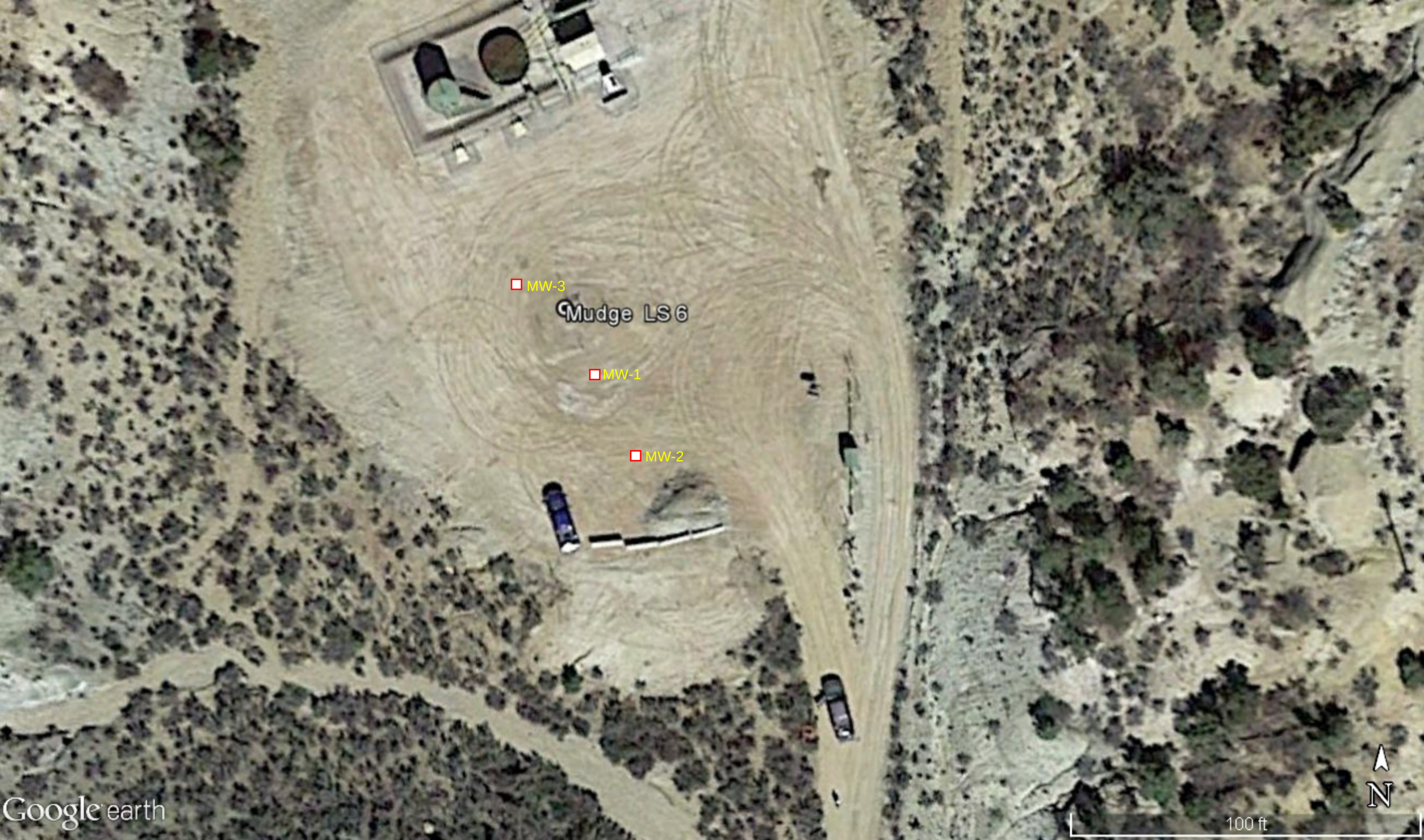
3R – 469

GWMR

07 / 08 / 2015


MW-3
Mudge LS 6
MW-1
MW-2
Google earth
N
100 ft

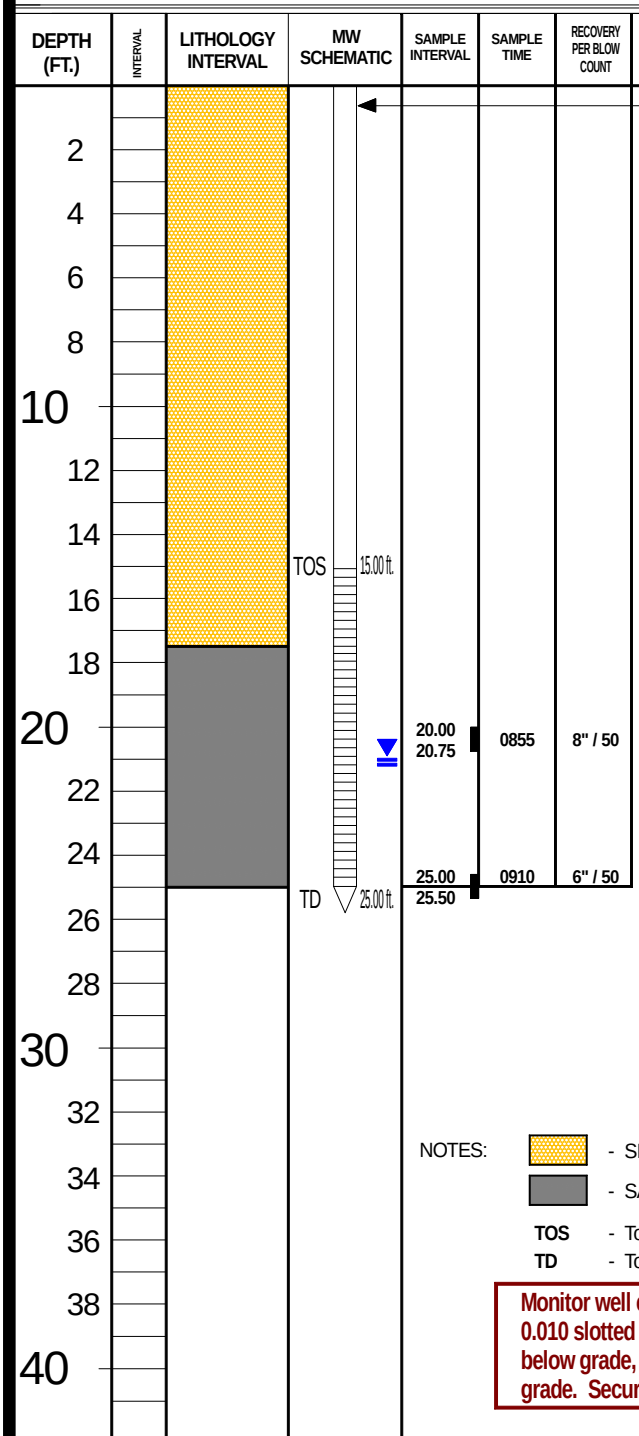
BLAGG ENGINEERING, INC.
P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

MW # 1

BORE / TEST HOLE REPORT

CLIENT:	BP AMERICA PRODUCTION CO.
LOCATION NAME:	MUDGE LS # 6 API: 3004510843 UNIT M, SEC. 11, T31N, R11W
CONTRACTOR:	BLAGG ENGINEERING, INC. / KYVEK ENERGY SERVICES, INC.
EQUIPMENT USED:	MOBILE DRILL RIG (CME 75) - HOLLOW STEM AUGER
BORING LOCATION:	22 FEET, S21E FROM WELL HEAD.

BORING #.....	BH - 1
MW #.....	1
PAGE #.....	1
DATE STARTED	06/04/15
DATE FINISHED	06/04/15
OPERATOR.....	KP
LOGGED BY.....	JCB



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 2.20 FT. ABOVE GRADE.

DARK YELLOWISH ORANGE SILTY SAND (BACKFILL MATERIAL), SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (0.0 - 17.5 FT. BELOW GRADE).

GRAY MEDIUM GRAINED SANDSTONE, SLIGHTLY MOIST, HARD, VERY DENSE, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (17.5 - 25.0 FT. BELOW GRADE).

GROUNDWATER ~ 20.70 ft. BELOW GRADE ; MEASURED 06/17/15.

NOTES:

- SILTY SAND.
- SANDSTONE.

TOS - Top of screen of monitor well.
TD - Total depth/bottom extent of monitor well.

Monitor well consist of 2 inch PVC piping - casing from 2.20 ft. above grade to 15.00 ft. below grade, 0.010 slotted screen between 15.00 to 25.00 ft. below grade, sand packed annular from 13.0 to 25.0 ft. below grade, bentonite grout between 12.0 to 13.0 ft. below grade, cuttings fill the remaining annular to grade. Secured casing top with locking cap and padlock.

DRAWING: MUDGE LS 6 MW-1 2015-06-04. SKF | DATE: 06/18/15 | DWN BY: NJV

BLAGG ENGINEERING, INC.
P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

MW # 2

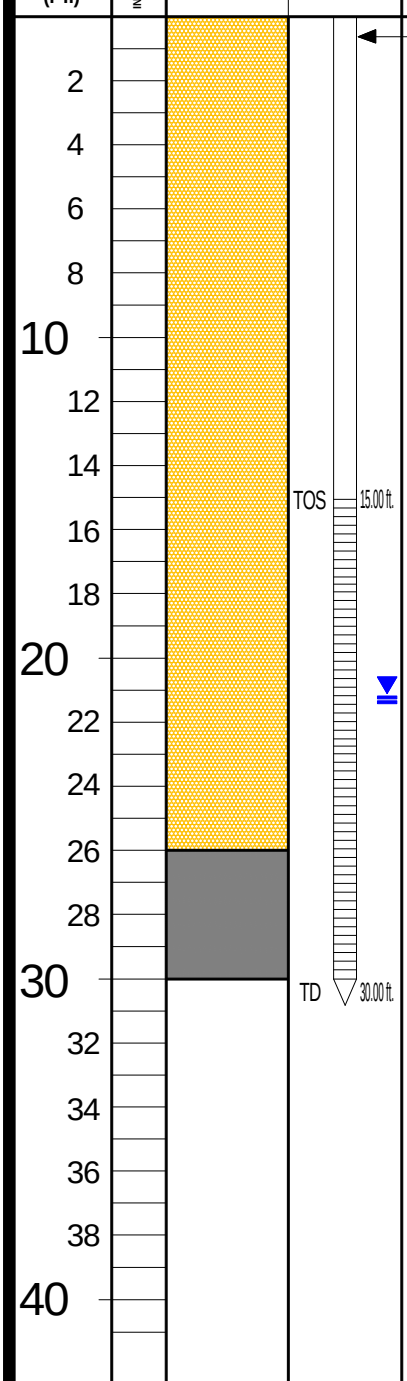
BORE / TEST HOLE REPORT

CLIENT:	BP AMERICA PRODUCTION CO.
LOCATION NAME:	MUDGE LS # 6 API: 3004510843 UNIT M, SEC. 11, T31N, R11W
CONTRACTOR:	BLAGG ENGINEERING, INC. / KYVEK ENERGY SERVICES, INC.
EQUIPMENT USED:	MOBILE DRILL RIG (CME 75) - HOLLOW STEM AUGER
BORING LOCATION:	50 FEET, S25E FROM WELL HEAD.

BORING #.....	BH - 2
MW #.....	2
PAGE #.....	2
DATE STARTED	06/04/15
DATE FINISHED	06/04/15
OPERATOR.....	KP
LOGGED BY.....	JCB

DEPTH (FT.) | INTERVAL | LITHOLOGY INTERVAL | MW SCHEMATIC | SAMPLE INTERVAL | SAMPLE TIME

FIELD CLASSIFICATION AND REMARKS



TOP OF CASING APPROX. 2.40 FT. ABOVE GRADE.

DARK YELLOWISH ORANGE SILTY SAND (BACKFILL MATERIAL), SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (0.0 - 26.0 FT. BELOW GRADE).

GROUNDWATER ~ 21.15 ft. BELOW GRADE ; MEASURED 06/17/15.

GRAY MEDIUM GRAINED SANDSTONE, SLIGHTLY MOIST, HARD, VERY DENSE, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (26.0 - 30.0 FT. BELOW GRADE).

EVALUATED SANDSTONE DENSITY WITH SPLIT SPOON SAMPLER - 6" DEPTH WITH BLOW COUNT OF 50.

NOTES:

- SILTY SAND.
- SANDSTONE.

TOS - Top of screen of monitor well.
TD - Total depth/bottom extent of monitor well.

Monitor well consist of 2 inch PVC piping - casing from 2.40 ft. above grade to 15.00 ft. below grade, 0.010 slotted screen between 15.00 to 30.00 ft. below grade, sand packed annular from 13.0 to 30.0 ft. below grade, bentonite grout between 12.0 to 13.0 ft. below grade, cuttings fill the remaining annular to grade. Secured casing top with locking cap and padlock.

DRAWING: MUDGE LS 6 MW-2 2015-06-04. SKF | DATE: 06/18/15 | DWN BY: NJV

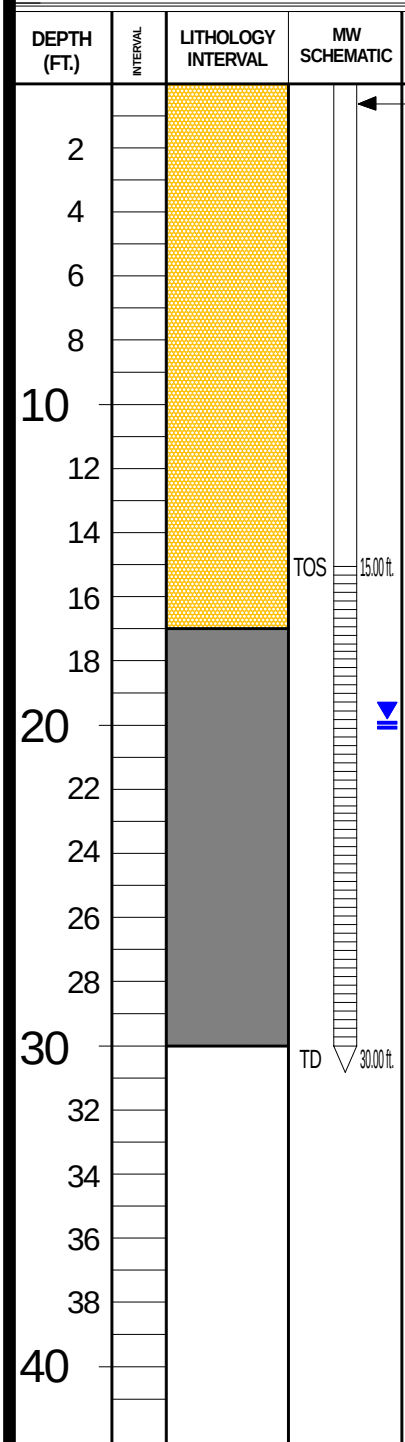
BLAGG ENGINEERING, INC.
P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

MW # 3

BORE / TEST HOLE REPORT

BORING #.....	BH - 3
MW #.....	3
PAGE #.....	3
DATE STARTED	06/04/15
DATE FINISHED	06/04/15
OPERATOR.....	KP
LOGGED BY.....	JCB

CLIENT: BP AMERICA PRODUCTION CO.
LOCATION NAME: MUDGE LS # 6 API: 3004510843 UNIT M, SEC. 11, T31N, R11W
CONTRACTOR: BLAGG ENGINEERING, INC. / KYVEK ENERGY SERVICES, INC.
EQUIPMENT USED: MOBILE DRILL RIG (CME 75) - HOLLOW STEM AUGER
BORING LOCATION: 17 FEET, N59W FROM WELL HEAD.



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 2.00 FT. ABOVE GRADE.

DARK YELLOWISH ORANGE SILTY SAND (BACKFILL MATERIAL), SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (0.0 - 17.0 FT. BELOW GRADE).

GROUNDWATER ~ 19.87 ft. BELOW GRADE ; MEASURED 06/17/15.

GRAY MEDIUM GRAINED SANDSTONE, SLIGHTLY MOIST, HARD, VERY DENSE, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY WITHIN CUTTINGS (17.0 - 30.0 FT. BELOW GRADE).

NOTES:
- SILTY SAND.
- SANDSTONE.

TOS - Top of screen of monitor well.
TD - Total depth/bottom extent of monitor well.

Monitor well consist of 2 inch PVC piping - casing from 2.00 ft. above grade to 15.00 ft. below grade, 0.010 slotted screen between 15.00 to 30.00 ft. below grade, sand packed annular from 13.0 to 30.0 ft. below grade, bentonite grout between 12.0 to 13.0 ft. below grade, cuttings fill the remaining annular to grade. Secured casing top with locking cap and padlock.

DRAWING: MUDGE LS 6 MW-3 2015-06-04. SKF | DATE: 06/18/15 | DWN BY: NJV

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

July 01, 2015

Jeff Blagg

Blagg Engineering
P. O. Box 87
Bloomfield, NM 87413
TEL: (505) 320-1183
FAX (505) 632-3903

RE: Mudge LS #6 OrderNo.: 1506917

Dear Jeff Blagg:

Hall Environmental Analysis Laboratory received 4 sample(s) on 6/19/2015 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering
Client Sample ID: MW #1
Project: Mudge LS #6
Collection Date: 6/18/2015 9:00:00 AM
Lab ID: 1506917-001
Matrix: AQUEOUS
Received Date: 6/19/2015 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Fluoride	0.29	0.10		mg/L	1	6/26/2015 7:18:12 AM	R27123
Chloride	24	10		mg/L	20	6/19/2015 9:21:37 PM	R26991
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	6/19/2015 9:09:12 PM	R26991
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	6/19/2015 9:09:12 PM	R26991
Sulfate	2000	50		mg/L	100	6/26/2015 7:30:36 AM	R27123
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	3700	200	*	mg/L	1	6/24/2015 1:27:00 PM	19880
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **MED**	
Iron	1.1	0.10		mg/L	5	6/29/2015 10:05:59 AM	R27144
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **MED**	
Iron	6.6	0.50		mg/L	10	6/26/2015 1:27:50 PM	19871
Manganese	4.5	0.020		mg/L	10	6/26/2015 1:27:50 PM	19871
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	1700	50		µg/L	50	6/25/2015 8:36:41 PM	R27099
Toluene	2100	50		µg/L	50	6/25/2015 8:36:41 PM	R27099
Ethylbenzene	540	50		µg/L	50	6/25/2015 8:36:41 PM	R27099
Xylenes, Total	4200	100		µg/L	50	6/25/2015 8:36:41 PM	R27099
Surr: 4-Bromofluorobenzene	104	80-120		%REC	50	6/25/2015 8:36:41 PM	R27099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering
Client Sample ID: MW #2
Project: Mudge LS #6
Collection Date: 6/18/2015 9:32:00 AM
Lab ID: 1506917-002
Matrix: AQUEOUS
Received Date: 6/19/2015 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**LGT**
Fluoride	0.40	0.10		mg/L	1	6/26/2015 8:07:51 AM	R27123
Chloride	24	10		mg/L	20	6/19/2015 9:46:26 PM	R26991
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	6/19/2015 9:34:01 PM	R26991
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	6/19/2015 9:34:01 PM	R26991
Sulfate	1800	50		mg/L	100	6/26/2015 8:20:15 AM	R27123
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst:	**KS**
Total Dissolved Solids	3870	100	*	mg/L	1	6/24/2015 1:27:00 PM	19880
EPA METHOD 6010B: DISSOLVED METALS						Analyst:	**MED**
Iron	1.8	0.10		mg/L	5	6/29/2015 10:10:02 AM	R27144
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst:	**MED**
Iron	13	5.0		mg/L	100	6/26/2015 1:29:27 PM	19871
Manganese	4.9	0.020		mg/L	10	6/26/2015 1:31:12 PM	19871
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	2000	50		µg/L	50	6/25/2015 9:05:23 PM	R27099
Toluene	ND	50		µg/L	50	6/25/2015 9:05:23 PM	R27099
Ethylbenzene	77	50		µg/L	50	6/25/2015 9:05:23 PM	R27099
Xylenes, Total	150	100		µg/L	50	6/25/2015 9:05:23 PM	R27099
Surr: 4-Bromofluorobenzene	90.5	80-120		%REC	50	6/25/2015 9:05:23 PM	R27099

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering
Client Sample ID: MW #3
Project: Mudge LS #6
Collection Date: 6/18/2015 10:06:00 AM
Lab ID: 1506917-003
Matrix: AQUEOUS
Received Date: 6/19/2015 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Fluoride	0.44	0.10		mg/L	1	6/26/2015 8:32:40 AM	R27123
Chloride	33	10		mg/L	20	6/19/2015 10:36:05 PM	R26991
Nitrogen, Nitrite (As N)	ND	0.10		mg/L	1	6/19/2015 10:23:40 PM	R26991
Nitrogen, Nitrate (As N)	ND	0.10		mg/L	1	6/19/2015 10:23:40 PM	R26991
Sulfate	2100	50		mg/L	100	6/26/2015 8:45:05 AM	R27123
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	3440	200	*	mg/L	1	6/24/2015 1:27:00 PM	19880
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **MED**	
Iron	0.32	0.020		mg/L	1	6/24/2015 1:39:19 PM	R27058
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **MED**	
Iron	36	5.0		mg/L	100	6/26/2015 1:32:50 PM	19871
Manganese	1.7	0.010		mg/L	5	6/26/2015 1:34:35 PM	19871
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	2000	50		µg/L	50	6/26/2015 11:15:13 AM	R27129
Toluene	4900	50		µg/L	50	6/26/2015 11:15:13 AM	R27129
Ethylbenzene	680	50		µg/L	50	6/26/2015 11:15:13 AM	R27129
Xylenes, Total	5500	100		µg/L	50	6/26/2015 11:15:13 AM	R27129
Surr: 4-Bromofluorobenzene	100	80-120		%REC	50	6/26/2015 11:15:13 AM	R27129

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering
Client Sample ID: LP AGT Produced Water
Project: Mudge LS #6
Collection Date: 6/18/2015 9:50:00 AM
Lab ID: 1506917-004
Matrix: AQUEOUS
Received Date: 6/19/2015 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LGT**	
Fluoride	ND	0.50		mg/L	5	6/26/2015 11:01:35 AM	R27162
Chloride	ND	2.5		mg/L	5	6/19/2015 11:13:17 PM	R26991
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	6/19/2015 11:13:17 PM	R26991
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	6/19/2015 11:13:17 PM	R26991
Sulfate	8.6	2.5		mg/L	5	6/26/2015 11:01:35 AM	R27162
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	190	100		mg/L	1	6/24/2015 1:27:00 PM	19880

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1506917**

01-Jul-15

Client: Blagg Engineering

Project: Mudge LS #6

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R26991**	RunNo: **26991**
Prep Date:	Analysis Date: **6/19/2015**	SeqNo: **806025** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R26991**	RunNo: **26991**
Prep Date:	Analysis Date: **6/19/2015**	SeqNo: **806026** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.9	0.50	5.000	0	98.3	90	110			
Nitrogen, Nitrite (As N)	1.0	0.10	1.000	0	99.8	90	110			
Nitrogen, Nitrate (As N)	2.6	0.10	2.500	0	102	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R26991**	RunNo: **26991**
Prep Date:	Analysis Date: **6/19/2015**	SeqNo: **806085** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								

Sample ID **LCS**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R26991**	RunNo: **26991**
Prep Date:	Analysis Date: **6/19/2015**	SeqNo: **806086** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	5.0	0.50	5.000	0	101	90	110			
Nitrogen, Nitrite (As N)	1.0	0.10	1.000	0	103	90	110			
Nitrogen, Nitrate (As N)	2.6	0.10	2.500	0	105	90	110			

Sample ID **MB**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R27123**	RunNo: **27123**
Prep Date:	Analysis Date: **6/25/2015**	SeqNo: **811147** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Sulfate	ND	0.50								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1506917**

01-Jul-15

Client: Blagg Engineering

Project: Mudge LS #6

Sample ID	**LCS**	SampType:	**LCS**		TestCode:	**EPA Method 300.0: Anions**				
Client ID:	**LCSW**	Batch ID:	**R27123**		RunNo:	**27123**				
Prep Date:		Analysis Date:	**6/25/2015**		SeqNo:	**811148**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.52	0.10	0.5000	0	104	90	110			
Sulfate	9.9	0.50	10.00	0	99.4	90	110			

Sample ID	**MB**	SampType:	**MBLK**		TestCode:	**EPA Method 300.0: Anions**				
Client ID:	**PBW**	Batch ID:	**R27123**		RunNo:	**27123**				
Prep Date:		Analysis Date:	**6/25/2015**		SeqNo:	**811204**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Sulfate	ND	0.50								

Sample ID	**LCS**	SampType:	**LCS**		TestCode:	**EPA Method 300.0: Anions**				
Client ID:	**LCSW**	Batch ID:	**R27123**		RunNo:	**27123**				
Prep Date:		Analysis Date:	**6/25/2015**		SeqNo:	**811205**	Units:	**mg/L**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.53	0.10	0.5000	0	106	90	110			
Sulfate	9.9	0.50	10.00	0	98.7	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1506917**

01-Jul-15

Client: Blagg Engineering

Project: Mudge LS #6

Sample ID	**5ML RB**	SampType:	**MBLK**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**PBW**	Batch ID:	**R27099**	RunNo:	**27099**					
Prep Date:		Analysis Date:	**6/25/2015**	SeqNo:	**810156**	Units:	**µg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	18		20.00		89.4	80	120			

Sample ID	**100NG BTEX LCS**	SampType:	**LCS**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**LCSW**	Batch ID:	**R27099**	RunNo:	**27099**					
Prep Date:		Analysis Date:	**6/25/2015**	SeqNo:	**810159**	Units:	**µg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	108	80	120			
Toluene	22	1.0	20.00	0	108	80	120			
Ethylbenzene	22	1.0	20.00	0	110	80	120			
Xylenes, Total	65	2.0	60.00	0	109	80	120			
Surr: 4-Bromofluorobenzene	20		20.00		98.7	80	120			

Sample ID	**5ML RB**	SampType:	**MBLK**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**PBW**	Batch ID:	**R27129**	RunNo:	**27129**					
Prep Date:		Analysis Date:	**6/26/2015**	SeqNo:	**811420**	Units:	**µg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	18		20.00		89.2	80	120			

Sample ID	**100NG BTEX LCS**	SampType:	**LCS**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**LCSW**	Batch ID:	**R27129**	RunNo:	**27129**					
Prep Date:		Analysis Date:	**6/26/2015**	SeqNo:	**811421**	Units:	**µg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	80	120			
Toluene	21	1.0	20.00	0	104	80	120			
Ethylbenzene	21	1.0	20.00	0	107	80	120			
Xylenes, Total	64	2.0	60.00	0	106	80	120			
Surr: 4-Bromofluorobenzene	19		20.00		92.7	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1506917**

01-Jul-15

Client: Blagg Engineering

Project: Mudge LS #6

Sample ID	**MB**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: Dissolved Metals**				
Client ID:	**PBW**	Batch ID:	**R27058**	RunNo:	**27058**				
Prep Date:		Analysis Date:	**6/24/2015**	SeqNo:	**808438**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								

Sample ID	**LCS**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: Dissolved Metals**				
Client ID:	**LCSW**	Batch ID:	**R27058**	RunNo:	**27058**				
Prep Date:		Analysis Date:	**6/24/2015**	SeqNo:	**808439**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.48	0.020	0.5000	0	96.2	80	120			

Sample ID	**MB**	SampType:	**MBLK**	TestCode:	**EPA Method 6010B: Dissolved Metals**				
Client ID:	**PBW**	Batch ID:	**R27144**	RunNo:	**27144**				
Prep Date:		Analysis Date:	**6/29/2015**	SeqNo:	**812160**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								

Sample ID	**LCS**	SampType:	**LCS**	TestCode:	**EPA Method 6010B: Dissolved Metals**				
Client ID:	**LCSW**	Batch ID:	**R27144**	RunNo:	**27144**				
Prep Date:		Analysis Date:	**6/29/2015**	SeqNo:	**812161**	Units:	**mg/L**		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.49	0.020	0.5000	0	97.7	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1506917**

01-Jul-15

Client: Blagg Engineering

Project: Mudge LS #6

Sample ID	**MB-19871**	SampType:	**MBLK**	TestCode:	**EPA 6010B: Total Recoverable Metals**					
Client ID:	**PBW**	Batch ID:	**19871**	RunNo:	**27058**					
Prep Date:	**6/23/2015**	Analysis Date:	**6/24/2015**	SeqNo:	**808436**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.050								
Manganese	ND	0.0020								

Sample ID	**LCS-19871**	SampType:	**LCS**	TestCode:	**EPA 6010B: Total Recoverable Metals**					
Client ID:	**LCSW**	Batch ID:	**19871**	RunNo:	**27058**					
Prep Date:	**6/23/2015**	Analysis Date:	**6/24/2015**	SeqNo:	**808437**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.48	0.050	0.5000	0	96.9	80	120			
Manganese	0.47	0.0020	0.5000	0	94.7	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1506917**

01-Jul-15

Client: Blagg Engineering

Project: Mudge LS #6

Sample ID	**MB-19880**	SampType:	**MBLK**	TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**PBW**	Batch ID:	**19880**	RunNo:	**27051**					
Prep Date:	**6/23/2015**	Analysis Date:	**6/24/2015**	SeqNo:	**808149**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID	**LCS-19880**	SampType:	**LCS**	TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**LCSW**	Batch ID:	**19880**	RunNo:	**27051**					
Prep Date:	**6/23/2015**	Analysis Date:	**6/24/2015**	SeqNo:	**808150**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1000	20.0	1000	0	101	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH Not In Range
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **BLAGG** Work Order Number: **1506917** RcptNo: **1**

Received by/date: 06/19/15

Logged By: **Ashley Gallegos** 6/19/2015 7:20:00 AM

Completed By: **Ashley Gallegos** 6/19/2015 7:48:17 AM

Reviewed By: 06/19/15

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.4	Good	Yes			

Chain-of-Custody Record

Client: **BLAGG ENGR. / BP AMERICA**

Mailing Address: **P.O. BOX 87**
BLOOMFIELD, NM 87413

Phone #: **(505) 632-1199**

email or Fax#:

QA/QC Package:
☑ Standard ☐ Level 4 (Full Validation)

Accreditation:
☐ NELAP ☐ Other
☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: **MUDGE LS # 6**

Project #:

Project Manager: **JEFF BLAGG**

Sampler: **JEFF BLAGG**

On Ice: ☑ Yes ☐ No

Sample Temperature: 8.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1506917	BTEX + ~~MTBE + TMB's~~ (8021B)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Nitrate N / Nitrite N	Manganese	Total Iron	Iron, Ferrous (filtered)	Anion / Cation Balance	Total Dissolved Solids	Grab sample	5 pt. composite sample	Air Bubbles (Y or N)
6/18/15	09:00	WATER	MW # 1	40 ml VOA - 3	HCl & Cool	-001	√													√		
6/18/15	"	WATER	MW # 1	500 ml - 1	Cool	"												√	√	√		
6/18/15	"	WATER	MW # 1	500 ml - 1	HNO_3 & Cool	"									√	√				√		
6/18/15	"	WATER	MW # 1	125 ml - 1	HNO_3 & Cool	"											√			√		
6/18/15	"	WATER	MW # 1	125 ml - 1	H_2SO_4 & Cool	"								√						√		
6/18/15	0932	WATER	MW # 2	40 ml VOA - 3	HCl & Cool	-002	√													√		
6/18/15	"	WATER	MW # 2	500 ml - 1	Cool	"												√	√	√		
6/18/15	"	WATER	MW # 2	500 ml - 1	HNO_3 & Cool	"									√	√				√		
6/18/15	"	WATER	MW # 2	125 ml - 1	HNO_3 & Cool	"											√			√		
6/18/15	"	WATER	MW # 2	125 ml - 1	H_2SO_4 & Cool	"								√						√		

Date:	Time:	Relinquished by:	Received by:	Date	Time
6/18/2015	1700	Jeff Blagg	Anna Williams	06/19/15	0720
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: **Report F, Cl, SO_4 only for Anion/Cation Balance.**

BILL DIRECTLY TO BP:

Jeff Peace, 200 Energy Court, Farmington, NM 87401

Paykey: **ZEVH01REME**

Chain-of-Custody Record

Client: BLAGG ENGR. / BP AMERICA

Mailing Address: P.O. BOX 87
BLOOMFIELD, NM 87413

Phone #: (505) 632-1199

email or Fax#:

QA/QC Package:
☑ Standard ☐ Level 4 (Full Validation)

Accreditation:
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name:
MUDGE LS # 6

Project #:

Project Manager:
JEFF BLAGG

Sampler: JEFF BLAGG

On Ice: ☒ Yes ☐ No

Sample Temperature: 2.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + ~~MTBE + TMB's~~ (8021B)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Nitrate N / Nitrite N	Manganese	Total Iron	Iron, Ferrous (filtered)	Anion / Cation Balance	Total Dissolved Solids	Grab sample	5 pt. composite sample
6/18/15	10:00	WATER	MW # 3	40 ml VOA - 3	HCl & Cool	-003	√													√	
6/18/15	"	WATER	MW # 3	500 ml - 1	Cool	"												√	√	√	
6/18/15	"	WATER	MW # 3	500 ml - 1	HNO_3 & Cool	"									√	√				√	
6/18/15	"	WATER	MW # 3	125 ml - 1	HNO_3 & Cool	"											√			√	
6/18/15	"	WATER	MW # 3	125 ml - 1	H_2SO_4 & Cool	"								√						√	
6/18/15	09:50	WATER	LP AGT PRODUCED WATER	500 ml - 1	Cool	-004												√	√	√	
~~6/18/15~~	"	~~WATER~~	~~LP AGT PRODUCED WATER~~	~~125 ml - 1~~	~~HNO_3 & Cool~~	NOT Supplied per Sheila											√			√	
6/18/15	"	WATER	LP AGT PRODUCED WATER	125 ml - 1	H_2SO_4 & Cool	-004								√						√	

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time
6/18/2015	1700	Jeff Blagg	Amgallegos	06/19/15	0720
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: **Report F, Cl, SO_4 only for Anion/Cation Balance.**

BILL DIRECTLY TO BP:

Jeff Peace, 200 Energy Court, Farmington, NM 87401

Paykey: **ZEVH01REME**