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Sandia National Laboratories

Operated for the U.S. Department of Energy

By: **Sandia Corporation**

Carlsbad, New Mexico 88220

date: March 11, 2021

to: Records Center

from: Mike Farinacci and Patricia Johnson, SNL Contractors

subject: 2020 Calculated Densities

The groundwater densities for the WIPP Culebra monitoring wells were calculated for 2020 as described in the Activity/Project Specific Procedure (SP) 9-11 *Calculation of Densities for Groundwater in WIPP Wells, Revision 3*. The derivation of the data is explained in the following sections and supporting data are attached.

1. Calculation Process:

As stated in SP 9-11, for each calculation the observed water pressure is divided by the height of the water column. Specifically, the measured pressure value minus the closest corresponding barometric pressure value was divided by the pressure gauge install depth minus the closest corresponding depth to water (from or adjusted to the same measurement point elevation), and that result was then divided by 0.4335 (psi to feet of water conversion at 4°C, at which temperature the density of pure water is 1.000 g/cm^3). The individual calculated density results for each well were then averaged for a final density value.

The density data are included in the *2020 Calculated Densities.xlsx* workbook file created in Excel. Within that workbook, the worksheet *2020 Calc Dens* summarizes the resulting density values and supporting information for the calculated densities, and the worksheet *2020 Calc Dens Formulas* provides the formulas in the worksheet. In addition, the Excel file contains individual well worksheets that include the data used for the calculations and plots of the pressure gauge pressure data. The columns in the worksheets and their contents are described below:

- A – Monitor Well – Well name
- B – 2020 Avg Calc Dens (g/cm^3) – Average calculated density value for 2020
- C – 2020 Specific Gravity (Reference: Freshwater at 70°F) – Average calculated density value for 2020 divided by 0.998 g/cm^3 to represent specific gravity in reference to freshwater at 70°F
- D – 2019 Avg Calc Dens (g/cm^3) – Average calculated density value for 2019
- E – 2020 - 2019 Difference (g/cm^3) – Difference between 2020 and 2019 calculated densities (Column B - Column D)
- F – # of Dens Averaged – number of density values averaged to get the final value
- G – 2020 Timeframe of Data – Time period for pressure data used in calculations
- H – Pressure Gauge File Name (Gauge SN) – File name for pressure data and INW or In-Situ gauge serial number

WIPP:4.4.8.3.1: TD: QA-L: NECERT: 541153

Information Only

1 of 5

- I – Pressure Gauge Install Depth (ft BTOC/BTEC/BTOT) – Depth below primary measuring point at which the pressure gauge was installed
- J – Pressure Gauge Ideal Install Depth (ft BTOC/BTEC/BTOT) – Mid-Culebra depth below top of referenced casing
- K – Length Off Ideal Depth (ft) – Depth in feet that the pressure gauge is installed below or above the ideal (Column I - Column J)
- L – Date of Install – Date(s) the pressure gauge(s) was/were installed
- M – Installation Logbook Page – Reference to scientific notebook(s) and page(s) where the pressure gauge installation(s) is/are documented
- N – Comments/Explanations – Comments and/or explanations regarding data, as needed

The spreadsheet entries were verified by Orlando Reyna (8882) and Shelly Nielsen (8880).

2. Identification/Listing of Input, Input sources, and Output:

- Excel workbook including the data – 2020 Calculated Densities.xls
  - Worksheet 1 – 2020 Calc Dens
  - Worksheet 2 – 2020 Calc Dens Formulas
  - Worksheet 3 – Baro Data
  - Worksheet 4 – AEC-7R
  - Worksheet 5 – C-2737
  - Worksheet 6 – ERDA-9
  - Worksheet 7 – H-4bR
  - Worksheet 8 – H-6bR
  - Worksheet 9 – H-9bR
  - Worksheet 10 – H-10cR
  - Worksheet 11 – H-11b4R
  - Worksheet 12 – H-12R
  - Worksheet 13 – H-15R
  - Worksheet 14 – H-16
  - Worksheet 15 – H-19b0
  - Worksheet 16 – IMC-461
  - Worksheet 17 – SNL-1
  - Worksheet 18 – SNL-2
  - Worksheet 19 – SNL-3
  - Worksheet 20 – SNL-5
  - Worksheet 21 – SNL-6
  - Worksheet 22 – SNL-8
  - Worksheet 23 – SNL-9
  - Worksheet 24 – SNL-10
  - Worksheet 25 – SNL-12
  - Worksheet 26 – SNL-13
  - Worksheet 27 – SNL-14
  - Worksheet 28 – SNL-15
  - Worksheet 29 – SNL-16
  - Worksheet 30 – SNL-17
  - Worksheet 31 – SNL-18
  - Worksheet 32 – SNL-19
  - Worksheet 33 – WIPP-11R
  - Worksheet 34 – WIPP-13
  - Worksheet 35 – WQSP-1
  - Worksheet 36 – WQSP-2
  - Worksheet 37 – WQSP-3

3. Data Qualification for Compliance Decision Analysis:

Data sources are documented in Column H (Pressure Gauge File Name (Gauge SN)), Column M (Installation Logbook Page), and in the References Section of this memorandum.

4. Software Used:

Lenovo, Intel® Core™ i5-8350U CPU, Windows 10 Pro, Microsoft Office 2016 Excel

5. Reviews:

Technical: Orlando Reyna, 8882
QA: Shelly Nielsen, 8880

6. References:

Information Only

- Pressure gauge installation data and SNL water level data from the following scientific notebooks (package ERMS 543277):
  Long-Term Monitoring Notebook (LTM)-31
  Long-Term Monitoring Notebook (LTM)-32
  Long-Term Monitoring Notebook (LTM)-33
- RES Water Level Data submitted to SNL in monthly memoranda (package ERMS 525178)
- Johnson, Patricia B., Culebra Center Depths for Use in Calculating Equivalent Freshwater Heads of the Culebra Dolomite Member of the Rustler Formation near the WIPP Site, Revision 3, June 10, 2010 (ERMS 553781)

7. List of Attachments:

1. Printout of Excel file worksheet 2020 Calc Dens.xls
2. Printout of Excel file worksheet 2020 Calc Dens Formulas.xls
3. CD including the Excel file and memorandum
4. Digital copies of pages used from LTM-31, LTM-32, and LTM-33 in PDF package

Information Only

2020 Calculated Densities

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Monitor Well	2020 Avg Calc Dens (g/cm^3)	2020 Specific Gravity (Reference: Freshwater at 70°F)	2019 Avg Calc Dens (g/cm^3)	2020 - 2019 Difference (g/cm^3)	# of Dens Averaged	2020 Timeframe of Data	Pressure Gauge File Name (Gauge SN)	Pressure Gauge Install Depth (ft BTOC/BTEC/ BTOT)	Pressure Gauge Ideal Install Depth (ft BTOC/BTEC/ BTOT)	Length Off Ideal Depth (ft)	Date of Install	Installation Logbook Page	Comments/Explanations
AEC-7R	1.065	1.067	1.063	0.002	8	Aug - Nov	AEC-7R C19 062420 (21741068)	866.00	868.98	-2.98	6/24/2020	LTM-32 pg 120	
C-2737	1.022	1.024	1.022	0.000	8	Aug - Nov	C-2737 C38 031020 (21830022)	688.85	689.78	-0.93	3/10/2020	LTM-32 pg 38	
ERDA-9	1.072	1.074	1.071	0.001	8	Aug - Nov	ERDA-9 C28 072120 (21830041)	717.20	717.81	-0.61	7/21/2020	LTM-32 pg 143	
H-2b2	Not Available -- Plugged and Abandoned in April 2020												
H-4bR	1.018	1.020	1.018	0.000	8	Jul- Nov	H-4bR C21 030520 (21237061), H-4bR C22 081720 (21918011)	507.90	507.72	0.18	3/5/2020, 8/17/2020	LTM-32 pg 33, LTM-33 pg 11	
H-5b	Not Available -- Plugged and Abandoned in 2019												
H-5bR	Not Available --DTW measurements not available during pump tests												
H-6bR	1.037	1.039	1.037	0.000	8	Aug - Nov	H-6bR C20 05112020 (21927002), H-6bR C21 082120 080719 (21927002), H-6bR C22 092320 (21927002)	616.60	616.58	0.02	5/11/2020, 8/21/2020, 9/23/2020	LTM-32 pg 79, LTM-33 pg 22, LTM-33 pg 47	
H-7b1	Not Available -- Plugged and Abandoned in April 2020												
H-9bR	1.000	1.002	1.003	-0.003	8	Jul - Nov	H-9bR C19 060220 (04200625), H-9bR C20 091720 (21237080)	660.54	660.47	0.07	6/2/2020, 9/17/2020	LTM-32 pg 103, LTM-33 pg 44	
H-10cR	1.087	1.089	1.085	0.002	8	Aug -Nov	H-10cR C15 071620_Append_2020-12-15_10-17-16-486 (452594)	1374.10	1368.38	5.72	7/16/2020	LTM-32 pg 138	
H-11b4R	1.077	1.079	1.076	0.001	8	Apr - Jul	H-11b4R C20 030520 (21237054)	735.85	736.72	-0.87	3/5/2020	LTM-32 pg 33	
H-12R	1.101	1.103	1.102	-0.001	8	Aug -Nov	H-12R C17 052020 (21534011)	835.80	834.69	1.11	5/20/2020	LTM-32 pg 98	
H-15R	1.124	1.126	1.123	0.001	8	Aug -Nov	H-15R C23 051520 (21237078)	872.50	872.57	-0.07	5/15/2020	LTM-32 pg 94	
H-16	1.031	1.033	1.030	0.001	8	Aug -Nov	H-16 C15 022020 (21933001)	715.10	714.50	0.60	2/20/2020	LTM-32 pg 26	
H-17	Not Available -- Plugged and Abandoned in April 2020												
H-19b0	1.065	1.067	1.064	0.001	8	Aug - Nov	H-19b0 C29 052020 (21237072), H-19b0 C30 101320 (21237072)	754.00	753.49	0.51	5/20/2020, 10/13/2020	LTM-32 pg 98, LTM-33 pg 63	
IMC-461	0.996	0.998	0.998	-0.002	8	Aug - Nov	IMC-461 C37 021720 (21933004)	376.50	376.10	0.40	2/17/2020	LTM-32 pg 16	
SNL-1	1.030	1.032	1.031	-0.001	8	Aug - Nov	SNL-1 C39 051220 (21237047), SNL-1 C40 082620 (21237047)	612.90	612.23	0.67	5/12/2020, 8/26/2020	LTM-32 pg 86, LTM-33 pg 24	
SNL-2	1.007	1.009	1.008	-0.001	8	Aug - Nov	SNL-2 C41 051220 (21927001), SNL-2 C42 072220 (21927001)	470.70	470.69	0.01	5/12/2020, 7/22/2020	LTM-32 pg 83, LTM-32 pg 145	
SNL-3	1.027	1.029	1.027	0.000	8	May - Nov	SNL-3 C27 110619 (21237050), SNL-3 C28 071620 (21237053), SNL-3 C29 082520 (21237053), SNL-3 C30 091520 (21237053), SNL-3 C31 110420 (03200494)	766.50	766.19	0.31	11/6/2019, 7/16/2020, 8/25/2020, 9/15/2020, 11/4/2020	LTM-31 pg 86, LTM-32 pg 136, LTM-33 pg 23, LTM-33 pg 38, LTM-33 pg 76	
SNL-5	1.004	1.006	1.005	-0.001	8	Aug - Nov	SNL-5 C42 071620 (21237059)	649.00	648.84	0.16	7/16/2020	LTM-32 pg 135	
SNL-6	1.230	1.232	1.243	-0.013	8	Aug - Nov	SNL-6 C28 071620_Append_2020-11-04_12-02-53-057 (452593)	1328.20	1338.03	-9.83	7/16/2020	LTM-32 pg 137	
SNL-8	1.088	1.090	1.089	-0.001	8	Aug - Nov	SNL-8 C52 051320 (21534015), SNL-8 C53 092320 (21534015)	969.70	968.56	1.14	5/13/2020, 9/23/2020	LTM-32 pg 89, LTM-33 pg 47	
SNL-9	1.016	1.018	1.016	0.000	8	Aug - Nov	SNL-9 C41 062420 (21933003)	567.20	566.07	1.13	6/24/2020	LTM-32 pg 120	
SNL-10	1.010	1.012	1.009	0.001	8	Aug - Nov	SNL-10 C33 071320 (21830039)	613.50	612.53	0.97	7/13/2020	LTM-32 pg 128	
SNL-12	1.008	1.010	1.008	0.000	8	Aug - Nov	SNL-12 C33 052720 (21225020)	570.90	570.68	0.22	5/27/2020	LTM-32 pg 100	
SNL-13	1.020	1.022	1.022	-0.002	7	Jul - Oct	SNL-13 C35 071320 (21237084), SNL-13 C36 101420 (21237084)	401.00	400.62	0.38	7/13/2020, 10/14/2020	LTM-32 pg 130, LTM-33 pg 68	
SNL-14	1.043	1.045	1.045	-0.002	8	Jul - Nov	SNL-14 C41 051420 (03200499), SNL-14 C42 082620 (03200499)	668.95	668.95	0.00	5/14/2020, 8/26/2020	LTM-32 pg 92, LTM-33 pg 25	
SNL-15	1.232	1.234	1.229	0.003	8	Aug - Nov	SNL-15 C34 060920 (21918009), SNL-15 C35 091420 (21918009)	922.18	922.18	0.00	6/9/2020, 9/14/2020	LTM-32 pg 108, LTM-33 pg 32	
SNL-16	1.016	1.018	1.015	0.001	8	Aug - Nov	SNL-16 C35 040920 (21237049), SNL-16 C36 081320 (21237050), SNL-16 C37 092320 (21237050)	207.86	207.86	0.00	4/9/2020, 8/13/2020, 9/23/2020	LTM-32 pg 58, LTM-33 pg 7, LTM-33 pg 46	
SNL-17a	1.012	1.014	1.012	0.000	8	Aug - Nov	SNL-17a C35 030520 (21225017), SNL-17a C36 091420 (21237007)	349.60	349.93	-0.33	3/5/2020, 9/14/2020	LTM-32 pg 35, LTM-33 pg 29	
SNL-18	1.008	1.010	1.009	-0.001	8	Aug - Nov	SNL-18 C41 072320 (21830026)	549.30	549.30	0.00	7/23/2020	LTM-32 pg 149	
SNL-19	1.002	1.004	1.004	-0.002	8	Aug - Nov	SNL-19 C29 072220 (21830023)	355.10	354.19	0.91	7/22/2020	LTM-32 pg 148	
WIPP-11R	1.029	1.031	1.034	-0.005	8	Aug - Nov	WIPP-11R C1 060220 (03200496)	853.14	853.14	0.00	6/2/2020	LTM-32 pg 102	
WIPP-13	1.032	1.034	1.033	-0.001	8	Aug - Nov	WIPP-13 C30 052020 (21237043)	715.30	714.88	0.42	5/20/2020	LTM-32 pg 98	
WIPP-19	Not Available -- Plugged and Abandoned in April 2020												
WQSP-1	1.042	1.044	1.039	0.003	8	Apr - Nov	WQSP-1 C2 020720 (21549048)	707.00	710.68	-3.68	2/7/2020	LTM-32 pg 13	
WQSP-2	1.032	1.034	1.031	0.001	8	Apr - Nov	WQSP-2 C2 020720 (21933002), WQSP-2 C3 082720 (21741067)	814.00	822.20	-8.20	2/7/2020, 8/27/2020	LTM-32 pg 14, LTM-33 pg 26	
WQSP-3	1.140	1.142	1.139	0.001	7	Feb - Nov	WQSP-3 C2 020720 (21933005), WQSP-3 C4 092420 (03200500)	849.00	857.39	-8.39	2/7/2020, 9/24/2020	LTM-32 pg 14, LTM-33 pg 48	

Notes:
All pressure gauges except H-10cR and SNL-6 are INW brand and cables are all non-vented
H-10cR and SNL-6 pressure gauges are InSitu brand
Barometric data are from INW gauges - SN 21237000 and SN 21237002
ft BTOC = feet below top of casing
ft BTEC = feet below top of environmental casing
ft BTOT = feet below top of tubing
LTM = Long-Term Monitoring
PT = Pressure Transducer
NA = Not available
Mid Depths are from ERMS 553781, except for AEC-7R, H-9bR, H-11b4R, H-5bR, WIPP-11R, and H-12R, which are from RES BDRs and/or construction diagrams, and WQSP wells which are from DOE-WIPP-95-2154

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2020 Calculated Densities Formulas

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Monitor Well	2020 Avg Calc Dens (g/cm^3)	2020 Specific Gravity (Reference: Freshwater at 70°F)	2019 Avg Calc Dens (g/cm^3)	2020 - 2019 Difference (g/cm^3)	# of Dens Averaged	2020 Timeframe of Data	Pressure Gauge File Name (Gauge SN)	Pressure Gauge Install Depth (ft BTOC/BTEC/BTOT)	Pressure Gauge Ideal Install Depth (ft BTOC/BTEC/BTOT)	Length Off Ideal Depth (ft)	Date of Install	Installation Logbook Page	Comments/Explanations
AEC-7R	1.065	1.067	1.063	0.002	8	Aug - Nov	AEC-7R C19 062420 (21741068)	866.00	868.98	-2.98	6/24/2020	LTM-32 pg 120	
C-2737	1.022	1.024	1.022	0.000	8	Aug - Nov	C-2737 C38 031020 (21830022)	688.85	689.78	-0.93	3/10/2020	LTM-32 pg 38	
ERDA-9	1.072	1.074	1.071	0.001	8	Aug - Nov	ERDA-9 C28 072120 (21830041)	717.20	717.81	-0.61	7/21/2020	LTM-32 pg 143	
H-2b2													
H-4bR	1.018	1.020	1.018	0.000	8	Jul - Nov	H-4bR C21 030520 (21237061), H-4bR C22 081720 (21918011)	507.90	507.72	0.18	3/5/2020, 8/17/2020	LTM-32 pg 33, LTM-33 pg 11	
H-5b													
H-5bR													
H-6bR	1.037	1.039	1.037	0.000	8	Aug - Nov	H-6bR C20 05112020 (21927002), H-6bR C21 082120 080719 (21927002), H-6bR C22 092320 (21927002)	616.60	616.58	0.02	5/11/2020, 8/21/2020, 9/23/2020	LTM-32 pg 79, LTM-33 pg 22, LTM-33 pg 47	
H-7b1													
H-9bR	1.000	1.002	1.003	-0.003	8	Jul - Nov	H-9bR C19 060220011719 (04200625), H-9bR C20 091720 (21237080)	660.54	660.47	0.07	6/2/2020, 9/17/2020	LTM-32 pg 103, LTM-33 pg 44	
H-10cR	1.087	1.089	1.085	0.002	8	Aug - Nov	H-10cR C15 071620_Append_2020-12-15_10-17-16-486 (452594)	1374.10	1368.38	5.72	6/23/2020	LTM-32 pg 138	
H-11b4R	1.077	1.079	1.076	0.001	8	Apr - Jul	H-11b4R C20 030520 (21237054)	735.85	736.72	-0.87	3/5/2020	LTM-32 pg 33	
H-12R	1.101	1.103	1.102	-0.001	8	Aug - Nov	H-12R C17 052020 (21534011)	835.80	834.69	1.11	5/20/2020	LTM-32 pg 98	
H-15R	1.124	1.126	1.123	0.001	8	Aug - Nov	H-15R C23 051520 (21237078)	872.50	872.57	-0.07	5/15/2020	LTM-32 pg 94	
H-16	1.031	1.033	1.030	0.001	8	Aug - Nov	H-16 C15 022020 (21933001)	715.10	714.50	0.60	2/20/2020	LTM-32 pg 26	
H-17													
H-19b0	1.065	1.067	1.064	0.001	8	Aug - Nov	H-19b0 C29 052020 (21237072), H-19b0 C30 101320 (21237072)	754.00	753.49	0.51	5/20/2020, 10/13/2020	LTM-32 pg 98, LTM-33 pg 63	
IMC-461	0.996	0.998	0.998	-0.002	8	Aug - Nov	IMC-461 C37 021720 (21933004)	376.50	376.10	0.40	2/17/2020	LTM-32 pg 16	
SNL-1	1.030	1.032	1.031	-0.001	8	Aug - Nov	SNL-1 C39 051220 (21237047), SNL-1 C40 082620 (21237047)	612.90	612.23	0.67	5/12/2020, 8/26/2020	LTM-32 pg 86, LTM-33 pg 24	
SNL-2	1.007	1.009	1.008	-0.001	8	Aug - Nov	SNL-2 C41 051220 (21927001), SNL-2 C42 072220 (21927001)	470.70	470.69	0.01	5/12/2020, 7/22/2020	LTM-32 pg 83, LTM-32 pg 145	
SNL-3	1.027	1.029	1.027	0.000	8	May - Nov	SNL-3 C27 110619 (21237050), SNL-3 C28 071620 (21237053), SNL-3 C29 082520 (21237053), SNL-3 C30 091520 (21237053), SNL-3 C31 110420 (03200494)	766.50	766.19	0.31	11/6/2019, 7/16/2020, 8/25/2020, 9/15/2020, 11/4/2020	LTM-31 pg 86, LTM-32 pg 136, LTM-33 pg 23, LTM-33 pg 38, LTM-33 pg 76	
SNL-5	1.004	1.006	1.005	-0.001	8	Aug - Nov	SNL-5 C42 071620 (21237059)	649.00	648.84	0.16	7/16/2020	LTM-32 pg 135	
SNL-6	1.230	1.232	1.243	-0.013	8	Aug- Nov	SNL-6 C28 071620_Append_2020-11-04_12-02-53-057 (452593)	1328.20	1338.03	-9.83	7/16/2020	LTM-32 pg 137	
SNL-8	1.088	1.090	1.089	-0.001	8	Aug - Nov	SNL-8 C52 051320 (21534015), SNL-8 C53 092320 (21534015)	969.70	968.56	1.14	5/13/2020, 9/23/2020	LTM-32 pg 89, LTM-33 pg 47	
SNL-9	1.016	1.018	1.016	0.000	8	Aug - Nov	SNL-9 C41 062420 (21933003)	567.20	566.07	1.13	6/24/2020	LTM-32 pg 120	
SNL-10	1.010	1.012	1.009	0.001	8	Aug - Nov	SNL-10 C33 071320 (21830039)	613.50	612.53	0.97	7/13/2020	LTM-32 pg 128	
SNL-12	1.008	1.010	1.008	0.000	8	Aug - Nov	SNL-12 C33 052720 (21225020)	570.90	570.68	0.22	5/27/2020	LTM-32 pg 100	
SNL-13	1.020	1.022	1.022	-0.002	7	Jul - Oct	SNL-13 C35 071320 (21237084), SNL-13 C36 101420 (21237084)	401.00	400.62	0.38	7/13/2020, 10/14/2020	LTM-32 pg 130, LTM-33 pg 68	
SNL-14	1.043	1.045	1.045	-0.002	8	Jul - Nov	SNL-14 C41 051420 (03200499), SNL-14 C42 082620 (03200499)	668.95	668.95	0.00	5/14/2020, 8/26/2020	LTM-32 pg 92, LTM-33 pg 25	
SNL-15	1.232	1.234	1.229	0.003	8	Aug - Nov	SNL-15 C34 060920 (21918009), SNL-15 C35 091420 (21918009)	922.18	922.18	0.00	6/9/2020, 9/14/2020	LTN-32 pg 108, LTM-33 pg 32	
SNL-16	1.016	1.018	1.015	0.001	8	Aug - Nov	SNL-16 C35 040920 (21237049), SNL-16 C36 081320 (21237050), SNL-16 C37 092320 (21237050)	207.86	207.86	0.00	4/9/2020, 8/13/2020, 9/23/2020	LTM-32 pg 58, LTM-33 pg 7, LTM-33 pg 46	
SNL-17	1.012	1.014	1.012	0.000	8	Aug - Nov	SNL-17 C35 030520 (21225017), SNL-17 C36 091420 (21237007)	349.60	349.93	-0.33	3/5/2020, 9/14/2020	LTM-32 pg 35, LTM-33 pg 29	
SNL-18	1.008	1.010	1.009	-0.001	8	Aug - Nov	SNL-18 C41 072320 (21830026)	549.30	549.30	0.00	7/23/2020	LTM-32 pg 149	
SNL-19	1.002	1.004	1.004	-0.002	8	Aug - Nov	SNL-19 C29 072220 (21830023)	355.10	354.19	0.91	7/22/2020	LTM-32 pg 148	
WIPP-11	1.029	1.031	1.034	-0.005	8	Aug Nov	WIPP-11R C1 060220 (03200496)	853.14	853.14	0.00	6/2/2020	LTM-32 pg 102	
WIPP-13	1.032	1.034	1.033	-0.001	8	Aug - Nov	WIPP-13 C30 052020 (21237043)	715.30	714.88	0.42	5/20/2020	LTM-32 pg 98	
WIPP-19													
WQSP-1	1.042	1.044	1.039	0.003	8	Apr - Nov	WQSP-1 C2 020720 (21549048)	707.00	710.68	-3.68	2/7/2020	LTM-32 pg 13	
WQSP-2	1.032	1.034	1.031	0.001	8	Apr - Nov	WQSP-2 C2 020720 (21933002), WQSP-2 C3 082720 (21741067)	814.00	822.20	-8.20	2/7/2020, 8/27/2020	LTM-32 pg 14, LTM-33 pg 26	
WQSP-3	1.140	1.142	1.139	0.001	7	Feb - Nov	WQSP-3 C2 020720 (21933005), WQSP-3 C4 092420 (03200500)	849.00	857.39	-8.39	2/7/2020, 9/24/2020	LTM-32 pg 14, LTM-33 pg 48	

Notes:
All pressure gauges except H-10cR and SNL-6 are INW brar
H-10cR and SNL-6 pressure gauges are InSitu b
Barometric data are from INW gauges - SN 212
ft BTOC = feet below top of casing
ft BTEC = feet below top of environmental casi
ft BTOT = feet below top of tubing
LTM = Long-Term Monitoring
PT = Pressure Transducer
NA = Not available
Mid Depths are from ERMS 553781, except for AEC-7R, H-9bR, H-11b4R, H-5bR, WIPP-11R, and H-12R, which are from RES BDRs and/or constructio

Information Only

WIPP:4.4.2.3.1: TD: QA-L: NECERT: 541153