

FORMATION WATER

PRIMARY DB KEY: **FH20**

LEASE #:

FIELD/AREA:

PROJECT NO. : **201904076**

COMPANY NAME : **NGL WATER SOLUTIONS**

OFFICE / BRANCH: **GREELEY, CO**

CUSTOMER REF:

PRODUCER :

FIELD DATA

SAMPLE CYCLE:

SAMPLE PRES. :

LAB PRES:

SAMPLE TEMP. :

AMBIENT TEMP.:

FIELD COMMENTS: **Field TDS: 183000 gl @66.8F - 96bbl & 96bbl recovered**

LAB COMMENTS:

NAME/DESCRIP : **SOUTH WELD SWD 1**

TEST #1 PKR@9847 BP@10996

VIRGIL, MISSOURI, DEMOINES, ATOKA

ANALYSIS NO. : **01**

ANALYSIS DATE: **APRIL 16, 2019 18:00**

SAMPLE DATE : **APRIL 4, 2019**

TO:

EFFECTIVE DATE:

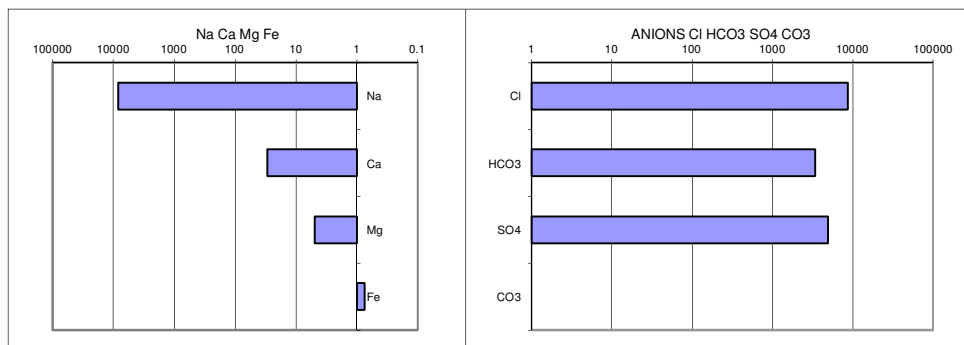
SAMPLE TYPE: **SPOT**

CYLINDER NO. : **1L GLASS**

SAMPLED BY : **TIM SHERWOOD**

SAMPLING COMPANY: **IPT**

<u>PARAMETER</u>	<u>METHOD</u>	<u>DETECTION LIMIT</u>	<u>REPORTED RESULTS/UNITS</u>
Visual Appearance	VISUAL	—	Cloudy rating
Apparent Odor	SMELL	—	Hydrocarbon rating
Ammonia Nitrogen	EPA 350.1	0.03	1.41 mg/L as NH3
Bicarbonate	SM2320-B	10	3428.2 as HCO3
Boron	EPA 200.8	0.1	4.84 mg/L
Calcium	EPA 200.8	0.5	29.4 mg/L
Calcium Hardness	EPA 200.8 / C/	0	73.4 mg/L as CaCO3
Carbonate	SM2320-B	10	ND mg/L as CaCO3
Chloride	EPA 300.0	120	8740 mg/L
Iron	EPA 200.8	0.1	0.744 mg/L
Magnesium	EPA 200.8	0.5	4.98 mg/L
Nitrate Nitrogen	EPA 300.0	10	ND mg/L as N
pH	SM4500-H+ B	1	8.17 pH Units
Potassium	EPA 200.8	0.5	395 mg/L
Resistivity	@ 77° F SM2510B/ CL/	0	#N/A ohm.m
Sodium	EPA 200.8	0.5	8250 mg/L
Sodium Adsorption Ratio	EPA 200.8 / C/	0	370.2 units
Specific Conductance	SM2510B	1	33500 umhos/cm
Specific Gravity	SM 2710F	0	1.05 units
Sulfate	EPA 300.0	60	4910 mg/L
Total Alkalinity	SM2320-B	10	2810 mg/L as CaCO3
Total Dissolved Solids	SM2540C	10	16400 mg/L



BDL = Below Detection Limit

ND = Non Detect

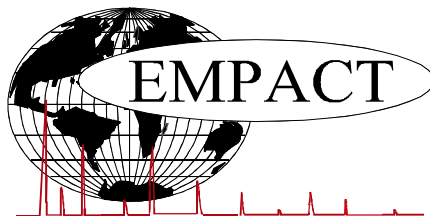
N/A = Not Analyzed for this Parameter

mg/L = Milligram Per Liter or ppm (wt/vol); ug/L = Micrograms Per Liter or PPB (wt/vol)

SM = "Standard Methods for the Examination of Water and Wastewater", APHA, 19th Edition, 1995

EPA = "Methods of Chemical Analysis of Water and Wastes", USEPA, EPA-600/4-79-020 rev 3/83

The data presented herein has been acquired by means of current analytical techniques and represents the judicious conclusion EMPACT Analytical Systems, Inc. Results of the analysis can be affected by the sampling conditions, therefore, are only warranted through proper lab protocol. EMPACT assumes no responsibility for interpretation or any consequences from application of the reported information and is the sole liability of the user. The reproduction in any media of this reported information may not be made, in portion or as a whole, without the written permission of EMPACT Analytical Systems, Inc.



FORMATION WATER

PRIMARY DB KEY: **FH20**

LEASE #:

FIELD/AREA:

NAME/DESCRIP: **SOUTH WELD SWD 1**

TEST #2 PKR@9524 BP@9847

ADMIRE, COUNCIL GROVE, AMAZON, WOLFCAMP

PROJECT NO. : **201904076**

COMPANY NAME: **NGL WATER SOLUTIONS**

OFFICE / BRANCH: **GREELEY, CO**

CUSTOMER REF:

PRODUCER :

ANALYSIS NO. : **02**

ANALYSIS DATE: **APRIL 16, 2019 00:00**

SAMPLE DATE : **APRIL 5, 2019**

TO:

EFFECTIVE DATE:

*****FIELD DATA*****

SAMPLE CYCLE:

SAMPLE PRES. :

LAB PRES:

SAMPLE TEMP. :

AMBIENT TEMP.:

FIELD COMMENTS: **Field TDS: 165000 gl @72.6F - 87TBR**

LAB COMMENTS:

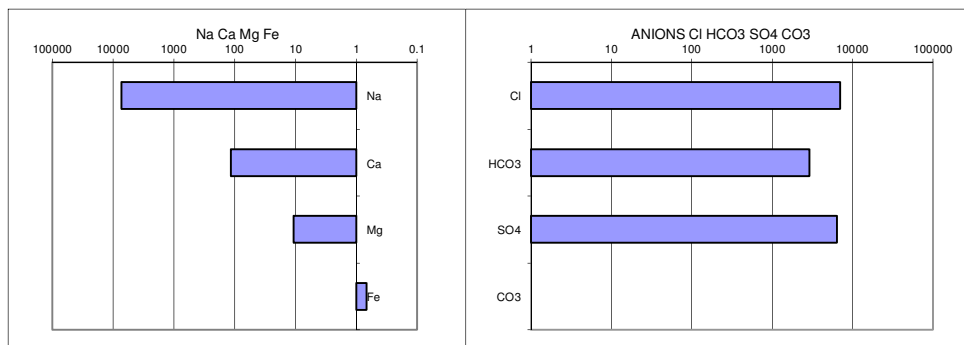
SAMPLE TYPE: **SPOT**

CYLINDER NO. : **1L GLASS**

SAMPLED BY : **TIM SHERWOOD**

SAMPLING COMPANY: **IPT**

<u>PARAMETER</u>	<u>METHOD</u>	<u>DETECTION LIMIT</u>	<u>REPORTED RESULTS/UNITS</u>
Visual Appearance	VISUAL	—	Cloudy rating
Apparent Odor	SMELL	—	Hydrocarbon rating
Ammonia Nitrogen	EPA 350.1	0.03	1.81 mg/L as NH3
Bicarbonate	SM2320-B	10	2940.2 as HCO3
Boron	EPA 200.8	0.1	5.01 mg/L
Calcium	EPA 200.8	0.5	115 mg/L
Calcium Hardness	EPA 200.8 / C/	0	287.2 mg/L as CaCO3
Carbonate	SM2320-B	10	ND mg/L as CaCO3
Chloride	EPA 300.0	120	7040 mg/L
Iron	EPA 200.8	0.1	0.682 mg/L
Magnesium	EPA 200.8	0.5	10.8 mg/L
Nitrate Nitrogen	EPA 300.0	10	ND mg/L as N
pH	SM4500-H+ B	1	8.29 pH Units
Potassium	EPA 200.8	0.5	373 mg/L
Resistivity	@ 77° F SM2510B/ CL/	0	0.351 ohm.m
Sodium	EPA 200.8	0.5	7360 mg/L
Sodium Adsorption Ratio	EPA 200.8 / C/	0	175.7 units
Specific Conductance	SM2510B	1	28500 umhos/cm
Specific Gravity	SM 2710F	0	1.06 units
Sulfate	EPA 300.0	60	6430 mg/L
Total Alkalinity	SM2320-B	10	2410 mg/L as CaCO3
Total Dissolved Solids	SM2540C	10	14000 mg/L



BDL = Below Detection Limit

ND = Non Detect

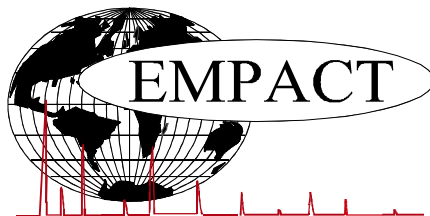
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FORMATION WATER

PRIMARY DB KEY: **FH2O**

LEASE #:

FIELD/AREA:

NAME/DESCRIP : **SOUTH WELD SWD 1
TEST #3 PKR@9238 BP@9524
L. SANTANKA**

PROJECT NO. : **201904076**

COMPANY NAME : **NGL WATER SOLUTIONS**

OFFICE / BRANCH: **GREELEY, CO**

CUSTOMER REF:

PRODUCER :

ANALYSIS NO. : **03**

ANALYSIS DATE: **APRIL 16, 2019 18:00**

SAMPLE DATE : **APRIL 5, 2019**

TO:

EFFECTIVE DATE:

*****FIELD DATA*****

SAMPLE CYCLE:

SAMPLE PRES. :

LAB PRES:

SAMPLE TEMP. :

AMBIENT TEMP.:

FIELD COMMENTS: **Field TDS: 140000**

LAB COMMENTS:

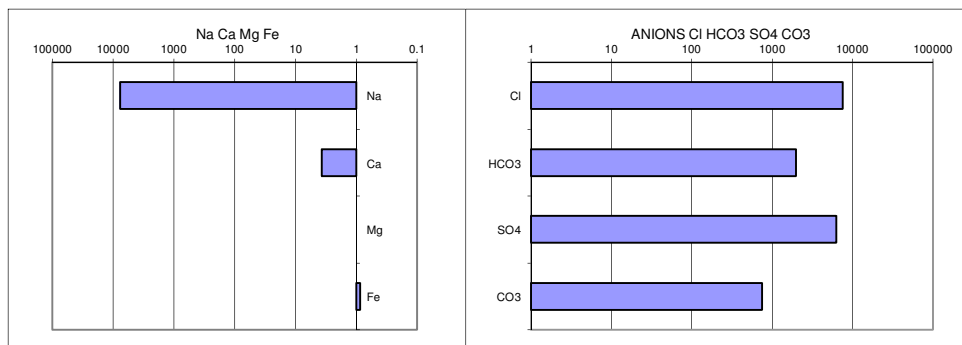
SAMPLE TYPE: **SPOT**

CYLINDER NO. : **1L GLASS**

SAMPLED BY : **TIM SHERWOOD**

SAMPLING COMPANY: **IPT**

<u>PARAMETER</u>	<u>METHOD</u>	<u>DETECTION LIMIT</u>	<u>REPORTED RESULTS/UNITS</u>
Visual Appearance	VISUAL	—	Cloudy rating
Apparent Odor	SMELL	—	Hydrocarbon rating
Ammonia Nitrogen	EPA 350.1	0.03	1.79 mg/L as NH3
Bicarbonate	SM2320-B	10	1976.4 as HCO3
Boron	EPA 200.8	0.1	4.99 mg/L
Calcium Total	EPA 200.8	0.5	3.71 mg/L
Calcium Hardness	EPA 200.8 / C/	0	9.3 mg/L as CaCO3
Carbonate	SM2320-B	10	750 mg/L as CaCO3
Chloride	EPA 300.0	120	7620 mg/L
Iron Total	EPA 200.8	0.1	0.867 mg/L
Magnesium Total	EPA 200.8	0.5	ND mg/L
Nitrate Nitrogen	EPA 300.0	10	ND mg/L as N
pH	SM4500-H+ B	1	9.28 pH Units
Potassium Total	EPA 200.8	0.5	379 mg/L
Resistivity @ 77° F	SM2510B/ CL/	0	0.337 ohm.m
Sodium Total	EPA 200.8	0.5	7680 mg/L
Sodium Adsorption Ratio	EPA 200.8 / C/	0	1097.0 units
Specific Conductance	SM2510B	1	29700 umhos/cm
Specific Gravity	SM 2710F	0	1.06 units
Sulfate	EPA 300.0	60	6300 mg/L
Total Alkalinity	SM2320-B	10	2370 mg/L as CaCO3
Total Dissolved Solids	SM2540C	10	14500 mg/L



BDL = Below Detection Limit

ND = Non Detect

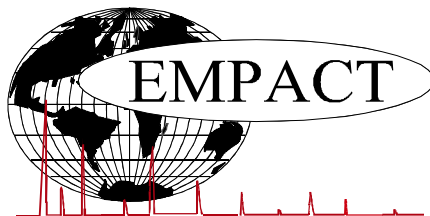
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FORMATION WATER

PRIMARY DB KEY: **FH2O**

LEASE #:

FIELD/AREA:

NAME/DESCRIP : **SOUTH WELD SWD 1
TEST #4 PKR@9157 BP@9238
LYONS**

PROJECT NO. : **201904076**

COMPANY NAME : **NGL WATER SOLUTIONS**

OFFICE / BRANCH: **GREELEY, CO**

CUSTOMER REF:

PRODUCER :

ANALYSIS NO. : **04**

ANALYSIS DATE: **APRIL 16, 2019 00:00**

SAMPLE DATE : **APRIL 9, 2019**

TO:

EFFECTIVE DATE:

*****FIELD DATA*****

SAMPLE CYCLE:

SAMPLE PRES. :

LAB PRES:

SAMPLE TEMP. :

AMBIENT TEMP.:

FIELD COMMENTS: **Field TDS: 157000 @ 84F - 89TBR**

LAB COMMENTS:

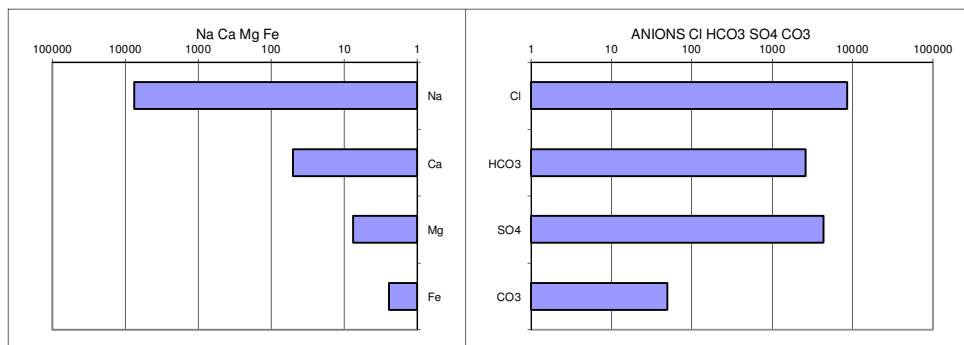
SAMPLE TYPE: **SPOT**

CYLINDER NO. : **1L GLASS**

SAMPLED BY : **TIM SHERWOOD**

SAMPLING COMPANY: **IPT**

<u>PARAMETER</u>	<u>METHOD</u>	<u>DETECTION LIMIT</u>	<u>REPORTED RESULTS/UNITS</u>
Visual Appearance	VISUAL	—	Cloudy rating
Apparent Odor	SMELL	—	Hydrocarbon rating
Ammonia Nitrogen	EPA 350.1	0.03	2.44 mg/L as NH3
Bicarbonate	SM2320-B	10	2586.4 as HCO3
Boron	EPA 200.8	0.1	4.98 mg/L
Calcium	EPA 200.8	0.5	50.2 mg/L
Calcium Hardness	EPA 200.8 / C/	0	125.3 mg/L as CaCO3
Carbonate	SM2320-B	10	50 mg/L as CaCO3
Chloride	EPA 300.0	120	8660 mg/L
Iron	EPA 200.8	0.1	2.447 mg/L
Magnesium	EPA 200.8	0.5	7.51 mg/L
Nitrate Nitrogen	EPA 300.0	10	ND mg/L as N
pH	SM4500-H+ B	1	8.41 pH Units
Potassium	EPA 200.8	0.5	361 mg/L
Resistivity	@ 77° F SM2510B/ CL/	0	0.330 ohm.m
Sodium	EPA 200.8	0.5	7600 mg/L
Sodium Adsorption Ratio	EPA 200.8 / C/	0	264.4 units
Specific Conductance	SM2510B	1	30300 umhos/cm
Specific Gravity	SM 2710F	0	1.05 units
Sulfate	EPA 300.0	60	4380 mg/L
Total Alkalinity	SM2320-B	10	2160 mg/L as CaCO3
Total Dissolved Solids	SM2540C	10	14800 mg/L



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ND = Non Detect

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SM = "Standard Methods for the Examination of Water and Wastewater", APHA, 19th Edition, 1995

EPA = "Methods of Chemical Analysis of Water and Wastes", USEPA, EPA-600/4-79-020 rev 3/83

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