1097	1097	Y
MS	<sup>629.5</sup> Matrix spike sample 4.42	NO <sub>3</sub>	<sup>SR=ND</sup> (SSR-SR) 5.332 mg/L	5.0505 mg/L	1067	106	Y
MST	Duplicate sample 59	NO <sub>3</sub>	5.3241 mg/L	<sup>FOUND: 5.332 mg/L</sup> 0.20315	0.1487 RPD	0.2637 RPD	Y

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

