2203154

GC/MS Volatiles:
The samples were analyzed using GC/MS following the current revision of SOP 525 based on SW-846 Method 8260C. The samples were also analyzed for Gasoline Range Organics (GRO).

All acceptance criteria were met.

GC/MS Semivolatiles:
The sample was analyzed using GC/MS following the current revision of SOP 506 based on SW-846 Method 8270D.

All acceptance criteria were met.

Dissolved Gasses:
The sample was prepared and analyzed according to method RSK-175 procedures and the current revision of SOP 449.

All acceptance criteria were met.

DRO:
The samples were analyzed following the current revision of SOP 406 generally based on SW-846 Methods 8000C and 8015D. TEPH is a multicomponent mixture and is quantitated by summing the entire carbon range, rather than individual peaks. The carbon range integrated in this test extends from C10 to C28.

All acceptance criteria were met.

BART:
The Biological Activity Reaction Test was completed with the Iron-Related Bacteria, Sulfate-Reducing Bacteria, and Slime-Forming Bacteria kit manufactured by Hach Company. The analysis was performed following the manufacturer provided instructions. If the target analyte is not detected (absent), then the sample will be reported with “ND” in the result field. If the target analyte is detected (present), then the sample will be reported with the estimated colony forming units/mL (cfu/mL) as provided by the manufacturer based on the day reaction was observed.

Metals:

The samples were analyzed following Methods for the Determination of Metals in Environmental Samples – Supplement 1 procedures. Analysis by ICPMS followed method 200.8 and the current revision of SOP 827.

The samples were to be analyzed for dissolved metals. The samples were filtered through a 0.45 micron filter and preserved with nitric acid to a pH less than two prior to analysis.

All acceptance criteria were met.

Inorganics:

The samples were analyzed following EMSL and Standard Method procedures for the current revisions of the following SOPs and methods:

Analyte	Method	SOP #
Alkalinity	SM2320B	1106
Bicarbonate	SM2320B	1106
Carbonate	SM2320B	1106
pH	SM4500-H^+ B	1126
Specific conductance	SM2510B	1128
Total phosphorus	SM4500-P B(5) and E	1119
TDS	SM2540C	1101
Bromide	300.0 Revision 2.1	1113
Chloride	300.0 Revision 2.1	1113
Fluoride	300.0 Revision 2.1	1113
Nitrate as N	300.0 Revision 2.1	1113
Nitrite as N	300.0 Revision 2.1	1113
Total Nitrates	300.0 Revision 2.1	1113
Sulfate	300.0 Revision 2.1	1113

All acceptance criteria were met.

Client: Western Water and Land, Inc. **Date:** *28-Mar-22*
Project: TEP Rule 411 Workover **Work Order:** 2203154
Sample ID: Tompkins MW-1 **Lab ID:** 2203154-1
Legal Location: **Matrix:** WATER
Collection Date: 3/8/2022 14:40 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
ALKALINITY AS CALCIUM CARBONATE			**SM2320B**		Prep Date: **3/15/2022**		PrepBy: **KRL**
BICARBONATE AS CaCO3	**230**		**20**	**MG/L**	1		3/15/2022
CARBONATE AS CaCO3	ND		20	MG/L	1		3/15/2022
TOTAL ALKALINITY AS CaCO3	**230**		**20**	**MG/L**	1		3/15/2022
BIOLOGICAL ACTIVITY REACTION TEST			**BART**		Prep Date: **3/14/2022**		PrepBy: **WJS**
IRON RELATED BACTERIA	**140000**		**1**	**cfu/ml**	1		3/22/2022
SLIME FORMING BACTERIA	**440000**		**1**	**cfu/ml**	1		3/22/2022
SULFATE REDUCING BACTERIA	**500000**		**1**	**cfu/ml**	1		3/22/2022
DIESEL RANGE ORGANICS			**SW8015M**		Prep Date: **3/15/2022**		PrepBy: **JRS**
Diesel Range Organics	ND		1	MG/L	1	0.51	3/22/2022 00:48
Surr: O-TERPHENYL	*103*		*69-120*	*%REC*	1		3/22/2022 00:48
DISSOLVED GASSES			**RSK175**		Prep Date: **3/15/2022**		PrepBy: **JRS**
METHANE	ND		1	UG/L	1	1	3/15/2022 14:35
ETHANE	ND		2	UG/L	1	2	3/15/2022 14:35
PROPANE	ND		1	UG/L	1	1	3/15/2022 14:35
GC/MS VOLATILES			**SW8260_25**		Prep Date: **3/22/2022**		PrepBy: **TWK**
BENZENE	ND		1	UG/L	1	0.3	3/22/2022 17:43
TOLUENE	ND		1	UG/L	1	0.34	3/22/2022 17:43
ETHYLBENZENE	ND		1	UG/L	1	0.33	3/22/2022 17:43
M+P-XYLENE	ND		1	UG/L	1	0.55	3/22/2022 17:43
O-XYLENE	ND		1	UG/L	1	0.34	3/22/2022 17:43
1,3,5-TRIMETHYLBENZENE	ND		1	UG/L	1	0.34	3/22/2022 17:43
1,2,4-TRIMETHYLBENZENE	ND		1	UG/L	1	0.33	3/22/2022 17:43
NAPHTHALENE	ND		1	UG/L	1	0.52	3/22/2022 17:43
Surr: DIBROMOFLUOROMETHANE	*94*		*80-120*	*%REC*	1		3/22/2022 17:43
Surr: TOLUENE-D8	*102*		*80-120*	*%REC*	1		3/22/2022 17:43
Surr: 4-BROMOFLUOROBENZENE	*102*		*80-120*	*%REC*	1		3/22/2022 17:43
GASOLINE RANGE ORGANICS	ND		100	UG/L	1	51	3/22/2022 17:43
ION CHROMATOGRAPHY			**EPA300.0**		Prep Date: **3/9/2022**		PrepBy: **AOW**
BROMIDE	ND		0.2	MG/L	1	0.064	3/9/2022 14:49
CHLORIDE	**3.4**		**0.2**	**MG/L**	1	0.076	3/9/2022 14:49
FLUORIDE	**0.24**		**0.1**	**MG/L**	1	0.039	3/9/2022 14:49
NITRATE/NITRITE AS N	**2.6**		**0.15**	**MG/L**	1	0.092	3/9/2022 14:49
NITRATE AS N	**1.2**		**0.2**	**MG/L**	1	0.092	3/9/2022 14:49
NITRITE AS N	**1.4**		**0.15**	**MG/L**	1	0.069	3/9/2022 14:49
SULFATE	**22**		**1**	**MG/L**	1	0.53	3/9/2022 14:49
DISSOLVED METALS BY 200.8			**EPA200.8**		Prep Date: **3/14/2022**		PrepBy: **WJS**
BARIUM	**0.16**		**0.001**	**MG/L**	10	0.00049	3/16/2022 11:29
BORON	**0.056**		**0.05**	**MG/L**	10	0.026	3/16/2022 11:29
CALCIUM	**33**		**1**	**MG/L**	10	0.18	3/16/2022 11:29
IRON	ND		0.15	MG/L	10	0.071	3/16/2022 11:29

Client:	Western Water and Land, Inc.	**Date:**	*28-Mar-22*
Project:	TEP Rule 411 Workover	**Work Order:**	2203154
Sample ID:	Tompkins MW-1	**Lab ID:**	2203154-1
Legal Location:		**Matrix:**	WATER
Collection Date:	3/8/2022 14:40	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
MAGNESIUM	**27**		**0.1**	**MG/L**	10	0.023	3/16/2022 11:29
MANGANESE	ND		0.004	MG/L	10	0.0021	3/16/2022 11:29
POTASSIUM	**2.3**		**1**	**MG/L**	10	0.2	3/16/2022 11:29
SELENIUM	**0.0028**		**0.0015**	**MG/L**	10	0.00067	3/16/2022 11:29
SODIUM	**41**		**1**	**MG/L**	10	0.13	3/16/2022 11:29
STRONTIUM	**0.6**		**0.001**	**MG/L**	10	0.00024	3/16/2022 11:29
PH			**SM4500-H**		Prep Date: **3/10/2022**		PrepBy: **KRL**
PH	**7.94**		**0.1**	**pH**	1		3/10/2022
SPECIFIC CONDUCTANCE IN WATER			**SM2510B**		Prep Date: **3/10/2022**		PrepBy: **KRL**
SPECIFIC CONDUCTIVITY	**485**		**1**	**umhos/cm**	1		3/10/2022
TOTAL DISSOLVED SOLIDS			**SM2540C**		Prep Date: **3/10/2022**		PrepBy: **KRL**
TOTAL DISSOLVED SOLIDS	ND		20	MG/L	1		3/15/2022
TOTAL PHOSPHORUS AS P			**SM4500-P**		Prep Date: **3/14/2022**		PrepBy: **AOW**
TOTAL PHOSPHORUS	**0.043**	J	**0.05**	**MG/L**	1	0.016	3/15/2022

Client: Western Water and Land, Inc. **Date:** *28-Mar-22*
Project: TEP Rule 411 Workover **Work Order:** 2203154
Sample ID: Revell Spr **Lab ID:** 2203154-2
Legal Location: **Matrix:** WATER
Collection Date: 3/8/2022 10:35 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
ALKALINITY AS CALCIUM CARBONATE			**SM2320B**		Prep Date: **3/15/2022**		PrepBy: **KRL**
BICARBONATE AS CaCO3	**240**		**20**	**MG/L**	1		3/15/2022
CARBONATE AS CaCO3	ND		20	MG/L	1		3/15/2022
TOTAL ALKALINITY AS CaCO3	**240**		**20**	**MG/L**	1		3/15/2022
DIESEL RANGE ORGANICS			**SW8015M**		Prep Date: **3/15/2022**		PrepBy: **JRS**
Diesel Range Organics	**0.56**	J	**1.1**	**MG/L**	1	0.53	3/22/2022 01:09
Surr: O-TERPHENYL	*105*		*69-120*	*%REC*	1		3/22/2022 01:09
GC/MS SEMI-VOLATILES			**SW8270**		Prep Date: **3/10/2022**		PrepBy: **CPC**
NAPHTHALENE	ND		9.3	UG/L	1	2.8	3/12/2022 09:32
2-METHYLNAPHTHALENE	ND		9.3	UG/L	1	2.8	3/12/2022 09:32
ACENAPHTHYLENE	ND		9.3	UG/L	1	2.8	3/12/2022 09:32
ACENAPHTHENE	ND		9.3	UG/L	1	2.8	3/12/2022 09:32
FLUORENE	ND		9.3	UG/L	1	2.8	3/12/2022 09:32
PHENANTHRENE	ND		9.3	UG/L	1	2.8	3/12/2022 09:32
ANTHRACENE	ND		9.3	UG/L	1	2.8	3/12/2022 09:32
FLUORANTHENE	ND		9.3	UG/L	1	2.8	3/12/2022 09:32
PYRENE	ND		9.3	UG/L	1	2.8	3/12/2022 09:32
BENZO(A)ANTHRACENE	ND		9.3	UG/L	1	2.8	3/12/2022 09:32
CHRYSENE	ND		9.3	UG/L	1	2.8	3/12/2022 09:32
BENZO(B)FLUORANTHENE	ND		9.3	UG/L	1	2.8	3/12/2022 09:32
BENZO(K)FLUORANTHENE	ND		9.3	UG/L	1	2.8	3/12/2022 09:32
BENZO(A)PYRENE	ND		9.3	UG/L	1	2.8	3/12/2022 09:32
INDENO(1,2,3-CD)PYRENE	ND		9.3	UG/L	1	2.8	3/12/2022 09:32
DIBENZO(A,H)ANTHRACENE	ND		9.3	UG/L	1	2.8	3/12/2022 09:32
BENZO(G,H,I)PERYLENE	ND		9.3	UG/L	1	2.8	3/12/2022 09:32
Surr: NITROBENZENE-D5	*87*		*43-120*	*%REC*	1		3/12/2022 09:32
Surr: 2-FLUOROBIPHENYL	*87*		*43-120*	*%REC*	1		3/12/2022 09:32
Surr: TERPHENYL-D14	*49*		*29-126*	*%REC*	1		3/12/2022 09:32
GC/MS VOLATILES			**SW8260_25**		Prep Date: **3/22/2022**		PrepBy: **TWK**
BENZENE	ND		1	UG/L	1	0.3	3/22/2022 18:02
TOLUENE	ND		1	UG/L	1	0.34	3/22/2022 18:02
ETHYLBENZENE	ND		1	UG/L	1	0.33	3/22/2022 18:02
M+P-XYLENE	ND		1	UG/L	1	0.55	3/22/2022 18:02
O-XYLENE	ND		1	UG/L	1	0.34	3/22/2022 18:02
1,3,5-TRIMETHYLBENZENE	ND		1	UG/L	1	0.34	3/22/2022 18:02
1,2,4-TRIMETHYLBENZENE	ND		1	UG/L	1	0.33	3/22/2022 18:02
NAPHTHALENE	ND		1	UG/L	1	0.52	3/22/2022 18:02
Surr: DIBROMOFLUOROMETHANE	*95*		*80-120*	*%REC*	1		3/22/2022 18:02
Surr: TOLUENE-D8	*101*		*80-120*	*%REC*	1		3/22/2022 18:02
Surr: 4-BROMOFLUOROBENZENE	*101*		*80-120*	*%REC*	1		3/22/2022 18:02
GASOLINE RANGE ORGANICS	ND		100	UG/L	1	51	3/22/2022 18:02
ION CHROMATOGRAPHY			**EPA300.0**		Prep Date: **3/9/2022**		PrepBy: **AOW**

Client: Western Water and Land, Inc. **Date:** *28-Mar-22*
Project: TEP Rule 411 Workover **Work Order:** 2203154
Sample ID: Revell Spr **Lab ID:** 2203154-2
Legal Location: **Matrix:** WATER
Collection Date: 3/8/2022 10:35 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
BROMIDE	ND		0.2	MG/L	1	0.064	3/9/2022 14:55
CHLORIDE	**4.5**		**0.2**	**MG/L**	1	0.076	3/9/2022 14:55
FLUORIDE	**0.24**		**0.1**	**MG/L**	1	0.039	3/9/2022 14:55
NITRATE/NITRITE AS N	**2.2**		**0.15**	**MG/L**	1	0.092	3/9/2022 14:55
NITRATE AS N	**0.82**		**0.2**	**MG/L**	1	0.092	3/9/2022 14:55
NITRITE AS N	**1.4**		**0.15**	**MG/L**	1	0.069	3/9/2022 14:55
SULFATE	**25**		**1**	**MG/L**	1	0.53	3/9/2022 14:55
DISSOLVED METALS BY 200.8			**EPA200.8**		Prep Date: **3/14/2022**		PrepBy: **WJS**
BARIUM	**0.14**		**0.001**	**MG/L**	10	0.00049	3/16/2022 11:32
BORON	**0.066**		**0.05**	**MG/L**	10	0.026	3/16/2022 11:32
CALCIUM	**37**		**1**	**MG/L**	10	0.18	3/16/2022 11:32
IRON	ND		0.15	MG/L	10	0.071	3/16/2022 11:32
MAGNESIUM	**28**		**0.1**	**MG/L**	10	0.023	3/16/2022 11:32
MANGANESE	ND		0.004	MG/L	10	0.0021	3/16/2022 11:32
POTASSIUM	**2.2**		**1**	**MG/L**	10	0.2	3/16/2022 11:32
SELENIUM	**0.0021**		**0.0015**	**MG/L**	10	0.00067	3/16/2022 11:32
SODIUM	**43**		**1**	**MG/L**	10	0.13	3/16/2022 11:32
STRONTIUM	**0.65**		**0.001**	**MG/L**	10	0.00024	3/16/2022 11:32
PH			**SM4500-H**		Prep Date: **3/10/2022**		PrepBy: **KRL**
PH	**7.78**		**0.1**	**pH**	1		3/10/2022
SPECIFIC CONDUCTANCE IN WATER			**SM2510B**		Prep Date: **3/10/2022**		PrepBy: **KRL**
SPECIFIC CONDUCTIVITY	**506**		**1**	**umhos/cm**	1		3/10/2022
TOTAL DISSOLVED SOLIDS			**SM2540C**		Prep Date: **3/10/2022**		PrepBy: **KRL**
TOTAL DISSOLVED SOLIDS	ND		20	MG/L	1		3/15/2022

Client: Western Water and Land, Inc. **Date:** *28-Mar-22*
Project: TEP Rule 411 Workover **Work Order:** 2203154
Sample ID: Trip Blank **Lab ID:** 2203154-3
Legal Location: **Matrix:** WATER
Collection Date: 3/8/2022 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed
GC/MS VOLATILES			**SW8260_25**		Prep Date: **3/22/2022**		PrepBy: **TWK**
BENZENE	ND		1	UG/L	1	0.3	3/22/2022 18:22
TOLUENE	ND		1	UG/L	1	0.34	3/22/2022 18:22
ETHYLBENZENE	ND		1	UG/L	1	0.33	3/22/2022 18:22
M+P-XYLENE	ND		1	UG/L	1	0.55	3/22/2022 18:22
O-XYLENE	ND		1	UG/L	1	0.34	3/22/2022 18:22
1,3,5-TRIMETHYLBENZENE	ND		1	UG/L	1	0.34	3/22/2022 18:22
1,2,4-TRIMETHYLBENZENE	ND		1	UG/L	1	0.33	3/22/2022 18:22
NAPHTHALENE	ND		1	UG/L	1	0.52	3/22/2022 18:22
Surr: DIBROMOFLUOROMETHANE	*96*		*80-120*	*%REC*	1		3/22/2022 18:22
Surr: TOLUENE-D8	*101*		*80-120*	*%REC*	1		3/22/2022 18:22
Surr: 4-BROMOFLUOROBENZENE	*102*		*80-120*	*%REC*	1		3/22/2022 18:22
GASOLINE RANGE ORGANICS	ND		100	UG/L	1	51	3/22/2022 18:22

Client:	Western Water and Land, Inc.	**Date:**	*28-Mar-22*
Project:	TEP Rule 411 Workover	**Work Order:**	2203154
Sample ID:	Trip Blank	**Lab ID:**	2203154-3
Legal Location:		**Matrix:**	WATER
Collection Date:	3/8/2022	**Percent Moisture:**	

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	MDL	Date Analyzed

Explanation of Qualifiers

Radiochemistry:

- "Report Limit" is the MDC
U or ND - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
Y2 - Chemical Yield outside default limits.
W - DER is greater than Warning Limit of 1.42
* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
G - Sample density differs by more than 15% of LCS density.
D - DER is greater than Control Limit
M - Requested MDC not met.
M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
L - LCS Recovery below lower control limit.
H - LCS Recovery above upper control limit.
P - LCS, Matrix Spike Recovery within control limits.
N - Matrix Spike Recovery outside control limits
NC - Not Calculated for duplicate results less than 5 times MDC
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).
U or ND - Indicates that the compound was analyzed for but not detected.
E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
M - Duplicate injection precision was not met.
N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
* - Duplicate analysis (relative percent difference) not within control limits.
S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.
B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
E - Analyte concentration exceeds the upper level of the calibration range.
J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
A - A tentatively identified compound is a suspected aldol-condensation product.
X - The analyte was diluted below an accurate quantitation level.
* - The spike recovery is equal to or outside the control criteria used.
+ - The relative percent difference (RPD) equals or exceeds the control criteria.
G - A pattern resembling gasoline was detected in this sample.
D - A pattern resembling diesel was detected in this sample.
M - A pattern resembling motor oil was detected in this sample.
C - A pattern resembling crude oil was detected in this sample.
4 - A pattern resembling JP-4 was detected in this sample.
5 - A pattern resembling JP-5 was detected in this sample.
H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
- gasoline
- JP-8
- diesel
- mineral spirits
- motor oil
- Stoddard solvent
- bunker C

Batch ID: **HC220315-81-1** Instrument ID **FUELS-1** Method: **SW8015M**

LCS Sample ID: **HC220315-81** Units: **MG/L** Analysis Date: **3/21/2022 20:28**

Client ID: Run ID: **HC220323-82A** Prep Date: **3/15/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	8.9	1.07	8.33		107	53-120				20	
Surr: O-TERPHENYL	1.6		1.67		96	69-120					

LCSD Sample ID: **HC220315-81** Units: **MG/L** Analysis Date: **3/21/2022 20:50**

Client ID: Run ID: **HC220323-82A** Prep Date: **3/15/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	8.42	1.07	8.33		101	53-120		8.9	6	20	
Surr: O-TERPHENYL	1.6		1.67		96	69-120			0		

MB Sample ID: **HC220315-81** Units: **MG/L** Analysis Date: **3/21/2022 20:06**

Client ID: Run ID: **HC220323-82A** Prep Date: **3/15/2022** DF: **1**

Analyte	Result	ReportLimit	MDL	Qual
Diesel Range Organics	ND	1.1	0.54	
Surr: O-TERPHENYL	1.3		78 69-120	

The following samples were analyzed in this batch: 2203154-1 2203154-2

QC BATCH REPORT

Batch ID: **HC220315-91-2** Instrument ID **MEE-1** Method: **RSK175**

LCS Sample ID: **HC220315-91** Units: **UG/L** Analysis Date: **3/15/2022 13:13**
Client ID: Run ID: **HC220321-91A** Prep Date: **3/15/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	125	1	142		88	76-125				25	
ETHANE	243	2	267		91	70-120				25	
PROPANE	357	1	391		91	72-120				25	

LCSD Sample ID: **HC220315-91** Units: **UG/L** Analysis Date: **3/15/2022 14:14**
Client ID: Run ID: **HC220321-91A** Prep Date: **3/15/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	151	1	142		106	76-125		125	18	25	
ETHANE	291	2	267		109	70-120		243	18	25	
PROPANE	426	1	391		109	72-120		357	18	25	

MB Sample ID: **HC220315-91** Units: **UG/L** Analysis Date: **3/15/2022 13:25**
Client ID: Run ID: **HC220321-91A** Prep Date: **3/15/2022** DF: **1**

Analyte	Result	ReportLimit	MDL	Qual
METHANE	ND	1	1	
ETHANE	ND	2	2	
PROPANE	ND	1	1	

The following samples were analyzed in this batch: 2203154-1

QC BATCH REPORT

Batch ID: **IP220314-1-2** Instrument ID **ICPMS2** Method: **EPA200.8**

LCS Sample ID: **IM220314-1** Units: **MG/L** Analysis Date: **3/16/2022 10:53**

Client ID: Run ID: **IM220316-10A6** Prep Date: **3/14/2022** DF: **10**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BARIUM	0.096	0.001	0.1		96	85-115				20	
BORON	2.08	0.05	2		104	85-115				20	
CALCIUM	10.7	1	10		107	85-115				20	
IRON	4.7	0.15	5		94	85-115				20	
MAGNESIUM	9.89	0.1	10		99	85-115				20	
MANGANESE	0.103	0.004	0.1		103	85-115				20	
POTASSIUM	5.11	1	5		102	85-115				20	
SELENIUM	0.103	0.0015	0.1		103	85-115				20	
SODIUM	10	1	10		100	85-115				20	
STRONTIUM	0.102	0.001	0.1		102	85-115				20	

LCSD Sample ID: **IM220314-1** Units: **MG/L** Analysis Date: **3/16/2022 10:59**

Client ID: Run ID: **IM220316-10A6** Prep Date: **3/14/2022** DF: **10**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BARIUM	0.0963	0.001	0.1		96	85-115		0.096	0	20	
BORON	2.14	0.05	2		107	85-115		2.08	3	20	
CALCIUM	10.7	1	10		107	85-115		10.7	0	20	
IRON	4.65	0.15	5		93	85-115		4.7	1	20	
MAGNESIUM	9.95	0.1	10		100	85-115		9.89	1	20	
MANGANESE	0.104	0.004	0.1		104	85-115		0.103	1	20	
POTASSIUM	5.22	1	5		104	85-115		5.11	2	20	
SELENIUM	0.103	0.0015	0.1		103	85-115		0.103	0	20	
SODIUM	9.93	1	10		99	85-115		10	1	20	
STRONTIUM	0.101	0.001	0.1		101	85-115		0.102	1	20	

QC BATCH REPORT

Batch ID: **IP220314-1-2** Instrument ID **ICPMS2** Method: **EPA200.8**

MB Sample ID: **FP220310-1** Units: **MG/L** Analysis Date: **3/16/2022 10:41**

Client ID: Run ID: **IM220316-10A6** Prep Date: **3/14/2022** DF: **10**

Analyte	Result	ReportLimit	MDL	Qual
BARIUM	ND	0.001	0.00049	
BORON	ND	0.05	0.026	
CALCIUM	0.18	1	0.18	J
IRON	ND	0.15	0.071	
MAGNESIUM	ND	0.1	0.023	
MANGANESE	ND	0.004	0.0021	
POTASSIUM	ND	1	0.2	
SELENIUM	ND	0.0015	0.00067	
SODIUM	ND	1	0.13	
STRONTIUM	ND	0.001	0.00024	

The following samples were analyzed in this batch: 2203154-1 2203154-2

Batch ID: **EX220310-2-1** Instrument ID **HPSV4** Method: **SW8270**

LCS Sample ID: **EX220310-2** Units: **UG/L** Analysis Date: **3/12/2022 08:56**

Client ID: Run ID: **SV220312-4** Prep Date: **3/10/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
NAPHTHALENE	34.1	10	40		85	57-120				20	
2-METHYLNAPHTHALENE	33.7	10	40		84	61-120				20	
ACENAPHTHYLENE	35.2	10	40		88	63-120				20	
ACENAPHTHENE	36.6	10	40		91	62-120				20	
FLUORENE	37.8	10	40		95	64-120				20	
PHENANTHRENE	37.9	10	40		95	65-120				20	
ANTHRACENE	38.4	10	40		96	66-120				20	
FLUORANTHENE	39.1	10	40		98	66-120				20	
PYRENE	39.4	10	40		98	65-120				20	
BENZO(A)ANTHRACENE	35.9	10	40		90	65-120				20	
CHRYSENE	36.9	10	40		92	68-120				20	
BENZO(B)FLUORANTHENE	36.3	10	40		91	60-120				20	
BENZO(K)FLUORANTHENE	37.4	10	40		93	63-120				20	
BENZO(A)PYRENE	35.9	10	40		90	60-120				20	
INDENO(1,2,3-CD)PYRENE	36.1	10	40		90	59-120				20	
DIBENZO(A,H)ANTHRACENE	37.9	10	40		95	63-120				20	
BENZO(G,H,I)PERYLENE	36.2	10	40		91	58-120				20	
Surr: NITROBENZENE-D5	49		50		98	43-120					
Surr: 2-FLUOROBIPHENYL	47.4		50		95	43-120					
Surr: TERPHENYL-D14	50.2		50		100	29-126					

Batch ID: **EX220310-2-1** Instrument ID **HPSV4** Method: **SW8270**

LCSD Sample ID: **EX220310-2** Units: **UG/L** Analysis Date: **3/12/2022 09:14**

Client ID: Run ID: **SV220312-4** Prep Date: **3/10/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
NAPHTHALENE	35.1	10	40		88	57-120		34.1	3	20	
2-METHYLNAPHTHALENE	34.4	10	40		86	61-120		33.7	2	20	
ACENAPHTHYLENE	35.2	10	40		88	63-120		35.2	0	20	
ACENAPHTHENE	36.7	10	40		92	62-120		36.6	0	20	
FLUORENE	37.8	10	40		95	64-120		37.8	0	20	
PHENANTHRENE	37.8	10	40		94	65-120		37.9	0	20	
ANTHRACENE	38.4	10	40		96	66-120		38.4	0	20	
FLUORANTHENE	39.2	10	40		98	66-120		39.1	0	20	
PYRENE	39.3	10	40		98	65-120		39.4	0	20	
BENZO(A)ANTHRACENE	35.8	10	40		90	65-120		35.9	0	20	
CHRYSENE	36.8	10	40		92	68-120		36.9	0	20	
BENZO(B)FLUORANTHENE	36	10	40		90	60-120		36.3	1	20	
BENZO(K)FLUORANTHENE	37.1	10	40		93	63-120		37.4	1	20	
BENZO(A)PYRENE	35.2	10	40		88	60-120		35.9	2	20	
INDENO(1,2,3-CD)PYRENE	35.6	10	40		89	59-120		36.1	1	20	
DIBENZO(A,H)ANTHRACENE	37.5	10	40		94	63-120		37.9	1	20	
BENZO(G,H,I)PERYLENE	35.7	10	40		89	58-120		36.2	1	20	
Surr: NITROBENZENE-D5	49.3		50		99	43-120			1		
Surr: 2-FLUOROBIPHENYL	46.7		50		93	43-120			1		
Surr: TERPHENYL-D14	48.9		50		98	29-126			3		

QC BATCH REPORT

Batch ID: **EX220310-2-1** Instrument ID **HPSV4** Method: **SW8270**

MB Sample ID: **EX220310-2** Units: **UG/L** Analysis Date: **3/12/2022 08:38**

Client ID: Run ID: **SV220312-4** Prep Date: **3/10/2022** DF: **1**

Analyte	Result	ReportLimit	MDL			Qual
NAPHTHALENE	ND	10	3			
2-METHYLNAPHTHALENE	ND	10	3			
ACENAPHTHYLENE	ND	10	3			
ACENAPHTHENE	ND	10	3			
FLUORENE	ND	10	3			
PHENANTHRENE	ND	10	3			
ANTHRACENE	ND	10	3			
FLUORANTHENE	ND	10	3			
PYRENE	ND	10	3			
BENZO(A)ANTHRACENE	ND	10	3			
CHRYSENE	ND	10	3			
BENZO(B)FLUORANTHENE	ND	10	3			
BENZO(K)FLUORANTHENE	ND	10	3			
BENZO(A)PYRENE	ND	10	3			
INDENO(1,2,3-CD)PYRENE	ND	10	3			
DIBENZO(A,H)ANTHRACENE	ND	10	3			
BENZO(G,H,I)PERYLENE	ND	10	3			
Surr: NITROBENZENE-D5	40.4			81	43-120	
Surr: 2-FLUOROBIPHENYL	41.1			82	43-120	
Surr: TERPHENYL-D14	49.7			99	29-126	

The following samples were analyzed in this batch: 2203154-2

Client: Western Water and Land, Inc.
Work Order: 2203154
Project: TEP Rule 411 Workover

QC BATCH REPORT

Batch ID: **VL220322-44-1** Instrument ID **HPV4** Method: **SW8260_25**

LCS Sample ID: **VL220322-44** Units: **UG/L** Analysis Date: **3/22/2022 17:00**
Client ID: Run ID: **VL220322-44A** Prep Date: **3/22/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	1050	100	1000		105	75-121				20	

LCSD Sample ID: **VL220322-44** Units: **UG/L** Analysis Date: **3/22/2022 17:19**
Client ID: Run ID: **VL220322-44A** Prep Date: **3/22/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	1040	100	1000		104	75-121		1050	1	20	

MB Sample ID: **VL220322-4** Units: **UG/L** Analysis Date: **3/22/2022 10:53**
Client ID: Run ID: **VL220322-44A** Prep Date: **3/22/2022** DF: **1**

Analyte	Result	ReportLimit	MDL	Qual
GASOLINE RANGE ORGANICS	ND	100	51	

The following samples were analyzed in this batch: 2203154-1 2203154-2 2203154-3

QC BATCH REPORT

Batch ID: **VL220322-44-5** Instrument ID **HPV4** Method: **SW8260_25**

LCS Sample ID: **VL220322-4** Units: **UG/L** Analysis Date: **3/22/2022 09:52**

Client ID: Run ID: **VL220322-44A** Prep Date: **3/22/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BENZENE	9.83	1	10		98	80-120				20	
TOLUENE	9.91	1	10		99	80-120				20	
Surr: DIBROMOFLUOROMETHANE	24.6		25		98	80-120					
Surr: TOLUENE-D8	24.4		25		98	80-120					
Surr: 4-BROMOFLUOROBENZENE	25.1		25		100	80-120					

LCSD Sample ID: **VL220322-4** Units: **UG/L** Analysis Date: **3/22/2022 10:11**

Client ID: Run ID: **VL220322-44A** Prep Date: **3/22/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BENZENE	9.8	1	10		98	80-120		9.83	0	20	
TOLUENE	9.73	1	10		97	80-120		9.91	2	20	
Surr: DIBROMOFLUOROMETHANE	24.7		25		99	80-120			0		
Surr: TOLUENE-D8	24.8		25		99	80-120			1		
Surr: 4-BROMOFLUOROBENZENE	24.5		25		98	80-120			2		

MB Sample ID: **VL220322-4** Units: **UG/L** Analysis Date: **3/22/2022 10:53**

Client ID: Run ID: **VL220322-44A** Prep Date: **3/22/2022** DF: **1**

Analyte	Result	ReportLimit	MDL	Qual
BENZENE	ND	1	0.3	
TOLUENE	ND	1	0.34	
ETHYLBENZENE	ND	1	0.33	
M+P-XYLENE	ND	1	0.55	
O-XYLENE	ND	1	0.34	
1,3,5-TRIMETHYLBENZENE	ND	1	0.34	
1,2,4-TRIMETHYLBENZENE	ND	1	0.33	
NAPHTHALENE	ND	1	0.52	
Surr: DIBROMOFLUOROMETHANE	24.1		96 80-120	
Surr: TOLUENE-D8	25		100 80-120	
Surr: 4-BROMOFLUOROBENZENE	25.6		102 80-120	

The following samples were analyzed in this batch: 2203154-1 2203154-2 2203154-3

QC BATCH REPORT

Batch ID: **AK220315-1-1** Instrument ID **NONE** Method: **SM2320B**

LCS Sample ID: **AK220315-1** Units: **MG/L** Analysis Date: **3/15/2022**
Client ID: Run ID: **AK220315-1A1** Prep Date: **3/15/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL ALKALINITY AS CaCO3	93.3	5	100		93	85-115				15	

MB Sample ID: **AK220315-1** Units: **MG/L** Analysis Date: **3/15/2022**
Client ID: Run ID: **AK220315-1A1** Prep Date: **3/15/2022** DF: **1**

Analyte	Result	ReportLimit	MDL	Qual
BICARBONATE AS CaCO3	ND	5		
CARBONATE AS CaCO3	ND	5		
TOTAL ALKALINITY AS CaCO3	ND	5		

The following samples were analyzed in this batch: 2203154-1 2203154-2

QC BATCH REPORT

Batch ID: **IC220309-1-3** Instrument ID **IC3** Method: **EPA300.0**

LCS Sample ID: **IC220309-1** Units: **MG/L** Analysis Date: **3/9/2022 12:48**

Client ID: Run ID: **IC220309-1A4** Prep Date: **3/9/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BROMIDE	10.2	0.2	10		102	90-110				15	
CHLORIDE	9.44	0.2	10		94	90-110				15	
FLUORIDE	5.3	0.1	5		106	90-110				15	
NITRATE AS N	9.79	0.2	10		98	90-110				15	
NITRITE AS N	4.74	0.15	5		95	90-110				15	
SULFATE	47.5	1	50		95	90-110				15	

LCSD Sample ID: **IC220309-1** Units: **MG/L** Analysis Date: **3/9/2022 14:07**

Client ID: Run ID: **IC220309-1A4** Prep Date: **3/9/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BROMIDE	10.3	0.2	10		103	90-110		10.2	0	15	
CHLORIDE	9.63	0.2	10		96	90-110		9.44	2	15	
FLUORIDE	5.25	0.1	5		105	90-110		5.3	1	15	
NITRATE AS N	9.95	0.2	10		99	90-110		9.79	2	15	
NITRITE AS N	4.79	0.15	5		96	90-110		4.74	1	15	
SULFATE	48.3	1	50		97	90-110		47.5	2	15	

MB Sample ID: **IC220309-1** Units: **MG/L** Analysis Date: **3/9/2022 13:00**

Client ID: Run ID: **IC220309-1A4** Prep Date: **3/9/2022** DF: **1**

Analyte	Result	ReportLimit	MDL	Qual
BROMIDE	ND	0.2	0.064	
CHLORIDE	ND	0.2	0.076	
FLUORIDE	ND	0.1	0.039	
NITRATE AS N	ND	0.2	0.092	
NITRITE AS N	ND	0.15	0.069	
SULFATE	ND	1	0.53	

The following samples were analyzed in this batch: 2203154-1 2203154-2

QC BATCH REPORT

Batch ID: **pH220310-1-1** Instrument ID **pH-2** Method: **SM4500-H**

CCV Sample ID: **CCV** Units: **pH** Analysis Date: **3/10/2022**

Client ID: Run ID: **pH220310-1A1** Prep Date: **3/10/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
PH	7	0.1	7			6.9-7.1					

ICV Sample ID: **ICV** Units: **pH** Analysis Date: **3/10/2022**

Client ID: Run ID: **pH220310-1A1** Prep Date: **3/10/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
PH	7	0.1	7			6.9-7.1					

The following samples were analyzed in this batch: 2203154-1 2203154-2

QC BATCH REPORT

Batch ID: **SC220310-1-1** Instrument ID **pH-2** Method: **SM2510B**

CCV Sample ID: **CCV** Units: **umhos/cm** Analysis Date: **3/10/2022**

Client ID: Run ID: **SC220310-1A** Prep Date: **3/10/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
SPECIFIC CONDUCTIVITY	1330	1	1410		94	90-110					

ICV Sample ID: **ICV** Units: **umhos/cm** Analysis Date: **3/10/2022**

Client ID: Run ID: **SC220310-1A** Prep Date: **3/10/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
SPECIFIC CONDUCTIVITY	720	1	718		100	90-110					

The following samples were analyzed in this batch: 2203154-1 2203154-2

Client: Western Water and Land, Inc.
Work Order: 2203154
Project: TEP Rule 411 Workover

QC BATCH REPORT

Batch ID: **TD220310-1-1** Instrument ID **Balance** Method: **SM2540C**

LCS Sample ID: **TD220310-1** Units: **MG/L** Analysis Date: **3/15/2022**
Client ID: Run ID: **TD220315-1A1** Prep Date: **3/10/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	410	20	400		102	85-115				14	

LCSD Sample ID: **TD220310-1** Units: **MG/L** Analysis Date: **3/15/2022**
Client ID: Run ID: **TD220315-1A1** Prep Date: **3/10/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	410	20	400		102	85-115		410	0	14	

MB Sample ID: **TD220310-1** Units: **MG/L** Analysis Date: **3/15/2022**
Client ID: Run ID: **TD220315-1A1** Prep Date: **3/10/2022** DF: **1**

Analyte	Result	ReportLimit	MDL	Qual
TOTAL DISSOLVED SOLIDS	ND	20		

The following samples were analyzed in this batch: 2203154-1 2203154-2

Client: Western Water and Land, Inc.
Work Order: 2203154
Project: TEP Rule 411 Workover

QC BATCH REPORT

Batch ID: **TP220314-1-1** Instrument ID **Spec** Method: **SM4500-P**

LCS Sample ID: **TP220314-1** Units: **MG/L** Analysis Date: **3/15/2022**
Client ID: Run ID: **TP220315-1A2** Prep Date: **3/14/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL PHOSPHORUS	0.489	0.05	0.5		98	80-120				20	

LCSD Sample ID: **TP220314-1** Units: **MG/L** Analysis Date: **3/15/2022**
Client ID: Run ID: **TP220315-1A2** Prep Date: **3/14/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL PHOSPHORUS	0.489	0.05	0.5		98	80-120		0.489	0	20	

MB Sample ID: **TP220314-1** Units: **MG/L** Analysis Date: **3/15/2022**
Client ID: Run ID: **TP220315-1A2** Prep Date: **3/14/2022** DF: **1**

Analyte	Result	ReportLimit	MDL	Qual
TOTAL PHOSPHORUS	ND	0.05	0.016	

The following samples were analyzed in this batch: 2203154-1