

Appendix C

Photograph Log





No. 1 – Confirming rig will meet layout requirements



No. 2 – *Daylighting activities and sound panel placement.*





No. 3 – Daylighting activities and sound panel placement.



No. 4 – Daylighted boring/plastic placement, and sound panels prior to parking drill rig.





No. 5 – *Layout of drill site with roll-off, totes, and support truck with drill casing.*



No. 6 – *Core storage area.*





No. 7 – Photograph of dumping hopper (cuttings from rig to roll-off).



No. 8 – *Core storage area after approximately one week of drilling activities.*





No. 9 – *Photograph of core retrieval area and winter drilling conditions.*



No. 10 – *AOP Security vehicle.*





No. 11 – *Push-ahead ground water sampler.*



No. 12 – Push-ahead ground water sampler.





No. 13 – Push-ahead ground water sampler.



No. 14 – Push-ahead ground water sampler.





No. 15 – Roll-off delivery.



No. 16 – Rig Repair at mast using high-lift.





No. 17 – Geophysical Logging Truck.



No. 18 – Geophysical Logging Truck.





No. 19 – Preparing Well Casing for Monitoring Well Installation.



No. 20 – Monitoring Well casing installation.





No. 21 – Well installation materials/removal of final section of drill casing.



No. 22 – *Monitoring Well installation – final section of monitoring well casing.*





No. 23 – *Monitoring well installation with locking cap.*



No. 24 – *Monitoring well condition at time of City of Albuquerque inspection prior to concrete placement.*





No. 25 – *Concrete Pouring – monitoring wellhead post inspection approval.*



No. 26 – *Final monitoring well installation – Data Gap Monitoring Well WUABFFMW01.*





No. 27 – *Photograph of WUABFFMW01 during development. The well was being bailed.*



No. 28 – *Photograph of the* 275-gallon totes that the development water was stored in on-site.





No. 29 – *Photograph of the PDBs being pulled up for sampling.*



No. 30 – *Photograph of WUABFFMW01 being surveyed by High Mesa Consulting Group.*





No. 31 – *Photograph of the low flow sampling set up using a trailer mounted Bennett Pump.*



No. 32 – *Photograph of the low flow sampling trailer and flow rate being measured.*





Appendix D

Soil Boring Log/Monitoring Well Construction Diagram





March 7, 2022

Diane Agnew Albuquerque Bernalillo Co. Water Utility Authority PO Box 568 Albuquerque, New Mexico 87103

RE: Approval of the Final Well Design for Data Gap Monitoring Well Installation (SAP 21-F2298-STB)

Dear Diane Agnew:

The Final Well Design for the referenced project that was created by Intera was received on March 4th, 2022. The document has been reviewed and the New Mexico Environment Department Construction Programs Bureau (NMED-CPB) hereby recommends approval and the project may move forward.

Please note that review of the Final Well Design for is only for bid ability, constructability, and completeness; the feasibility or cost effectiveness of the project have not been evaluated. Review of these plans does not relieve the owner or engineer of legal responsibilities for overall integrity of the project, adequacy of the design or compliance with all applicable regulations. The NMED is not responsible for increased costs resulting from defects in the plans, design drawings, specifications, or other contract documents. This letter is valid for one year from the date of issue. Continued compliance with State and Federal regulations will require that the facility be properly constructed, operated and maintained.

Should you have any question or comments, contact Eric Gartner at 505-670-3643 or e-mail at eric.gartner@state.nm.us

Sincerely,

Eric Gartner Project Manager

cc: Marta Ortiz (ABCWUA)

te Sta te Coi Iling C Iling N	arted: mpleteo Compar /lethod:	1/29 d: 4/06 ny: Cas : Sor	RA 5/2022 6/2022 scade Drill nic e Barrel	Driller: K. Rogers Logged By: R. Sengebush Boring Depth (ft bgs): 610 Boring Diameter (in): 8.0	DTW First Encounter DTW Static (ft btoc): Collar Elevation (ft ar Northing*: Easting*:	ed (ft bgs):	 Albuquerque, NM 458 (2/10/2022) 452.89 (5/25/2022) 5328.542 1479210.657 1544391.936
	Elev (ft amsl)	EDB (µg/L)**	Lithology	Lithologic Description	Gamma (API) 10.0 70.0 Neutron (API) 700.0 700.0 2300.0 Neutron (API) 700.0 10.0 700.0	Depth (ft bgs)	Monitoring Well Construction
0				Quaternary Alluvium: Silty SAND (SM), fine to coarse grained, subrounded to subangular; trace (<5%) Gravel, fine to medium grained, subangular; 10YR 7/4 (very pale brown / grayish orange), loose, moist, no odor, moderate HCI reaction, homogeneous, weak cementation, sand is quartz 70 %, feldspar 20 %, biotite 5%, rock fragments 5%	- M	0 	12-in Traffi Rated Flush-Grad Vault Lockable J-plug Portland Cement
	- 5320			Poorly Graded SAND (SP), fine grained, subrounded; 10YR 7/4 (very pale brown / grayish orange), loose, dry, no odor, no staining, blocky, thin bedded, weak cementation	MMMM	- - - - 10 -	Lockable J-plug Portland Cement
				Poorly Graded SAND with Clay (SP-SC), fine grained, rounded; little (15-25%) Clay; few (5-10%) Silt; few (5-10%) Sand, subrounded; 10YR 7/4 (very pale brown / grayish orange), dry, no odor, no staining, moderate HCI reaction, blocky, thin bedded, weak cementation		- - 15 -	
	- 5310			 Well-Graded SAND with Gravel (SW), fine to coarse grained, subangular; 10YR 7/4 (very pale brown / grayish orange), very loose, dry, no odor, no staining, moderate HCI reaction, blocky, weak cementation Poorly Graded SAND with Clay (SP-SC), fine grained, rounded; little (15-25%) Clay; 10YR 7/4 (very pale brown / grayish orange), medium dense, moist, no odor, no staining, moderate HCI reaction, blocky, thinly laminated bedded, weak cementation 	WWW. W. W. W. W.	- - 20 - -	
-				Poorly Graded SAND with Gravel (SW), fine to coarse grained, subrounded; few (5-10%) Gravel, fine to medium grained, angular; trace (<5%) Cobbles; 10YR 6/3 (pale brown), very loose, moist, no odor, weak HCl reaction, blocky, thickly bedded weak cementation, trace caliche on pebbles and cobbles. cobbles to 4 inches, quartzite	W W W W W W W	- 25 - -	
-	- 5300				Low With My My	- 30 - -	



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Lab Samples Aqueous

1) ft = feet, bgs = below ground surface, in = inches, amsl = above mean sea level, DTW = depth to water, btoc = below top of casing, EPA = Environmental Protection Agency, EDB = ethylene dibromide, μg = micrograms, L = liter, API = American Petroleum Institute gamma ray unit *Coordinates are in NAD83, State Plane NM Central, ft

ite S ite C illing illing	tarted: omplete	1/2 d: 4/0 ny: Cas : Sor		Driller: K. Rogers [Logged By: R. Sengebush [Boring Depth (ft bgs): 610 (Boring Diameter (in): 8.0	DTW First Encounter DTW Static (ft btoc): Collar Elevation (ft an Northing*: Easting*:	ed (ft bgs):	 Albuquerque, NM 458 (2/10/2022) 452.89 (5/25/2022) 5328.542 1479210.657 1544391.936
neptul (It pgs)	Elev (ft amsl)	EDB (µg/L)**	Lithology	Lithologic Description	Gamma (API) 10.0 70.0 Neutron (API) 700.0 2300.0 Neutron (API) 10.0 700.0	Depth (ft bgs)	Monitoring Well Construction
- - - - -	- 5280			Sand, fine grained; 5YR 4/3 (reddish brown), stiff, moist, no odor, no staining, moderate HCI reaction, laminated, thin bedded, weak cementation	WWW WWWWWW	- - - - 50 - - -	
55 — - - - - - - - - - - - - -	- 5270			Poorly Graded SAND (SP), fine grained, subrounded; 5YR 5/6 (yellowish red / light brown), loose, moist, no odor, no staining, weak HCI reaction, blocky, weak cementation, lean clay 64 - 65 ft	Marka Minin Willing Willing	55 60 	
5	— 5260			LEAN CLAY with Sand (CL), medium plasticity; some (30-45%) Clay; few (5-10%) Sand, fine grained; 5YR 5/6 (yellowish red / light brown), stiff, moist, no odor, strong HCl reaction, blocky, thin bedded, weak cementation, caliche nodules, 1%, tubular to 1 inch long, half inch diameter LEAN CLAY (CL), medium plasticity; 5YR 5/6 (yellowish red / light brown), very stiff, moist, no odor, no staining, moderate HCl reaction, blocky, weak cementation	MANANA	— 65 - - -	
- - 0 - -	-			Poorly Graded SAND (SP), fine to medium grained, subrounded; 5YR 5/4 (reddish brown), very loose, moist, no odor, no staining, weak HCl reaction, blocky, weak cementation LEAN CLAY (CL), medium plasticity; 5YR 5/6 (yellowish red / light brown), stiff, moist, no odor, no staining, no HCl reaction, laminated, thin bedded, weak cementation, clay to silty clay	MMMMMM	- 70 - - -	
·5 				Poorly Graded SAND with Clay (SP-SC), fine grained, little (15-25%) Clay; 5YR 5/4 (reddish brown), medium dense, moist, no odor, no staining, strong HCl reaction, blocky, moderate cementation	Mar Martin	- 75 - -	
- 80 —	— 5250				MM	- 80	



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	TE	RA	Boring Log: WUABFFMW01 Project Name: Data Gap Well Project #: ABWUA.C009.KAFB		Location: Albuquerque, NM
ate Started: ate Complet illing Comp illing Metho ampling Met	ted: 4 any: C od: S	onic	Logged By: R. Sengebush ing Boring Depth (ft bgs): 610 Boring Diameter (in): 8.0	DTW First Encountere DTW Static (ft btoc): Collar Elevation (ft am Northing*: Easting*:	ed (ft bgs): 458 (2/10/2022) 452.89 (5/25/2022) nsl): 5328.542 1479210.657 1544391.936
Elev (ft amsl)	EDB (µg/L)**	Lithology	Lithologic Description	Gamma (API) 10.0 70.0 Neutron (API) 700.0 2300.0 Neutron (API) 100.0 700.0	(tf pgs) Well Construction
5			Poorly Graded SAND with Clay (SP-SC), fine grained, subrounded; little (15-25%) Clay; 5YR 4/4 (reddish brown / moderate brown), medium dense, moist, no odor, no staining, strong HCI reaction, blocky, weak cementation	Marine Service Marine	- 95 - 95
523() - - - - -	D			MWW WWW WWW	- 95 - 95
; 			Well-Graded SAND (SW), fine to coarse grained, subrounded; 10YR 5/4 (yellowish brown / moderate yellowish brown), loose, moist, no odor, no staining, moderate HCI reaction, blocky, weak cementation	MMM	- 105
_— 5220) - - - - - - -	D		LEAN CLAY (CL), medium plasticity; 5YR 5/3 (reddish brown), soft, moist, no odor, no staining, strong HCl reaction, laminated, weak cementation, caliche nodules to 10% at 112-115 ft, spherical to 1 inch and patches to 3 inches, causes rig chatter when coring	MWW WWW	- 110 - 110
- - - 5210	D		LEAN CLAY (CL), medium plasticity; 5YR 5/4 (reddish brown), soft, moist, no odor, weak HCl reaction, blocky, weak cementation	MAN MAN	- 115 - - - - - 120
- - - -			Sandy SILT (ML), low plasticity; 5YR 8/4 (pink / moderate orange pink), stiff, dry, no odor, no staining, strong HCI reaction, blocky, moderate cementation, caliche to 20% in nodules and patches, causes drill to chatter when coring Poorly Graded SAND (SP), fine grained, subrounded; 10YR 7/6 (yellow), loose, no	M. M. M. M. M.	- - - - - 125
- - - 5200	D		dor, no staining, weak HCl reaction, blocky, weak cementation, caliche layer 125.5-126 ft LEAN CLAY (CL), medium plasticity; 10YR 7/6 (yellow), medium stiff, moist, no	Mary Mary Mark	- - - - 130
			odor, no staining, blocky, weak cementation Poorly Graded SAND (SP), fine grained, subrounded; 10YR 7/, loose, moist, no odor, no staining, weak HCl reaction, blocky, weak cementation	Mar Mar Mar	- 130
-			Poorly Graded SAND (SP), fine grained, subrounded; 10YR 7/6 (yellow), loose, moist, no odor, no staining, weak HCl reaction, blocky, weak cementation		
_— 5190)			blocky, weak cementation		- 140

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Lab Samples Aqueous 1) ft = feet, bgs = below ground surface, in = inches, amsl = above mean sea level, DTW = depth to water, btoc = below top of casing, EPA = Environmental Protection Agency, EDB = ethylene dibromide, μg = micrograms, L = liter, API = American Petroleum Institute gamma ray unit *Coordinates are in NAD83, State Plane NM Central, ft

te Started: 1/25/20		Project #: ABWUA.CU		Location: Albuquerq	
e Started: 1/25/20 e Completed: 4/06/20 ing Company: Cascad ing Method: Sonic npling Method: Core B	022 de Drilling	Driller:K. RogersLogged By:R. SengebushBoring Depth (ft bgs):610Boring Diameter (in):8.0Surface Elev. (ft amsl)*:5328.839	DTW First Encounte DTW Static (ft btoc): Collar Elevation (ft a Northing*: Easting*:	ered (ft bgs): 2458 (2/10/20 5 452.89 (5/25 6 msl): 5328.542 1479210.657 1544391.936	/2022)
Elev (ft amsl) EDB (µg/L)**	Lithology	Lithologic Description	Gamma (API) 10.0 70.0 Neutron (API) 700.0 700.0 2300.0 Neutron (API) 700.0 10.0 700.0	- (t p d c) - (t	itoring Vell struction
	moist, no odor, weak HC inch at 140-141 ft Poorly Graded SAND (S moderate brown), loose,	P), fine grained, subrounded; 10YR 7/6 (yel Cl reaction, blocky, weak cementation, calich P), fine grained, subrounded; 5YR 4/4 (redo moist, no odor, no staining, blocky, weak c	e nodules to 1 ish brown / ementation,	- - - - 145	
- - 	caliche layer 147.5-148. with calcium carbonate	=4 ft, nodules and patches of fine grained s	and cemented	- - - - - 145 - - - - - - - - - - - - - - - - - - -	
55 - - - - - - - - - - - - - - - - - - -	 5/6 (yellowish brown), m blocky, moderate cemen angular, very hard coring 	Gravel (SW), fine to coarse grained, suban edium dense, moist, no odor, no staining, n tation, gravel is quartzite up to 1,5 inch, rou g, was compacted but now loose from coring eposits of the sierra ladrones formation	HCl reaction, nded to	- - - 155 - -	
			And Marine Marine Marine	- - 160 - -	
	odor, no staining, weak l	um plasticity; 5YR 5/4 (reddish brown), very HCI reaction, blocky, weak cementation P), fine grained, subrounded; 5YR 5/4 (redo		- 165 - -	
- 5160 70 -	LEAN CLAY (CL), 5YR 5 reaction, blocky, weak co	5/4 (reddish brown), stiff, moist, no odor, we	exementation ak HCl	- - - 170 -	
75	brown), loose, no odor, i	ron oxide staining, no HCl reaction, stratified ents 5-10%, iron oxide stain coating quartz s	l, sand is	- - - 175	



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Lab Samples Aqueous

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			RA	Boring Log: WUABFFMW01 Project Name: Data Gap Well Project #: ABWUA.C009.KAFB		Location:	Albuquerque, NM
ate C rilling rilling	Started: Complete Compai Method ing Method	d: 4/0 ny: Ca : Soi		Logged By: R. Sengebush ing Boring Depth (ft bgs): 610 Boring Diameter (in): 8.0	DTW First Encounter DTW Static (ft btoc): Collar Elevation (ft an Northing*: Easting*:		458 (2/10/2022) 452.89 (5/25/2022) 5328.542 1479210.657 1544391.936
Depth (ft bgs)	Elev (ft amsl)	EDB (µg/L)**	Lithology	Lithologic Description	Gamma (API) 10.0 70.0 Neutron (API) 700.0 2300.0 Neutron (API) 10.0 700.0	Depth (ft bgs)	Monitoring Well Construction
- - 90 — -	- 5140 -			Well-Graded SAND with Gravel (SW), fine to coarse grained, subrounded; 10YR 5/4 (yellowish brown / moderate yellowish brown), loose, moist, no odor, no staining, no HCl reaction, blocky, no cementation, quartzite pebbles, about 5%	WWW. W. WWW.	- - - 190 -	
- - 95 — -	-			Well-Graded SAND (SW), fine to coarse grained, subrounded; 10YR, loose, moist, no odor, no staining, no HCl reaction, homogeneous, no cementation, trace pebbles to 0.5 inch	my aver when a fi	- - 195 - -	
- - - 00 -	- 5130 -				M	- - - 200 -	
- 50 -	-			Poorly Graded SAND (SP), fine to medium grained, subrounded; 10YR 7/1 (light gray), loose, moist, no odor, no staining, no HCl reaction, homogeneous, no cementation	WWW KOWWWW ANN JAN	- 205 - -	
- 10 — -	- 5120				May Marking	- — 210 -	
- - 15 -				Well-Graded SAND with Gravel (SW), medium to coarse grained, subangular; few (5-10%) Gravel, medium to coarse grained, subrounded; 10YR 7/1 (light gray), loose, moist, no odor, no staining, no HCl reaction, homogeneous, no cementation, gravel includes quartzite, pumace , and basalt, ave 1 inch diameter, up to 2 inches Well-Graded SAND with Gravel (SW), fine to coarse grained, subrounded; some (30-45%) Gravel, fine to medium grained, subrounded; 10YR 6/2 (light brownish gray / pale yellowish brown), loose, dry, no odor, no staining, no HCl reaction, homogeneous, no cementation, gravel is sandstone and basalt, to 1 inch diameter	Mr. M. M. M. M.	- - - 215 - -	
- - 20 - -	5110 			Well-Graded SAND with Gravel (SW), fine to coarse grained, subrounded; little (15-25%) Gravel, fine grained, subrounded; 10YR 6/2 (light brownish gray / pale yellowish brown), loose, dry, no odor, no staining, no HCI reaction, homogeneous, no cementation, gravel primarily basalt	My and Any My	- - - 220 -	



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L	ab Samples
	Aqueous

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ate Starte		1/25/2022	FIOJECI #. ADWOA.COUS.NAFD	DTW First Encounter		Albuquerque, NM
e Compl ling Com ling Metl	leted: npany: hod:	4/06/2022	Logged By: R. Sengebush ng Boring Depth (ft bgs): 610 Boring Diameter (in): 8.0	DTW First Encounter DTW Static (ft btoc): Collar Elevation (ft an Northing*: Easting*:		438 (2/10/2022) 452.89 (5/25/2022) 5328.542 1479210.657 1544391.936
Elev (ft amsi)		EUB (µg/L)	Lithologic Description	Gamma (API) 10.0 70.0 Neutron (API) 700.0 2300.0 Neutron (API) 100.0 700.0	Depth (ft bgs)	Monitoring Well Construction
5			Sandy LEAN CLAY (CL), medium plasticity; 5YR 5/4 (reddish brown), soft, moist, no odor, no staining, moderate HCl reaction, blocky, weak cementation, bottom of	in the second second	— 235 - -	
- 50) - -	090		Well-Graded SAND with Gravel (SW), fine to coarse grained, subrounded; little (15-25%) Gravel, fine to medium grained, rounded; 10YR 6/2 (light brownish gray / pale yellowish brown), loose, dry, no odor, no staining, no HCI reaction, homogeneous, no cementation, gravel is quartzite, black and purple basalt, up to 2.5 inches diameter	M.	- - 240 -	
			Well-Graded SAND with Gravel (SW), fine to coarse grained, subangular; 10YR	- Min	- - - 245 -	
- _— 50	080		6/2 (light brownish gray / pale yellowish brown), loose, dry, no odor, no staining, no HCl reaction, homogeneous, weak cementation, lean clay layer 250-251 ft	4 How My Wind	- - 250 -	
-			Well-Graded SAND with Gravel (SW), fine to coarse grained, subangular; little	MAR T WARD	- - - 255 -	
- _— 50) — - -	070		(15-25%) Gravel, fine to medium grained, rounded; 10YR 6/2 (light brownish gray / pale yellowish brown), loose, dry, no odor, iron oxide staining, no HCI reaction, homogeneous, weak cementation, bottom 2 feet contains orange iron oxide staining and gravel is moderately cemented or consolidated with 10% clay	Winth Marin Wint War I want was	- - - 260 -	
				Mary Milling	- - - 265 - -	
50	060			Vind	-	



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Lab Samples Aqueous

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\succ			RA	Boring Log: WUABFFMW01 Project Name: Data Gap Well Project #: ABWUA.C009.KAFB		Location	: Albuquerque, NM
Date C Drilling Drilling	tarted: complete Compai Method ng Meth	d: 4/0 ny: Ca : Soi		Logged By: R. Sengebush ling Boring Depth (ft bgs): 610 Boring Diameter (in): 8.0	DTW First Encounter DTW Static (ft btoc): Collar Elevation (ft an Northing*: Easting*:		 458 (2/10/2022) 452.89 (5/25/2022) 5328.542 1479210.657 1544391.936
Depth (ft bgs)	Elev (ft amsl)	EDB (µg/L)**	Lithology	Lithologic Description	Gamma (API) 10.0 70.0 Neutron (API) 700.0 2300.0 Neutron (API) 100.0 700.0	Depth (ft bgs)	Monitoring Well Construction
- - 285 — - -	-			Poorly Graded SAND (SP), fine to medium grained, subangular; 10YR 6/2 (light brownish gray / pale yellowish brown), loose, moist, no odor, no staining, no HCl reaction, homogeneous, no cementation	When the is a share with the way the wind the way	- - 285 - -	Grout 3.0-in Sch. 8 PVC
- 90 — - -	— 5040				And minight I wi	- 290 - -	
- 95 — -	-			Well-Graded SAND with Gravel (SW), fine to coarse grained, angular; little (15-25%) Gravel, fine to medium grained, subrounded; 10YR 6/4 (light yellowish	in the second	- 295 - -	
- - - 00 -	— 5030			brown), medium dense, dry, no odor, iron oxide staining, no HCl reaction, mottled, moderate cementation, compacted sand and gravel with mottled coloring red, purple, green. gravel includes jasper gravel to 1 inch Well-Graded SAND with Gravel (SW), fine to coarse grained, subangular; little (15-25%) Gravel, medium grained, rounded to subangular; 10YR 6/4 (light	M. V. Kink	- - 300 -	
- - 05 — -	-			 yellowish brown), loose, dry, no odor, no staining, no HCI reaction, homogeneous, no cementation, includes 1 ft thick layer of sp poorly graded sand. gravel 304-305 clasts to 2 inches, flat, quartzite Well-Graded SAND with Gravel (SW), fine to coarse grained, subrounded; few (5-10%) Gravel, fine to medium grained, subrounded; 10YR 6/4 (light yellowish brown), loose, dry, no odor, no staining, no HCI reaction, homogeneous, no cementation, gravel, as above 	Why way way him	- - 305 - -	
- - 10 -	— 5020			Well Graded SAND with Gravel (SWI) find to coarse grained outrounded; come	And M. M. Hand	- - 310 - -	
- - 15 -	-			Well-Graded SAND with Gravel (SW), fine to coarse grained, subrounded; some (30-45%) Gravel, fine to coarse grained, rounded to subrounded; 10YR 6/4 (light yellowish brown), dry, no odor, no staining, no HCI reaction, homogeneous, no cementation, gravel to 2 inches, weathered basalt and quartzite Well-Graded SAND with Gravel (SW), fine to coarse grained, subrounded; little (15-25%) Gravel, fine to medium grained, subrounded; 10YR 6/4 (light vellowish	When the work of the second	- - 315 -	



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Lab Samples Aqueous
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Date Start Date Com Drilling Co Drilling Me	ted: ppleted: ompany: ethod:	1/25/2022 4/06/2022 Cascade Drill Sonic : Core Barrel	Driller: K. Rogers Logged By: R. Sengebush Boring Depth (ft bgs): 610 Boring Diameter (in): 8.0	DTW First Encountere DTW Static (ft btoc): Collar Elevation (ft am Northing*: Easting*:	ed (ft bgs):	 Albuquerque, NM 458 (2/10/2022) 452.89 (5/25/2022) 5328.542 1479210.657 1544391.936
Depth (ft bgs)	Elev (ft amsl)	EDB (µg/L)** Lithology	Lithologic Description	Gamma (API) 10.0 70.0 Neutron (API) 700.0 700.0 2300.0 Neutron (API) 700.0 100.0 700.0	Depth (ft bgs)	Monitoring Well Construction
5 30 - - -	5000		Well-Graded SAND with Gravel (SW), fine to coarse grained, subangular; little (15-25%) Gravel, fine to coarse grained, rounded; few (5-10%) Cobbles, rounded; 10YR 6/4 (light yellowish brown), loose, moist, no odor, no staining, no HCl reaction, homogeneous, no cementation, quartzite cobbles to 3 inches, well rounded	ALAN WININ	- 330	
 335 - - -				Work Marin Marin	- 335 -	
340	4990		Poorly Graded SAND (SP), fine to medium grained, subrounded; 10YR 8/1 (white), loose, dry, no odor, no staining, no HCl reaction, homogeneous, no cementation, trace rounded gravel to 2 inch diameter, quartzite, white chalcedony	in the survey for a finance	- 340 	
45	4980		Well-Graded SAND (SW), fine to coarse grained, subangular; 10YR 7/3 (very pale brown), moist, no odor, iron oxide staining, no HCI reaction, homogeneous, no cementation, trace gravel. sand is quartz 85%, feldspar 5%, rock fragments 10%. rock fragments, medium to coarse grained, dark, probably basaltic	And And And An	- 345	
350 — - - - -				Mr. March Marin	- 350	
355 — - - - - - - - - - - - -	4970		Well-Graded SAND with Gravel (SW), fine to coarse grained, subangular; few (5-10%) Gravel, fine grained, subrounded; 10YR 7/3 (very pale brown), loose, dry, no odor, no staining, no HCl reaction, homogeneous, no cementation	Ar Mary Mary	- 355	
360 — - - -			Well-Graded SAND with Gravel (SW), fine to coarse grained, subangular; few (5-10%) Gravel, rounded to subangular; 10YR 7/3 (very pale brown), no odor, no	A A A A A A A A A A A A A A A A A A A	- 360	



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Lab Samples Aqueous 1) ft = feet, bgs = below ground surface, in = inches, amsl = above mean sea level, DTW = depth to water, btoc = below top of casing, EPA = Environmental Protection Agency, EDB = ethylene dibromide, μg = micrograms, L = liter, API = American Petroleum Institute gamma ray unit *Coordinates are in NAD83, State Plane NM Central, ft

			RA	Boring Log: WUABFFMW01 Project Name: Data Gap Well Project #: ABWUA.C009.KAFB		Locatio	n: Albuquerque, NM
ate Star ate Com illing Co illing Me ampling	npleted ompan ethod:	l: 4/00 y: Cas Sor		Logged By: R. Sengebush [ing Boring Depth (ft bgs): 610 (Boring Diameter (in): 8.0	DTW First Encounter DTW Static (ft btoc): Collar Elevation (ft ar Northing*: Easting*:		 458 (2/10/2022) 452.89 (5/25/2022) 5328.542 1479210.657 1544391.936
Deptili (it bgs)	Elev (ft amsl)	EDB (µg/L)**	Lithology	Lithologic Description	Gamma (API) 10.0 70.0 Neutron (API) 700.0 700.0 2300.0 Neutron (API) 100.0 10.0 700.0	Depth (ft bgs)	Monitoring Well Construction
- - - 30 - -	4950			Well-Graded SAND with Gravel (SW), fine to coarse grained, subangular; little (15-25%) Gravel, rounded to subangular; few (5-10%) Cobbles, subrounded; 10YR 7/3 (very pale brown), loose, dry, no odor, no staining, no HCI reaction, homogeneous, no cementation, gravel and cobbles to 3.5 inches, basalt, chalcedony, first granitic clast in core	My Kerthe Min With in String	- - - - 380 - -	
35 - - - - - - - - 00 -	4940			Well-Graded SAND with Gravel (SW), fine to coarse grained, subrounded to subangular; little (15-25%) Gravel, subrounded; 10YR 7/3 (very pale brown), loose, dry, no odor, no staining, no HCl reaction, homogeneous, no cementation, gravel quartzite, chalcedony to 2 inches diameter	ALAM WINT WY	- 385 - - - - 390	
				Well-Graded SAND with Gravel (SW), fine to coarse grained, subrounded; little (15-25%) Gravel, fine to medium grained, rounded to subangular; 10YR 7/3 (very pale brown), loose, dry, no odor, no staining, no HCI reaction, homogeneous, no cementation, gravel includes purple rhyolite, layered volcanic, glassy with abundant feldspar, red volcanic pebbles with euhedral feldspar. sand is quartz	M. W. L. M.	- - - - 395 -	
- 	4930			60%, feldspar 10 %, dark rock fragments. general increase in quartz-rich volcanic content.	My Minhow My	- 400 - -	
				Well-Graded SAND with Gravel (SW), fine to coarse grained, subrounded; few (5-10%) Gravel, fine to medium grained, rounded; 10YR 7/3 (very pale brown), loose, dry, no odor, no staining, no HCl reaction, homogeneous, no cementation, various volcanics, very fine grained, pink, green, black, cylindrical, to 1.5 inches long, 0.5 diameter	My hit was in the second	- 405 - -	
- 	4920				And All	- 410	



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Lab Samples Aqueous

1) ft = feet, bgs = below ground surface, in = inches, amsI = above mean sea level, DTW = depth to water, btoc = below top of casing, EPA = Environmental Protection Agency, EDB = ethylene dibromide, μg = micrograms, L = liter, API = American Petroleum Institute gamma ray unit *Coordinates are in NAD83, State Plane NM Central, ft

	EHA	Boring Log: WUABFFMW01 Project Name: Data Gap Well Project #: ABWUA.C009.KAFB		Location: Albu	Iquerque, NM
e Started: e Completed: ing Company: ing Method: npling Method:	Sonic	Logged By: R. Sengebush ng Boring Depth (ft bgs): 610 Boring Diameter (in): 8.0	DTW First Encounter DTW Static (ft btoc): Collar Elevation (ft an Northing*: Easting*:	▼ 452. nsl): 5328 1479	(2/10/2022) 89 (5/25/2022) 9.542 1210.657 391.936
Elev (ft amsl)	EDB (µg/L)** Lithology	Lithologic Description	Gamma (API) 10.0 70.0 Neutron (API) 700.0 2300.0 Neutron (API) 100.0 700.0	Depth (ft bgs)	Monitoring Well Construction
		average size <1 inch diameter	Mary : With High	- - - 425 -	
- 4900 		Poorly Graded SAND (SP), fine to medium grained, subrounded; 10YR 8/1 (white) to 10YR 7/3 (very pale brown), very loose, dry, no odor, no staining, no HCl reaction, homogeneous, no cementation, notably no gravel	Mronchike M. M. Witch	- - 430 -	
		 Poorly Graded SAND (SP), medium grained, subrounded; 10YR 7/3 (very pale brown), loose, dry, no odor, no staining, no HCl reaction, homogeneous, no cementation FAT CLAY (CH), high plasticity; 5YR 5/4 (reddish brown), very stiff, moist, no odor, no staining, no HCl reaction, laminated, no cementation, clay, stiff, 1 ft thick. Poorly Graded SAND (SP), fine to medium grained, subrounded; 5YR 5/4 (reddish brown), dry, no odor, no staining, no HCl reaction, homogeneous, no cementation 	M.M.	- - 435 - -	
- _— 4890 		SILT (ML), non plastic; trace (<5%) Clay; medium stiff, moist, no odor, no HCl reaction, homogeneous, no cementation, silt with trace clay, stiff Well-Graded SAND (SW), fine to coarse grained, subrounded; 5YR 5/1 (gray), loose, moist, no odor, no staining, no HCl reaction, homogeneous, no cementation, trace gravel, ave < 0.5 inch diameter	A A A	- - - 440 -	
		Poorly Graded SAND (SP), subrounded; 10YR 7/2 (light gray), loose, dry, no odor, no staining, no HCl reaction, homogeneous, no cementation Poorly Graded SAND (SP), fine grained, rounded to subrounded; 10YR 7/2 (light gray) and 7.5YR 7/8 (reddish yellow), loose, moist, no odor, iron oxide staining, no HCl reaction, homogeneous, moderate cementation, intense orange feox stain at 455-457	W. i. A. N I mar had broken I	- - - 445 -	
- 4880 			M. W. W. W. W. W.	- - - 450 - -	
			M. M. M. M.	- - - 455 -	



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Lab Samples Aqueous

1) ft = feet, bgs = below ground surface, in = inches, amsl = above mean sea level, DTW = depth to water, btoc = below top of casing, EPA = Environmental Protection Agency, EDB = ethylene dibromide, μg = micrograms, L = liter, API = American Petroleum Institute gamma ray unit *Coordinates are in NAD83, State Plane NM Central, ft

	Started:		RA 5/2022	Driller: K. Rogers	DTW First Encounter	ed (ft bgs):	n: Albuquerque, NM
ate C illing illing	Complete g Compar g Method ling Metho	d: 4/06 ny: Cas : Son	6/2022 scade Drill iic	Logged By: R. Sengebush ing Boring Depth (ft bgs): 610 Boring Diameter (in): 8.0	DTW Static (ft btoc): Collar Elevation (ft an Northing*: Easting*:		 452.89 (5/25/2022) 5328.542 1479210.657 1544391.936
Depth (ft bgs)	Elev (ft amsl)	EDB (µg/L)**	Lithology	Lithologic Description	Gamma (API) 10.0 70.0 Neutron (API) 700.0 2300.0 Neutron (API) 100.0 700.0	Depth (ft bgs)	Monitoring Well Construction
70 — - - 75 —	-			ft, gravel to 2 inches, granite with k feldspar, quartzite, basalt, well rounded	M. W.	470 - - - - - - 475	
- - - 80 – -	- 4850			 Poorly Graded SAND (SP), fine to medium grained, subrounded; 10YR 6/2 (light brownish gray / pale yellowish brown), loose, wet, no odor, no staining, no HCl reaction, homogeneous, no cementation Well-Graded SAND with Gravel (SW), fine to coarse grained, subrounded; little (15-25%) Gravel, fine to medium grained; 10YR 6/2 (light brownish gray / pale yellowish brown), loose, wet, no odor, no staining, no HCl reaction, homogeneous, no cementation, gravel includes granite, quartzite, basalt, to 2 inches, rounded 	MMMMW	- - - - 480 -	
- - 85 – -	-			Poorly Graded SAND (SP), fine to medium grained, subrounded; 10YR 6/2 (light brownish gray / pale yellowish brown), loose, wet, no odor, no HCl reaction, homogeneous, no cementation	WWWWWWW	- - 485 -	
- - 90 — -	4840 	< 0.0093		Well-Graded SAND (SW), fine to coarse grained, subrounded; 10YR 5/3 (brown), loose, wet, no odor, no HCl reaction, homogeneous, no cementation Well-Graded SAND (SW), fine to coarse grained, subrounded; 10YR 5/3 (brown),	M. W. W. W. W.	- - 490 -	
- - 95 — - -				loose, wet, no odor, no staining, no HCl reaction, homogeneous, no cementation	Why why why is	- - - 495 - -	
- 500 — -	4830 			Poorly Graded SAND (SP), fine grained, rounded; 2.5YR 5/3 (reddish brown), loose, wet, no odor, no staining, no HCl reaction, homogeneous, no cementation, 1 vesicular basalt pebble 1 inch diameter. color is mottled with gray	W W WWWWWW	- — 500 -	



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Lab Samples
Aqueous

1) ft = feet, bgs = below ground surface, in = inches, amsl = above mean sea level, DTW = depth to water, btoc = below top of casing, EPA = Environmental Protection Agency, EDB = ethylene dibromide, μg = micrograms, L = liter, API = American Petroleum Institute gamma ray unit *Coordinates are in NAD83, State Plane NM Central, ft

	N		RA	Boring Log: WUABFFMW01 Project Name: Data Gap Well Project #: ABWUA.C009.KAFB		Location	: Albuquerque, NM
te C Iling Iling	Started: Complete g Compa g Method ing Meth	d: 4/0 ny: Cas : Sor		Logged By: R. Sengebush ing Boring Depth (ft bgs): 610 Boring Diameter (in): 8.0	DTW First Encountere DTW Static (ft btoc): Collar Elevation (ft an Northing*: Easting*:		 458 (2/10/2022) 452.89 (5/25/2022) 5328.542 1479210.657 1544391.936
Depth (ft bgs)	Elev (ft amsl)	EDB (µg/L)**	Lithology	Lithologic Description	Gamma (API) 10.0 70.0 Neutron (API) 700.0 2300.0 Neutron (API) 100.0 700.0	Depth (ft bgs)	Monitoring Well Construction
- - 20 -	4810	< 0.0094		Well-Graded SAND with Gravel (SW), medium to coarse grained, subrounded; some (30-45%) Gravel, medium to coarse grained, rounded to subrounded; 10YR 4/2 (dark grayish brown / dark yellowish brown), loose, wet, no odor, no staining, no HCl reaction, homogeneous, no cementation, cobbles to 4 inches	William WWW with the will be a start of the	- - - - 520 - -	
- 25 — -	-				WWWWWWWWWWW	- — 525 -	
- - 30 — -	- 4800			Well-Graded SAND with Gravel (SW), medium to coarse grained, subrounded; some (30-45%) Gravel, medium to coarse grained, rounded; 10YR 5/2 (grayish brown), loose, wet, no odor, no staining, no HCI reaction, homogeneous, no cementation, gravel to 3 inches diameter, basalt, rounded and elongate	Mining And	- - - 530 -	
- 35 — -	-			FAT CLAY (CH), high plasticity; 10YR 8/1 (white), very stiff, dry, no odor, no HCI reaction, no cementation	M. Jorian	- - - 535 -	
- - 40 — -	- 4790 -			Well-Graded SAND with Gravel (SW), medium to coarse grained, subrounded; some (30-45%) Gravel, medium to coarse grained, rounded to subrounded; few (5-10%) Cobbles, rounded; 10YR 5/2 (grayish brown), loose, wet, no odor, no staining, no HCI reaction, homogeneous, no cementation, cobbles to 4 inches. fossiliferous limestone clast, 2 inches, (madera?)	Why in winting	- - 540 -	
- - 45 — -	-				M. M. M. M.	- - 545 -	
- - 550 — -	- 4780			Poorly Graded SAND (SP), fine grained, subrounded; 10YR 5/2 (grayish brown), loose, wet, no odor, no staining, no HCl reaction, homogeneous, no cementation, trace pebbles 0.25 inch Well-Graded SAND with Gravel (SW), fine to medium grained, subrounded; few (5-10%) Gravel, fine to medium grained, rounded; 10YR 5/2 (grayish brown), loose, wet, no odor, no HCl reaction, homogeneous, no cementation, gravel, granite to 2 inch, basalt, 1 inch, rounded	WWWWW WWW	- - 550 -	



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Lab Samples Aqueous

1) ft = feet, bgs = below ground surface, in = inches, amsl = above mean sea level, DTW = depth to water, btoc = below top of casing, EPA = Environmental Protection Agency, EDB = ethylene dibromide, μg = micrograms, L = liter, API = American Petroleum Institute gamma ray unit *Coordinates are in NAD83, State Plane NM Central, ft

ate Sta	arted:	1/2	RA 5/2022	Driller: K. Rogers	DTW First Encounter		on: Albuquerque, NM): ▼ 458 (2/10/2022)
illing (illing l	ompleted Compar Method: ig Metho	ny: Cas Sor		ling Boring Depth (ft bgs): 610	DTW Static (ft btoc): Collar Elevation (ft an Northing*: Easting*:	nsl):	452.89 (5/25/2022) 5328.542 1479210.657 1544391.936
Deptn (11 bgs)	Elev (ft amsl)	EDB (µg/L)**	Lithology	Lithologic Description	Gamma (API) 10.0 70.0 Neutron (API) 700.0 2300.0 Neutron (API) 100.0 700.0	Depth (ft bgs)	Monitoring Well Construction
 5 -				Poorly Graded SAND with Clay (SP-SC), fine grained, subrounded; 10YR 5/2 (grayish brown), medium dense, wet, no odor, no staining, no HCl reaction, stratified, no cementation, clayey sand with tabular sandstone pieces to 5 inches, hard cemented sandstone, rounded but flat. layer 0.5 ft thick, but rounded cobbles predominate Well-Graded SAND with Gravel (SW), fine to coarse grained, subrounded; few	WWW WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW	- — 565 -	1/4-in TR 30 Bentonite Pellets
- - - - 0 - -	- 4760			 (5-10%) Gravel, fine grained, subrounded; 10YR 5/2 (grayish brown), loose, wet, no odor, no staining, no HCl reaction, homogeneous, no cementation Poorly Graded SAND (SP), fine grained, subrounded; 10YR 5/2 (grayish brown), loose, wet, no odor, no staining, no HCl reaction, homogeneous, no cementation Well-Graded SAND with Gravel (SW), fine to coarse grained, subrounded; some (30-45%) Cobbles, subrounded; 10YR 4/3 (brown), loose, wet, no odor, no staining, no HCl reaction, homogeneous, strong cementation, 567-568, sandstone pieces (fully lithified) to 5 inches diameter, well cemented pebbly sandstone, vari-colored pebbles in the sandstone matrix, very distinctive, not typical of other previous gravel or cobbles. sandstone pieces are angular, 4 - 5 inches in longest dimension but tabular. these pieces also contain fine-grained sandstone zones, as 	M.M.M.M.	- - 570 -	Stainless Steel Centralizer
- - 5 -				 thin beds (1 inch) or rip-up clasts within the coarse, pebbly sandstone pieces, as thin beds (1 inch) or rip-up clasts within the coarse, pebbly sandstone matrix. no hcl reaction on the sandstone pieces, interpret as silica cement Poorly Graded SAND (SP), fine to medium grained, subrounded; 10YR 4/3 (brown), loose, wet, no odor, no staining, no HCl reaction, homogeneous, no cementation Well-Graded SAND with Gravel (SW), subrounded; little (15-25%) Gravel, fine to medium grained; 10YR 4/3 (brown), loose, wet, no odor, no staining, no HCl reaction, homogeneous, no cementation, pravel is rounded average 1-2 inch 	M W W W	- - 575 -	
- 0 	- 4750			diameter, typical of previous gravels Well-Graded SAND with Gravel (SW), fine to coarse grained, subrounded; little (15-25%) Cobbles, rounded; 10YR 4/2 (dark grayish brown / dark yellowish brown), loose, wet, no odor, no staining, no HCI reaction, homogeneous, no cementation, 579 - 580, sand matrix supported cobbles to 3.5 inches diameter, includes banded rhyolite, basalt, granite, and pink and gray vein quartz Well-Graded SAND with Gravel (SW), fine to coarse grained, subangular; trace	WWWWW	- - 580 -	
- - 5- -		< 0.0094		 (<5%) Gravel, fine to medium grained, subangular; 10YR 4/2 (dark gravish brown / dark yellowish brown), loose, wet, no odor, no staining, no HCl reaction, homogeneous, no cementation, gravel includes subangular calcite-cemented sandstone clast and a well rounded quartzite clast Poorly Graded SAND (SP), medium to coarse grained, subrounded; 10YR 4/2 (dark grayish brown / dark yellowish brown), loose, wet, no odor, no staining, no HCl reaction, homogeneous, no cementation 	M M M M M	- - 585 -	10/20 Silica Sand 3.0-in Sch. PVC 0.020- Slot Screen
- -	- 4740			 Well-Graded SAND with Gravel (SW), fine to coarse grained, subrounded; trace (<5%) Gravel, fine grained, subangular; 10YR 4/2 (dark grayish brown / dark yellowish brown), loose, wet, no odor, no staining, no HCl reaction, homogeneous, no cementation Poorly Graded SAND (SP), medium to coarse grained, subrounded; 10YR 4/2 (dark grayish brown / dark yellowish brown), loose, wet, no odor, no staining, no HCl reaction, homogeneous, no HCl reaction, homogeneous, no cementation 	WWW WWW	- - 590 -	
- - 5				FAT CLAY (CH), high plasticity; trace (<5%) Clay; very stiff, moist, no odor, laminated, no cementation, clay layer, 0.5 ft thick, very stiff, pale red 5r 7/3 Well-Graded SAND (SW), fine to coarse grained, subangular; trace (<5%) Gravel, fine grained, subangular; 10YB 4/2 (dark gravish brown / dark vellowish brown)	M. M. M.	- - 595	Stainless Steel Centralizer 3.0-in Sch. PVC
-				fine grained, subangular; 10YR 4/2 (dark grayish brown / dark yellowish brown), loose, wet, no odor, no staining, no HCl reaction, homogeneous, no cementation, trace fine gravel Well-Graded SAND with Gravel (SW), fine to medium grained, subrounded; trace (5%) Gravel, fine to medium grained, rounded; 10YR 5/3 (brown), loose, wet, no	A A A A A A A A A A A A A A A A A A A	-	Threaded Stainless Steel End C



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Lab Samples Aqueous
1) ft = feet, bgs = below ground surface, in = inches, amsl = above mean sea level, DTW = depth to water, btoc = below top of casing, EPA = Environmental Protection Agency, EDB = ethylene dibromide, μg = micrograms, L = liter, API = American Petroleum Institute gamma ray unit *Coordinates are in NAD83, State Plane NM Central, ft



Appendix E

Well Development Forms





PROJECT NAME: 71 5 W A COOG. KAFA: PROJECT NO.: DATE: 9722	WELL	NO.: D.L. BY: Br	Carlie II
WELL CON	STRUCTION		
TOTAL DEPTH BELOW MEASURING POINT (BMP) (FT): 50 TOTAL DEPTH BELOW LAND SURFACE (FT BLS): WELL PROTECTOR: DYES DNO PADLOCK NO.:	WELL DIAMETER	R INSIDE (IN):	2811
SAND PACK INTERVAL (BLS) (FT):	SCREEN INTER	/AL (BLS) (FT)	
SAND PACK INTERVAL (BLS) (FT):	SCREEN INTER	/AL (BLS) (FT)	
SAND PACK INTERVAL (BLS) (FT): Screen 572-597 WATER VOLUMI DATE/TIME OF MEASUREMENT: 412/22 747	SCREEN INTER	/AL (BLS) (FT)	·
AND PACK INTERVAL (BLS) (FT): Schemen 572-597 WATER VOLUMI SG2-597 WATER VOLUMI SG2-597 WATER VOLUMI SG2-597 WATER VOLUMI SG2-597 WATER VOLUMI SG2-597 SG2-597 WATER VOLUMI SG2-597 WATER VOLUMI SG2-597 SG2-597 WATER VOLUMI	SCREEN INTER	/AL (BLS) (FT)	
AND PACK INTERVAL (BLS) (FT): Screen 572-597 WATER VOLUMI ST2-5977 ATE/TIME OF MEASUREMENT: 402/22 747 IEASURING POINT: TOX ELEV.: (ATER LEVEL INSTRUMENT USED: School Of UT	SCREEN INTER	/AL (BLS) (FT)	
AND PACK INTERVAL (BLS) (FT): Screen 572-597 WATER VOLUMI STEPTIME OF MEASUREMENT: 402/22 747	SCREEN INTER	/AL (BLS) (FT)	

,DE	
METHOD OF DEVELOPMENT:	- 2" (D x 40' @ ~ 6.5 gal par
WATER VOLUME TO BE REMOVED (GAL):	WATER VOLUME ACTUALLY REMOVED (GAL):
TIME DEVELOPMENT STARTED:	TIME DEVELOPMENT COMPLETED:
NOTE: Development is to be performed in accord	ance with Standard Operating Procedure No. 8.

WATER QUALITY INSTRUMENTS

INSTRUMENT	SERIAL NO.	TIME CALIBRATION PERFORMED	ТЕСН	COMMENTS
YST PRO 1030		820	Bu	
HACH	Zrava	820	35h	

WATER QUALITY READINGS DURING DEVELOPMENT

DATE/TIME	TOTAL WATER PURGED (gal)	TEMP (°C)	CONDUCTIVITY (µS/cm)	TURB (NTU)*	рН	TECH	COMMENTS
1015	6.5	155	878	YOU	7.58		Stow och
1150	55	170	605	xers	5.55		410
1215	100	179	492	COX	8.40		
1447	130	20,9	586	2000	7.66		tray alor ()
1505	160	20.7	387	70000	8.00		
1531	10030	198	384	2690	838	1	11 5000
1605	245	(9.7	348	Creac	0.72		11 500
	END '	DAY	T	ATAC	PUR	GED	
	1		28500	(1		
				V. D.			

*If measured.



WATER QUALITY READINGS DURING DEVELOPMENT (continued)

DATE/TIME	TOTAL WATER PURGED (gal)	TEMP (°C)	CONDUCTIVITY (µS/cm)	TURB (NTU)*	рН	TECH	COMMENTS
						-	
						· · · · · · · · · · · · · · · · · · ·	
					-		
				-			
					/		
				_			
			¥				
		-			_		
					-		
			1	1			
		_					
						-	

*If measured.

Stabilization = Temp ±1°C; pH ±0.2 units; Sp. Cond. ±10%; Turb. ±10%

April 2015



NOTE: Development is to be performed in accordance with Standard Operating Procedure No. 8.

WATER QUALITY INSTRUMENTS

INSTRUMENT	SERIAL NO.	TIME CALIBRATION PERFORMED	TECH	COMMENTS
SE	PEUIOSO	730	Bn	2PT PH
HACH	DODIS	730	Br	

WATER QUALITY READINGS DURING DEVELOPMENT

DATE/TIME	TOTAL WATER PURGED (gal)	TEMP (°C)	CONDUCTIVITY (µS/cm)	TURB (NTU)*	pН	TECH	COMMENTS
9,00	300	17.6	3636	>1000	7.56	75n	strador
1000	375	15.1	339	>6000	812	BA	e 1
1100	415	191	327	These	8.37	BA	
130	450	18.8	307	7000	8.51	Bn	olor
1200	500	159	21	2000	8:43	Br	6
1230	545	195	3078	3000	8.35	Br	Stator
pad	LOOSPU	189	2515	700	541	Bh	0.000
1400	600	P.Y	283	Creak	8.53		
1430	650	199	284.9	2000	8.55		
1505	695	1.05	274.8	674	8.44	Br	stipt al

*If measured.



WATER QUALITY READINGS DURING DEVELOPMENT (continued)

DATE/TIME	TOTAL WATER PURGED (gal)	TEMP (°C)	CONDUCTIVITY (µS/cm)	TURB (NTU)*	рН	TECH	COMMENTS
1530	740	19.7	273.9	745	859	By	St.fit al
600	77500	20.5	270	716	8.34	1	11
630	825	20.0	277.3	GOOK	840	V	د]
1650	855	20.6	2769		8.06	819	11
F	END (DED	AY 4	8/22	2		
	TI	17.	-1-001				- 1-
	121	es (-5	6309-1	, (0	obx 4	220	Sgal-
		~		100		10	1 1-
		81	5-285=	39	Uga	tor	dm 48
		1			-		1
				-	-		
		-					
				-	-		
				-			
				-			

*If measured.

P. C. Barren Comp. B. L.

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Stabilization = Temp ±1°C; pH ±0.2 units; Sp. Cond. ±10%; Turb. ±10%

April 2015

ROJECT NAME WUA Duty Gap Well	WELL	NO .: WUAB	FFMWO
ROJECT NAME: WUA DATA GAP Well ROJECT NO .: DATE:DATE:	FORM COMPLETED	BY: UP	
WELL CONS	STRUCTION		
DTAL DEPTH BELOW MEASURING POINT (BMP) (FT): DTAL DEPTH BELOW LAND SURFACE (FT BLS): ELL PROTECTOR: □ YES □ NO PADLOCK NO.: AND PACK INTERVAL (BLS) (FT):	WELL DIAMETER	R INSIDE (IN): _ R OUTSIDE (IN)	:
WATER VOLUM	E CALCULATION		
ATE/TIME OF MEASUREMENT:	ITEM	WATER	VOLUME
EASURING POINT: ELEV.:		FT ³	GAL
TER LEVEL INSTRUMENT USED:	Well Casing		
AL WATER LEVEL (BMP) (FT):	Sand Pack		
EAR FEET OF WATER:	Drilling Fluids		
EAR FEET SATURATED GRAVEL PACK:	TOTAL		
DTE: Quantities are to be calculated prior to development. DEVELOPMENT: Bailing w/ 40'2 ATER VOLUME TO BE REMOVED (GAL): WATE ME DEVELOPMENT STARTED: 0825 TIME D	R VOLUME ACTUALLY	REMOVED (GA	ynl totz 875 AL):

INSTRUMENT	SERIAL NO.	TIME CALIBRATION PERFORMED	TECH	COMMENTS
YSI PRO 1030		0715	ip	
HACH 2100	Q	0715	if	

WATER QUALITY READINGS DURING DEVELOPMENT

DATE/TIME	TOTAL WATER PURGED (gal)	TEMP (°C)	CONDUCTIVITY (µS/cm)	TURB (NTU)*	рН	TECH	COMMENTS
0848	~ 905	13,8	3501	508	8.21	UP .	slight ada
0933	~905	15.6	384.4	406	8.32	UP	nodor
1000	~1025	134	389.4	454	8.45	UP	no odos
1031	~1085	17.3	313,0	498	8.37	P	no odor
1103	v1145	18.1	311.8	568	8.34	P	no olar
1135	~1205	18.5	316.1	487	8.32	Y	no octor
451	-1265	19.2	312.3	355	8.30	R	noodu
1219	~1325	19.9	317.3	310	8.31	R	noodor
1315	~ 385	20.1	321.3	404	8.32	N	no odori
1425	- HTER	0.15	2199	561	8.18	R	nobdor,

1505 *If measured.

Stabilization = Temp ±1°C; pH ±0.2 units; Sp. Cond. ±10%; Turb. ±10%

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cont. J

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WATER QUALITY READINGS DURING DEVELOPMENT (continued)

DATE/TIME	TOTAL WATER PURGED (gal)	TEMP (°C)	CONDUCTIVITY (µS/cm)	TURB (NTU)*	рН	TECH	COMMENTS
1442	1535	21.2	323.1	331	8.18	CP	stighty a
1508	1595	21.4	324.8	312	8.23	UP	slightly
1536	1650	21.3	324.1	377	8.33	IR	slightly c
1603	1710	21.2	321.4	377	8.32	ip	slightly cl
	Final -	Total	Purged =				
	1725	£	- Ser				
	Daily +	otal=	B15 galle	nz			
	12-11		015) 00				
				()			

*If measured.

Stabilization = Temp ±1°C; pH ±0.2 units; Sp. Cond. ±10%; Turb. ±10%

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PROJECT NAME:	Data (rav Well	WELL NO .: . WUABFF MWO/
PROJECT NO.:	DATE: 41022	FORM COMPLETED BY: L. Price

WELL CONSTRUCTION

TOTAL DEPTH BELOW MEASURING POINT (BMP) (FT):	BOREHOLE DIAMETER (IN):
TOTAL DEPTH BELOW LAND SURFACE (FT BLS):	WELL DIAMETER INSIDE (IN):
WELL PROTECTOR: I YES I NO PADLOCK NO .:	WELL DIAMETER OUTSIDE (IN):
SAND PACK INTERVAL (BLS) (FT):	SCREEN INTERVAL (BLS) (FT):

WATER VOLUME CALCULATION

DATE/TIME OF MEASUREME	NT:
MEASURING POINT:	ELEV.:
WATER LEVEL INSTRUMENT	USED:
INITIAL WATER LEVEL (BMP)	(FT):
LINEAR FEET OF WATER:	
LINEAR FEET SATURATED G	RAVEL PACK:

a dama anti- di Ja	WATER	VOLUME
ITEM	FT ³	GAL
Well Casing		1
Sand Pack		
Drilling Fluids		
TOTAL	danjs To	

NOTE: Quantities are to be calculated prior to development.

51.

DEVELOPMENT CRITERIA

METHOD OF DEVELOPMENT: BAILING W/ 1	40'2" DIA PUC BAILER		
WATER VOLUME TO BE REMOVED (GAL):	WATER VOLUME ACTUALLY REMOVED (GAL):		
TIME DEVELOPMENT STARTED: 0800	TIME DEVELOPMENT COMPLETED:		
NOTE: Development is to be performed in accordance	with Standard Operating Procedure No. 8.		

WATER QUALITY INSTRUMENTS

INSTRUMENT	SERIAL NO.	TIME CALIBRATION PERFORMED	TECH	COMMENTS
YSI PRO 103	þ	0715	NP	
HACH 2/00	Q	0715	N	

WATER QUALITY READINGS DURING DEVELOPMENT

DATE/TIME	TOTAL WATER PURGED (gal)	TEMP (°C)	CONDUCTIVITY (µS/cm)	TURB (NTU)*	pН	TECH	COMMENTS
0805	initial	16.10	276.0	223	774	ip	slightly church
0840	1785	1611	0421-385.9	252	7.09	N	mostly clear
8600	~1845	16.5	338.5	232	7.98	up	mostly den
0936	~1905	17.3	331.6	252	8.04	up	slightly cloudy
1007	-1945	17.9	330.4	244	8.14	ip	Slightly clothy
1041	-2025	19.4	337.3	230	8.20	NP	slightly cludy
1110	-2085	19.7	336.9	306	8.25	P.	slightly chirdly
1139	-2145	21.0	334.3	256	8.18	P	slightly durdy
1210	V2205	2018	339.7	273	8.25	VP	stighting clad
1242	~2265	247	345.1	249	8,35	VP	slighty chuch

*If measured.

~ 60 gd ~ 60 gd ~ 60 gd ~ 60 ~ 60 ~ 60 ~ 60 ~ 60 ~ 60 ~ 60



+ 60 + 60 + 60 + 60 + 60 + 60

WATER QUALITY READINGS DURING DEVELOPMENT (continued)

ATE/TIME	TOTAL WATER PURGED (gal)	TEMP (°C)	CONDUCTIVITY (μS/cm)	TURB (NTU)*	pН	TECH	COMMENTS
313	2325	20.6	339.4	246	8.33	y	slighty a
351	2385	2011	337.9	210	9.34	up	slightly a
418	2445	19.90	340.5	236	8.33	LP	stratty a
446	2505	20.9	334.9	177	8.3	UP	slightly c
518	2565	21.7	333.1	141	8.29	LP	mostly cle
	A						1
							1
	Approximat	jon. ba	red on prom	ping	60 5	al from	n (2) 30 g
_				1 0	3		
Howe	ver, To.	e 8 =	~270gl	~			
	Tot	29=	~ 260 st.	1	STR	totes	are gradua
	10	te 10 =	w 2,70 5-1	/	Im	vsing t	
	Tot	11 =	45 94	/	V	ofme p	
			,			1	0
	Daily =	v 805	gallong				
			0				5
	Grand -	ptd -	1725 gel	+ 80	5 gal	long	= 2530
			,		,		
11							
		2					
				1			
			-				
						12.000	
1	1			1			
				1.1			
				_			

*If measured.



Standard Operating Procedure SOP 30: Field Form 3 – WELL DEVELOPMENT and GENERAL DATA

PROJECT NAME:	Data Gap We	WUAB FFMWOI
PROJECT NO.:	DATE:4	R. Archuleta

WELL CONSTRUCTION

TOTAL DEPTH BELOW MEASURING POINT (BMP) (FT): 577.21	BOREHOLE DIAMETER (IN):
TOTAL DEPTH BELOW LAND SURFACE (FT BLS):	WELL DIAMETER INSIDE (IN): 3
WELL PROTECTOR: DYES DNO PADLOCK NO .:	WELL DIAMETER OUTSIDE (IN):
SAND PACK INTERVAL (BLS) (FT):	_ SCREEN INTERVAL (BLS) (FT):

WATER VOLUME CALCULATION

DATE/TIME OF MEASUREMENT:	4/11/22 0800
MEASURING POINT: TOC	ELEV.:
WATER LEVEL INSTRUMENT USE	ED:
INITIAL WATER LEVEL (BMP) (FT)	453.05
LINEAR FEET OF WATER:	
LINEAR FEET SATURATED GRAV	EL PACK:

	WATER	VOLUME	
ITEM	FT ³	GAL	
Well Casing			
Sand Pack			
Drilling Fluids			
TOTAL		4250	
Yesterd	ay's Tota	1=2,53	0 gallon

NOTE: Quantities are to be calculated prior to development.

DEVELOPMENT CRITERIA

METHOD OF DEVELOPMENT: Bailing w/	2" PVC Sch 80 Balen (~6 gallons)				
WATER VOLUME TO BE REMOVED (GAL): 4250	WATER VOLUME ACTUALLY REMOVED (GAL): 3430 (total)				
TIME DEVELOPMENT STARTED: 0540	TIME DEVELOPMENT COMPLETED: 1640				
NOTE: Development is to be performed in accordance w	ith Standard Operating Procedure No. 8.				

WATER QUALITY INSTRUMENTS

INSTRUMENT	SERIAL NO.	TIME CALIBRATION PERFORMED	TECH	COMMENTS
YSI 80 1030		0830	BA	
HACH 2100 Q		0830	BA	

WATER QUALITY READINGS DURING DEVELOPMENT

DATE/TIME	TOTAL WATER	TEMP	CONDUCTIVITY	TURB			
	PURGED (gal)	(°C)	(μS/cm)	(NTU)*	рН	TECH	COMMENTS
0840	Taitia /2530	17.01	332.2	58.9	6.84	BA	Mostly clear.
0925	2620	19.7	493	132	5.53	BA	Mostly clan, Sti
0945	2680	18.8	474	167	7.05	BA	11
1011	7740	18.4	328.2	147	7.80	BA	Slightly Cloud
1045	2800	19.6	324.1	171	7.91	BA	0.00
1130	2900	19.8	326.0	167	8.34	BA	10
1158	7,980	20.3	325.6	160	8.43	But	10
12.44	3070	20.2	373.2	176	8.13	BA	1(
1331	3140	20.5	315.0	238	8.36	BA	C/
1400	3200	70.8	320 5	239	8144	. RA	10

*If measured.

Stabilization = Temp ±1°C; pH ±0.2 units; Sp. Cond. ±10%; Turb. ±10%

April 2015

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810 900

DATE/TIME	TOTAL WATER PURGED (gal)	TEMP (°C)	CONDUCTIVITY (µS/cm)	TURB (NTU)*	рH	TECH	COMMENTS
519	3340	23.1	332.4	235	8.41	BA	Cloudy. Sti
1640	3430	22.7	322.8	174	8,30		11
	Stop D.	evelopen	ent effort	s f	or th	e de	24
		ly Vol	ine = 900) gai	Vons	-)
	- Tot	al vol	ume = 3	130	Salle	m	
	Te	nget 1	Blume =	4250) ga	llons	
		Remain	ng Volum	0 = 5	150	gallo	
			,			3 10	
						-	

WATER QUALITY READINGS DURING DEVELOPMENT (continued)

*If measured.

\$ 19.2

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PROJECT NAME:	Data Gap Well	WELL NO .: WUABFF MWDI
PROJECT NO.:	DATE: 4/12/22	FORM COMPLETED BY: <u>B. Archalate</u>

WELL CONSTRUCTION

TOTAL DEPTH BELOW MEASURING POINT (BMP) (FT): 597.35	BOREHOLE DIAMETER (IN):
TOTAL DEPTH BELOW LAND SURFACE (FT BLS):	WELL DIAMETER INSIDE (IN):
WELL PROTECTOR: DYES DNO PADLOCK NO .:	WELL DIAMETER OUTSIDE (IN):
SAND PACK INTERVAL (BLS) (FT):	_ SCREEN INTERVAL (BLS) (FT):

WATER VOLUME CALCULATION

DATE/TIME OF MEASUREMENT:	0810 4/12	22
MEASURING POINT: TUC	ELEV.:	
WATER LEVEL INSTRUMENT USE	D: <u>Cascade's</u>	_
INITIAL WATER LEVEL (BMP) (FT):	452.9	_
LINEAR FEET OF WATER:		_
LINEAR FEET SATURATED GRAVE	EL PACK:	_

WATER	VOLUME
FT ³	GAL
	425

NOTE: Quantities are to be calculated prior to development.

Continue from yesterday @ 3430 gallons

DEVELOPMENT CRITERIA

METHOD OF DEVELOPMENT: Bailing 2" 40-ft PVC Bailer (6.5 gallons	
WATER VOLUME TO BE REMOVED (GAL): 4250 WATER VOLUME ACTUALLY REMOVED (GAL): 4140 (total)
TIME DEVELOPMENT STARTED: 0530 TIME DEVELOPMENT COMPLETED: 1618	
NOTE: Development is to be performed in accordance with Standard Operating Procedure No. 8.	

WATER QUALITY INSTRUMENTS

INSTRUMENT	SERIAL NO.	TIME CALIBRATION PERFORMED	TECH	COMMENTS
YSI Pro 1030		0815	BA	
HACH ZIDO Q		0515	BA	

WATER QUALITY READINGS DURING DEVELOPMENT

Daily	DATE/TIME	TOTAL WATER PURGED (gal)	TEMP (°C)	CONDUCTIVITY (µS/cm)	TURB (NTU)*	рН	TECH	COMMENTS
10	4/12/22 0832	Initial= 3430	18.4	328.8	315	6.51	BA	Cloudy Slight tomoderate
+60	-	3490	17.8	330.1	172	8.09	BA	odor. Bail bottom of well.
120	0942	3550	17.6	323.3	151	8.05	BA	Slightly cloudy slight odor.
180	1010	3610	18.1	323.9	140	8.25	BA	Slightly Cloudy, Mod. odar.
240	1050	373670	18.6	471	165	6-80	BA	1.1.
300	1127	3730	17.5	561	131	8.54	BA	
330	1156	\$760	20.0	354.7	152	8.02	BA	
370	1223	3800	18.4	328.1	135	7.87	Bot	
430-50	1303	3860	19.1	327.2	154	7.91	BA	
490	1330	3920	18.4	330-3	143	8.06	BA	

*If measured.

Stabilization = Temp ±1°C; pH ±0.2 units; Sp. Cond. ±10%; Turb. ±10%

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WATER QUALITY READINGS DURING DEVELOPMENT (continued)

DATE/TIM	PURGED (gai)	(°C)	CONDUCTIVITY (µS/cm)	TURB (NTU)*	pН	TECH	COMMENTS
1450	Switch o	per to b	milling Scree	n zon	4 (60	ttom o	fwell).
-1500		@~390	10 gallous to far	1.			-
1500	4000	19.5	323.1	121	8.09		Slightly cloudy
221540	4030	19.8	322.2	183	8.00	BA	Cloudy
1515	Finished	working	screened 2 one	Bai	led 12	20 gall	ons out.
	Only go	ta litt		udy.	InL	off C	m
	Samples	1 100	d were	20.5	mL.	Switc	h back
	over f	p removing	/bailing fre	in u	yen	Column	•
1549	4080	19.1	331.6	268	7.95	BA	Cloudy. No
1618	4140	19.2	319.4	125	825	BA	Slightly cloud
							Slight odor.
	Daily [Dev. Volu	me = 710				
	Total	Volum					
L	Targe		= 4250				
	Rem	sinche H	= 110	gallo	2.5		
				<i>v</i>			
					1		

*If measured.



PROJECT NAME:	Data	Gap Well	WELL NO .: WUABFF MWOI
PROJECT NO .:		DATE: 4/13	22 FORM COMPLETED BY: B. Archulite

WELL CONSTRUCTION

TOTAL DEPTH BELOW MEASURING POINT (BMP) (FT): 577.2	BOREHOLE DIAMETER (IN):
TOTAL DEPTH BELOW LAND SURFACE (FT BLS):	WELL DIAMETER INSIDE (IN): 3
WELL PROTECTOR: DYES DNO PADLOCK NO .:	WELL DIAMETER OUTSIDE (IN):
SAND PACK INTERVAL (BLS) (FT):	SCREEN INTERVAL (BLS) (FT):

WATER VOLUME CALCULATION

DATE/TIME OF MEASUREMENT:	4 13/22 2807
MEASURING POINT: TO C	ELEV.:
WATER LEVEL INSTRUMENT USE	:D:
INITIAL WATER LEVEL (BMP) (FT)	453.2
LINEAR FEET OF WATER:	
LINEAR FEET SATURATED GRAV	EL PACK:

NOTE: Quantities are to be calculated prior to development.

ITEM	WATER VOLUME					
	FT ³	GAL				
Well Casing						
Sand Pack						
Drilling Fluids						
TOTAL	1	4250				

development. Continued from yesterday (4140)

METHOD OF DEVELOPMENT: 2" Railer									
WATER VOLUME TO BE REMOVED (GAL): 42 50 V	NATER VOLUME ACTUALLY REMOVED (GAL): 4345 (Total)								
TIME DEVELOPMENT STARTED: 0521 T	IME DEVELOPMENT COMPLETED: 1053								
NOTE: Development is to be performed in accordance with	Standard Operating Procedure No. 8.								

WATER QUALITY INSTRUMENTS

INSTRUMENT	SERIAL NO.	TIME CALIBRATION PERFORMED	TECH	COMMENTS	
YS1 Pro \$1030		0800	BA	Cold Tamps Sp Cond. ma	bea
HACH 21000		0800	BA		little loc

WATER QUALITY READINGS DURING DEVELOPMENT

DATE/TIME	TOTAL WATER PURGED (gal)	TEMP (°C)	CONDUCTIVITY (µS/cm)	TURB (NTU)*	pН	TECH	COMMENTS
0830	Init: (414)	15.2	331.2	911	6.82	BA	Slightly furl
	4> Bailed f	con both	mol well. So	ne v.f.	g . san	d + sift	
0910	4200	15.0	271.9	28.8	7.84		Clear Slight oc
0938	4235	16.9	271.4	86.9	8.24		mostly clean s
0953	4255	17.0	267.5	59.8	8.25	1	11
1003	4265	17.6	267.6	49.2	8.35		Clar. slight
1014	4285	17.2	271,9	46.2	8-23		١٢
1027	4300	17.6	261.3	28.8	8.21		11
1035	4315	17.5	266.1	34.2	8.15		(1
1043	4330	17.8	253.1	32.4	8.05		11

*If measured.



WATER QUALITY READINGS DURING DEVELOPMENT (continued)

DATE/TIME	TOTAL WATER PURGED (gal)	TEMP (°C)	CONDUCTIVITY (µS/cm)	TURB (NTU)*	рН	TECH	COMMENTS	
1053	4345	17.6	272.6	38.8	8.19	BA	Clear sigh	+
2								
	Dayly	Total=	205 gal	lons				-
	trojec	f total	= 4345 4	lons				-
								-
1053	Da	Velopm	ent Com	plete	-			-
				-				-
	1							
							-	-
				-				
						1	-	
						-		
				-				
								1
								1
								1
						-		
		-						
			10.00		1			
			1.1					
						1		
	-							

*If measured.

Stabilization = Temp ±1°C; pH ±0.2 units; Sp. Cond. ±10%; Turb. ±10%

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