

Summary of water measurements at the Derr Pit

Attached are the measurement sheets from the Derr Pit from 10-2006 thru 10-2019. The 2006 date was used for the start date because this reading was before any mining activity in the Loloff Pit and Derr Pit. This is the only baseline without any outside influences.

The spreadsheet includes a reading every six months from the monitoring wells in the Derr Pit. There is a gap between March 2008 and October of 2016. The operator was to file yearly water measurement to the Derr file at the Colorado Division of Reclamation Mining and Safety. For some unknown reason there is an eight year gap that was not reported to the DRMS.

The Loloff Pit was being wet mined for several years. As the mining was taking place the static water levels started going down as much as 6 feet over the next several of years until 2013. In 2013 Loloff started pumping the the water from the Loloff pit into a ditch to the SW corner. The mine was changed in to a dry mine with the DRMS at this time. The continuous dry mine dewatering started in 2013 thru August of 2017. During the four year dewatering the Derr monitoring wells went down as much as 20 feet.

A slurry wall was installed August/September of 2017. The water levels in the Derr monitoring wells did not completely recover after the slurry wall installation. The wells started going down again as soon as the Derr pit was being dewatered 2019.

The dewatering of the Loloff Pit and the Derr Pit has permanently lowered the water levels in the wells of the Surrounding Property Owners. See well locations on attached map.

Derr Pit monitor well static water levels provided by Broken Arrow and Ag Professionals

Date	10/30/2006	4/2/2007	10/6/2007	3/1/2008	10/1/2016	4/1/2017	10/1/2017	4/1/2018	10/1/2018	4/1/2019	10/1/2019
MW1	10.5	12.07	12.13	11.8	27	30	18	17	17.06	27.66	18.5
MW2	10.5	12.1	12.13	12.6	26	27	17	16	17.06	19.06	22.18
MW3	11.55	12.78	13.1	14	25	26	18	16	17.67	19.46	22.36
MW4	10.7	12	12.24	13	21	20	18	16	15.38	17.02	22.27
MW5	9.3	11.1	11	11.7	20	20	18				
MW6	11	13.96	12.91	13	22	23	17	16	14.89	16.34	20
MW7	12.9	14.9	14.9	14	23	23	16	15	16.57	17.91	20.71
MW8	11.68	12.81	14.3	14.5	21	23	17	15	17.79	19.27	22.51
MW9	11.79	13	13.74	13.5	28	26	16	15	15.32	16.75	19.96
MW10	10.3	11.48	12.26	13	23	23	16	15	13.89	15.85	20.48
MW11	9.3	10	10.63	11.1	24	23	17	14	13.89	15.55	19.79
MW12	10.5	11.89	12.1	12.3	25	25	18	14	16.51	18.03	21.31
MW13	10.47	12.13	12.49	13.2		24		15	17.21	19.18	22.55
MW14	40.6	42.23	42.15	43.1	50	51		42	45.97	47.61	50.65
MW15	37.7	38.64	39.35	40	50	51			41.11	42.55	45.4
MW16											44.52
MW17											46.59
MW18											46.61

Water Baseline
History
Timeline (2006)

Illegal
dewater
(6-2013)

not
approved

Loloff
dewater
(8-2013)

approved

Slurry
wall
(2017)

Derr
dewater
(2019)

Well History	Hernandez	Well replaced with NWCWD water tap	2015
	Parker	Well lowered	2015
	Koehler	All three wells are down -16,-16,-14.6	2019
	Francis	All three wells need to be replaced DRMS	2017
	Stout	Well was replaced by owner	2019
	Taylor1 Taylor2	Well has been inoperable	2012
	Murata	Well lowered	2020
	Hoshiko	Well is inoperable	2014

3

**Subsurface Exploration Report
Proposed Slurry Wall**

**Sand & Gravel Pit
Part of Sec 4, T5N, R65W, 6th P.M.
Greeley, Colorado**

December 3, 2006

**Two Rivers Testing, Inc.
1601 37th Street
Evans, Colorado 80620
(970) 339-4092**

- 2) Lower Soils: Below the upper soils, varying types of weathered and competent bedrock consisting of siltstone and claystone were present to the depths explored. Competent bedrock was present at depths ranging from forty-five feet (45') to greater than one hundred twenty feet (120') below existing surface.
- 3) Groundwater: Groundwater was encountered at depths ranging from eight feet (8') to forty feet (40'). Water levels in this area are subject to change due to seasonal variations and irrigation demands on and/or adjacent to the property.

Table No. 2 summarizes the depth and elevation of the groundwater and competent bedrock.

TABLE NO. 2 - SUMMARY OF BORE DATA

TRT BORE #	EXISTING GROUND ELEVATION (FT)	DEPTH TO GROUND WATER (FT)	ELEVATION TO GROUND WATER (FT)	DEPTH TO COMPETENT BEDROCK (FT)	ELEV. TO COMPETENT BEDROCK (FT)
1	4633.33	8.0	4625.3	45.5	4587.8
2	4631.63	9.0	4622.6	85.0	4546.6
3	4629.83	9.0	4620.8	86.0	4543.8
4	4630.52	11.0	4619.5	83.0	4547.5
5	4630.53	9.0	4621.5	82.0	4548.5
6	4634.50	15.0	4619.5	89.0	4545.5
7	4638.15	17.0	4621.1	77.0	4561.1
8	4637.61	13.0	4624.6	76.0	4561.6
9	4636.29	15.0	4621.3	89.0	4547.3
10	4632.63	8.5	4624.1	84.5	4548.1
11	4630.68	11.0	4619.7	86.0	4544.7
12	4632.48	17.0	4615.5	74.0	4558.5
13	4630.70	9.0	4621.7	85.0	4545.7
14	4658.46	40.0	4618.5	>120	>4538.5
15	4661.19	35.0	4626.2	115.0	4546.2

RECOMMENDATIONS AND DISCUSSION

Based upon the results of our investigation, we conclude that from a geotechnical standpoint, the site is suitable for the proposed construction with the following limitations listed below:

The slurry wall is proposed to be hammer driven with slurry injection. The slurry wall should be installed a minimum of five feet (5') into competent bedrock or until refusal occurs. Some leakage may still occur through the siltstone bedrock stratum. A Geotechnical Engineer's representative should be on site to verify competent bedrock is encountered.

Monitor Well Static Water Levels
Derr Pit, Weld County, CO

Data Provided by Broken Arrow Investments, LLC

Date	10/30/2006	11/28/2006	12/10/2006	1/2/2007	2/1/2007	3/2/2007	4/2/2007	5/4/2007	6/2/2007	7/2/2007	8/4/2007	9/1/2007	10/6/2007	11/1/2007	12/2/2007	1/20/2008	2/9/2008	3/1/2008	
Well No.	Depth to Water Surface, ft																		Top of Well Casing Elevation, ft
MW1	10.50	10.25	10.67	10.97	11.30	11.80	12.07	12.14	12.67	12.69	12.78	12.12	12.13	12.12	13.00	11.95	11.86	11.80	4635.90
MW2	10.50	10.51	10.80	11.00	11.23	11.76	12.10	12.27	12.43	12.60	12.63	12.10	12.13	12.00	12.51	12.55	12.57	12.60	4635.40
MW3	11.55	11.95	12.10	12.00	12.20	12.32	12.78	13.10	13.41	13.86	13.80	13.14	13.10	13.00	13.38	13.75	13.94	14.00	4635.90
MW4	10.70	10.73	11.13	11.43	11.89	11.97	12.00	12.13	12.52	12.70	12.78	12.26	12.24	12.17	12.65	12.80	12.93	13.00	4636.10
MW5	9.30	9.44	9.70	10.23	10.61	10.97	11.10	11.30	11.31	11.50	11.55	11.10	11.00	10.89	11.39	11.50	11.62	11.70	4635.30
MW6	11.00	11.34	11.61	11.98	13.25	13.65	13.96	14.23	14.90	13.16	13.10	12.96	12.91	12.81	13.33	13.00	13.10	13.00	4637.90
MW7	12.90	13.23	13.67	13.90	14.21	14.67	14.90	15.10	15.20	15.20	15.13	14.89	14.90	14.82	15.47	14.15	14.10	14.00	4639.90
MW8	11.68	11.76	11.99	12.09	12.37	12.60	12.81	12.91	13.00	13.70	13.67	13.34	14.30	14.36	15.06	14.75	14.68	14.50	4639.60
MW9	11.79	12.00	12.30	12.59	12.87	12.90	13.00	13.22	13.60	14.00	13.90	13.75	13.74	13.79	14.30	13.60	13.54	13.50	4638.80
MW10	10.30	10.42	10.56	10.80	10.89	11.10	11.48	11.80	12.10	12.44	12.31	12.28	12.26	12.29	12.81	12.70	12.88	13.00	4637.00
MW11	9.30	9.44	9.49	9.53	9.70	10.00	10.00	10.44	10.92	11.00	11.10	10.89	10.63	10.70	11.24	11.07	11.09	11.10	4635.00
MW12	10.50	10.59	10.63	10.99	11.21	11.60	11.89	12.00	12.26	12.41	12.32	12.21	12.10	12.10	12.70	12.35	12.34	12.30	4635.80
MW13	10.47	10.70	10.72	10.75	11.00	11.60	12.13	12.43	12.67	12.66	12.64	12.50	12.49	12.50	12.97	13.10	13.17	13.20	4635.80
MW14	40.60	40.93	40.97	41.22	41.56	41.91	42.23	42.67	42.69	42.83	42.80	42.30	42.15	42.10	42.50	42.90	43.00	43.10	4665.10
MW15	37.70	37.68	37.76	38.10	38.28	38.40	38.64	38.83	39.20	39.59	39.70	39.40	39.35	39.35	39.90	39.80	40.90	40.00	4664.80



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Mill Iron Derr Pitt Water Elevations Through October 2019

for

MILL IRON MINING
590 BALSAM AVE
GREELEY, CO 80631

Prepared by



AGPROfessionals
3050 67th Avenue
Greeley, CO 80634
(970) 535-9318

Derr Pit/ Weld, CO 2016-17

↑

Derr Pit/ Weld, CO 2017-18

↑

12-19-19

Project	2354-01
Client	Mill Iron
Location	Derr Pit

Monitoring Well	9/26/2018		10/26/2018	
	Meter Depth to Water from TOC (ft)	Water Elevation (MSL)	Meter Depth to Water from TOC (ft)	Water Elevation (MSL)
MW-1	16.73	4614.65	17.06	4614.32
MW-2	17.18	4613.73	17.06	4613.85
MW-3	17.87	4613.51	17.67	4613.71
MW-4	15.73	4615.90	15.38	4616.25
MW-5	Broken, No Readings	Broken, No Readings	Broken, No Readings	Broken, No Readings
MW-6	15.31	4618.05	14.89	4618.47
MW-7	0.00	0.00	16.57	4619.03
MW-8	18.07	4617.17	17.79	4617.45
MW-9	15.74	4618.28	15.32	4618.70
MW-10	14.75	4617.36	13.89	4618.22
MW-11	14.21	4616.25	13.89	4616.57
MW-12	16.58	4614.62	16.51	4614.69
MW-13	17.42	4613.96	17.21	4614.17
MW-14	49.19	4611.40	45.97	4614.62
MW-15	41.59	4618.77	41.11	4619.25
MW-16				
MW-17				
MW-18				

11/20/2018		12/18/2018		1/17/2019	
Meter Depth to Water from TOC (ft)	Water Elevation (MSL)	Meter Depth to Water from TOC (ft)	Water Elevation (MSL)	Meter Depth to Water from TOC (ft)	Water Elevation (MSL)
17.14	4614.24	17.38	4614.00	17.72	4613.66
17.03	4613.88	17.03	4613.88	17.56	4613.35
17.63	4613.75	17.63	4613.75	18.16	4613.22
15.34	4616.29	15.34	4616.29	15.74	4615.89
Broken, No Readings	Broken, No Readings	Broken, No Readings	Broken, No Readings	Broken, No Readings	Broken, No Readings
14.78	4618.58	14.78	4618.58	15.13	4618.23
16.43	4619.17	16.43	4619.17	16.75	4618.85
17.71	4617.53	17.71	4617.53	18.09	4617.15
15.21	4618.81	15.21	4618.81	15.56	4618.46
14.25	4617.86	14.25	4617.86	14.60	4617.51
13.80	4616.66	13.80	4616.66	14.22	4616.24
16.49	4614.71	16.49	4614.71	16.95	4614.25
17.18	4614.20	26.48	4604.90	17.70	4613.68
45.90	4614.69	45.90	4614.69	46.37	4614.22
43.01	4617.35	43.01	4617.35	41.37	4618.99

2/12/2019		3/7/2019		4/22/2019	
Meter Depth to Water from TOC (ft)	Water Elevation (MSL)	Meter Depth to Water from TOC (ft)	Water Elevation (MSL)	Meter Depth to Water from TOC (ft)	Water Elevation (MSL)
18.10	4613.28	18.30	4613.08	27.66	4603.72
17.95	4612.96	18.19	4612.72	19.06	4611.85
18.58	4612.80	18.79	4612.59	19.46	4611.92
16.11	4615.52	25.46	4606.17	17.02	4614.61
Broken, No Readings	Broken, No Readings	Broken, No Readings	Broken, No Readings	Broken, No Readings	Broken, No Readings
15.49	4617.87	15.74	4617.62	16.34	4617.02
17.11	4618.49	17.34	4618.26	17.91	4617.69
18.44	4616.80	18.65	4616.59	19.27	4615.97
15.92	4618.10	16.13	4617.89	16.75	4617.27
14.98	4617.13	24.30	4607.81	15.85	4616.26
14.58	4615.88	14.81	4615.65	15.55	4614.91
17.33	4613.87	17.54	4613.66	18.03	4613.17
18.08	4613.30	18.32	4613.06	19.18	4612.20
46.75	4613.84	46.99	4613.60	47.61	4612.98
41.71	4618.65	51.07	4609.29	42.55	4617.81



5/14/2019		6/21/2019		7/24/2019	
Meter Depth to Water from TOC (ft)	Water Elevation (MSL)	Meter Depth to Water from TOC (ft)	Water Elevation (MSL)	Meter Depth to Water from TOC (ft)	Water Elevation (MSL)
22.31	4609.07	14.60	4616.78	16.41	4615.14
28.70	4602.21	20.28	4610.63	20.75	4610.33
20.22	4611.16	20.65	4610.73	20.92	4610.63
18.63	4613.00	20.40	4611.23	20.49	4611.31
Broken, No Readings	Broken, No Readings	Broken, No Readings	Broken, No Readings	Broken, No Readings	Broken, No Readings
17.63	4615.73	18.55	4614.81	18.61	4614.92
18.71	4616.89	19.42	4616.18	19.42	4616.35
19.91	4615.33	20.73	4614.51	20.90	4614.51
25.56	4608.46	18.53	4615.49	18.77	4615.42
26.60	4605.51	18.67	4613.44	18.79	4613.49
16.70	4613.76	17.87	4612.59	18.04	4612.59
27.43	4603.77	19.09	4612.11	19.62	4611.75
29.09	4602.29	20.87	4610.51	21.17	4610.38
48.44	4612.15	49.02	4611.57	50.15	4610.61
43.49	4616.87	43.61	4616.75	44.31	4616.22

8/21/2019		9/17/2019		10/10/2019	
Meter Depth to Water from TOC (ft)	Water Elevation (MSL)	Meter Depth to Water from TOC (ft)	Water Elevation (MSL)	Meter Depth to Water from TOC (ft)	Water Elevation (MSL)
17.99	4613.56	no reading, roots	no reading, roots	18.50	4613.05
21.11	4609.97	22.56	4608.52	22.18	4608.90
21.28	4610.27	22.57	4608.98	22.36	4609.19
20.63	4611.17	22.74	4609.06	22.27	4609.53
Broken, No Readings	Broken, No Readings	Broken, No Readings	Broken, No Readings	Broken, No Readings	Broken, No Readings
18.95	4614.58	19.54	4613.99	20.00	4613.53
19.85	4615.92	20.38	4615.39	20.71	4615.06
21.41	4614.00	22.27	4613.14	22.51	4612.90
19.16	4615.03	19.75	4614.44	19.96	4614.23
19.10	4613.18	19.87	4612.41	20.48	4611.80
18.45	4612.18	19.61	4611.02	19.79	4610.84
20.23	4611.14	21.61	4609.76	21.31	4610.06
21.39	4610.16	22.97	4608.58	22.55	4609.00
49.56	4611.20	50.66	4610.10	50.65	4610.11
44.71	4615.82	45.08	4615.45	45.40	4615.13
43.63	4612.73	44.44	4611.92	44.52	4611.84
47.00	4616.80	46.95	4616.85	46.59	4617.21
46.38	4621.28	46.52	4621.14	46.61	4621.05



11/13/2019		12/10/2019	
Meter Depth to Water from TOC (ft)	Water Elevation (MSL)	Meter Depth to Water from TOC (ft)	Water Elevation (MSL)
18.46	4613.09	no reading, roots	no reading, roots
23.31	4607.77	23.30	4607.61
23.28	4608.27	23.32	4608.06
23.18	4608.62	23.07	4608.56
Broken, No Readings	Broken, No Readings	Broken, No Readings	Broken, No Readings
20.30	4613.23	20.28	4613.08
21.05	4614.72	21.01	4614.59
23.01	4612.40	22.97	4612.27
20.28	4613.91	20.26	4613.76
20.82	4611.46	20.78	4611.33
20.36	4610.27	20.30	4610.16
22.43	4608.94	22.41	22.41
23.62	4607.93	23.62	4607.76
50.65	4610.11	51.25	4609.34
45.64	4614.89	45.57	4614.79
44.87	4611.49	44.91	4611.28
46.75	4617.05	46.80	4616.83
46.74	4620.92	46.73	4620.76

**MILL IRON
OFFSITE PRIVATE WELLS**

Units = Feet				SEPTEMBER 2019		OCTOBER 2019		NOVEMBER 2019		DECEMBER 2019	
Site Number	Identifier	Stick-up (Ground or concrete slab to monitoring point)	Adjusted Meter Reading (Subtract 0.165)	PAS 9/26/2019	26-Sep-19	MK 10/10/2019	10-Oct-19	MK 11/14/19	14-Nov-19	MK 12/13/19	13-Dec-19
				Field Reading Depth to Water	Depth to Water from Ground Surface	Field Reading Depth to Water	Depth to Water from Ground Surface	Field Reading Depth to Water	Depth to Water from Ground Surface	Field Reading Depth to Water	Depth to Water from Ground Surface
1	Hofner #1 Dom	-0.875	-0.165	45.48	44.44	45.47	44.43	45.60	44.56	47.66	46.79
2	Hofner #2 Irr	-0.854	-0.165	48.67	47.65	48.45	47.43	48.89	47.87	49.00	48.15
3	Koehler #1 Dom (Vault)	5.000	-0.165	43.68	48.52	43.73	48.57	43.90	48.74	43.92	48.92
4	Koehler #2 stock (Vault)	6.290	-0.165	41.25	47.38	41.32	47.45	41.52	47.65	41.53	47.82
5	Koehler #3 Irr	-0.271	-0.165	50.80	50.36	49.99	49.55	50.18	49.74	50.18	49.91
6	Global Assets Davis Irr	-1.125	-0.165	47.90	46.61	47.91	46.62	48.10	46.81	48.10	46.98
7	Bliss Irr	-1.021	-0.165	46.20	45.01	46.40	45.21	47.05	45.86	47.24	46.22
8	Parker Dom (Vault)	-0.450	-0.165	no reading	#VALUE!	42.50	41.89	42.75	42.14	42.70	42.25
9	Francis #1 Stock	-1.625	-0.165	13.60	11.81	14.69	12.90	15.71	13.92	15.96	14.34
10	Francis #2 Irr	-1.375	-0.165	11.33	9.79	12.39	10.85	13.82	12.28	14.06	12.69
11	Francis #3 Dom	0.000	-0.165	12.20	12.04	13.21	13.05	14.61	14.45	14.87	14.87
12	Taylor Dom	-0.813	-0.165	17.33	16.35	17.03	16.05	18.95	17.97	19.45	18.64
13	Harrelll #1 Dom	-1.167	-0.165	11.25	10.08	11.80	10.47	12.03	10.70	12.00	10.83
14	Harrelll #2 Irr	-0.729	-0.165	10.08	9.35	10.65	9.76	10.95	10.06	10.92	10.19
15	Murata #1 Irr	-1.958	-0.165	50.25	48.13	50.20	48.08	50.80	48.68	50.82	48.86



Imagery Date: 9/12/2018 40°26'38.07" N 104°41'2

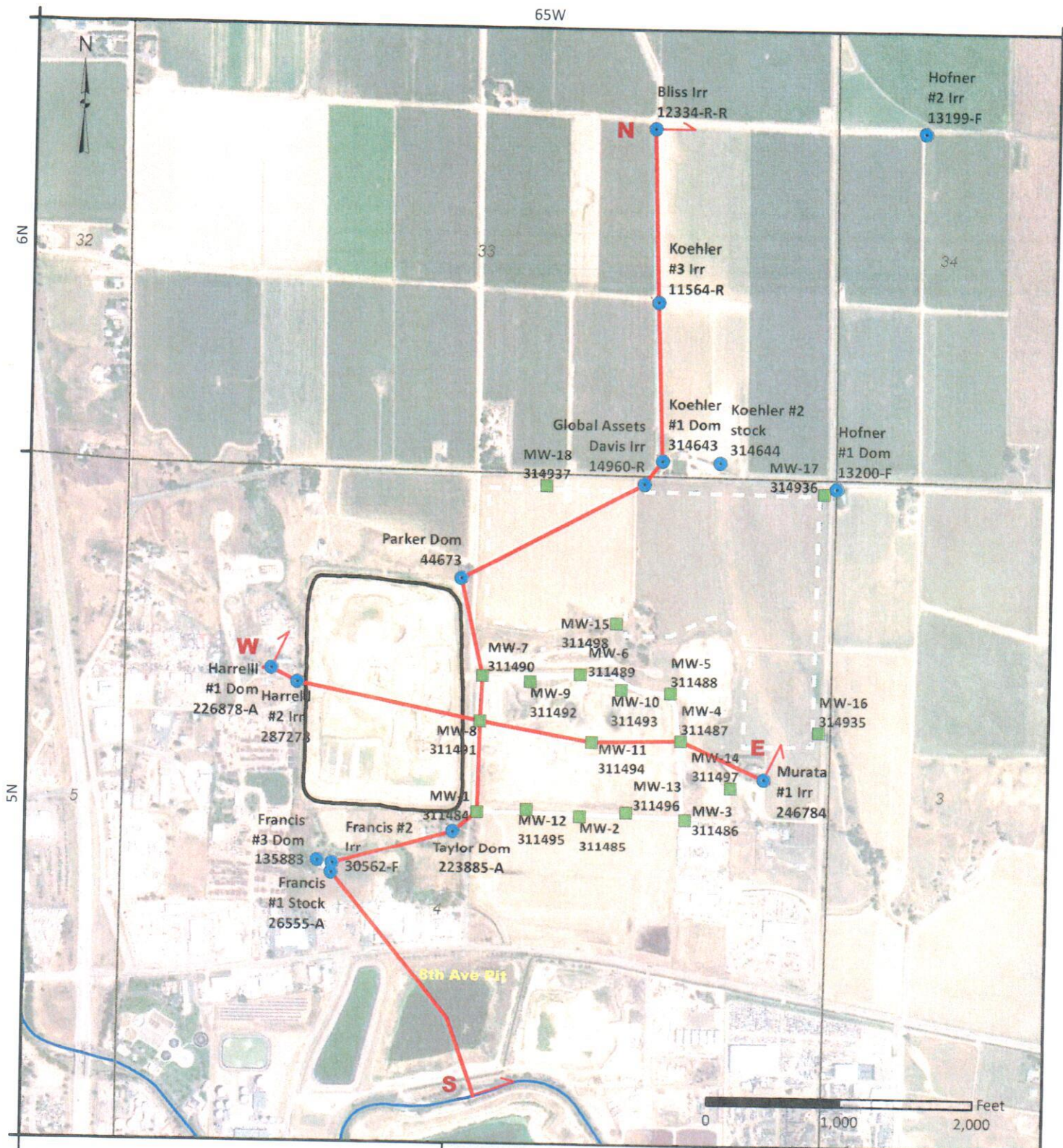


Figure 1
Cross-Section Locations

Derr Pit
Weld County, Colorado

Map Legend

Cross-Section

Registered Well Used for Monitoring

Monitoring Well

Loloff Pit with Slurry Wall

Derr Pit with Planned Slurry Wall (2020)

Derr Pit Amendment with Future Slurry Wall

Sources:
CDSS Well Permit Database 100119, JT Consulting
Monitoring Well Data, Google Earth Image 2018, ESRI
World Topo, USGS DEM 10m

Date: November 11, 2019
Datum/Projection: NAD83/Colorado State
Plane North, feet



McGrane Water
Engineering, LLC