



January 11, 2012

Sally McLeod
Environmental Superintendent
Sumitomo Metal Mining Pogo LLC
P.O. Box 145
Delta Junction, AK 99737

RE: Pogo Mine, As-built Report for MW11-216 and MW99-216

Dear Ms. McLeod:

Aspen Hydrologic Services, LLC (AHS) prepared the attached **MW11-001A and MW11-001B As-built Report** in order to provide well construction information for new monitoring wells MW11-001A (alluvial) and MW11-001B (bedrock) located between the Drystack Tailings Facility (DSTF) and RTP.

If you have any questions concerning this report, please feel free to contact me at 775-296-3739 or sgaddy@aspenhydrologic.com.

Sincerely,

A handwritten signature in black ink that reads "Sherry L. Gaddy". The signature is written in a cursive, flowing style.

Sherry L. Gaddy
Owner
Aspen Hydrologic Services, LLC

AS-BUILT REPORT FOR MW11-001A AND MW11-001B

Drilling and development activities were conducted by GF Back in accordance with the ADEC Monitoring Well Guidance, February 2009 (18 AAC 75 and 18 AAC 78). All drilling, installation, development and sealing activities were observed and documented by AHS personnel.

Air rotary drilling commenced on September 11, 2011. The wells were completed on September 17, 2011. The surface pads were completed on September 28, 2011.

MW11-001B Installation:

Summary details for MW11-001B are provided in **Table 1** and **Well Diagram 1**. A sounder tube was installed to facilitate water depth monitoring. The well was drilled with air and a minimum of water was added for dust control purposes only. This well was drilled to monitor the bedrock groundwater between the Dry Stack Tailings Facility (DSTF) and the RTP. The bedrock well was drilled first in order to log depth of alluvial/colluvial ground and existence of alluvial/colluvial groundwater. The alluvial well was drilled immediately following development of MW11-001B.

Table 1. Summary of MW11-001B Completion Details

Description	MW11-001B
Ground Elevation (Feet AMSL)	~2130'
Total Depth (Feet)	76
Static Water Level (Feet BGS)	39
Well Casing Diameter and Material	4" Sched 40 PVC
Sounder Casing Diameter and Material	1" Sched 40 PVC
Well Screen Material and Slot Size	4" Sched 40 PVC, 0.020" Slot
Sounder Screen Material and Slot Size	1" Sched 40 PVC, 0.020" Slot
Screen Interval (Feet BGS)	55 - 75
Surface Casing Diameter and Material	8" LCS
Gravel Pack Size, Type, & Interval (Feet BGS)	8x12, Silica Sand, 51 - 76
3/8Inch Bentonite Pellets (Feet BGS)	36 - 50
Neat Cement (Feet BGS)	0 - 36
Surface Monument (Feet AGS)	+1.5

Photo 1 - Location of MW11-001B



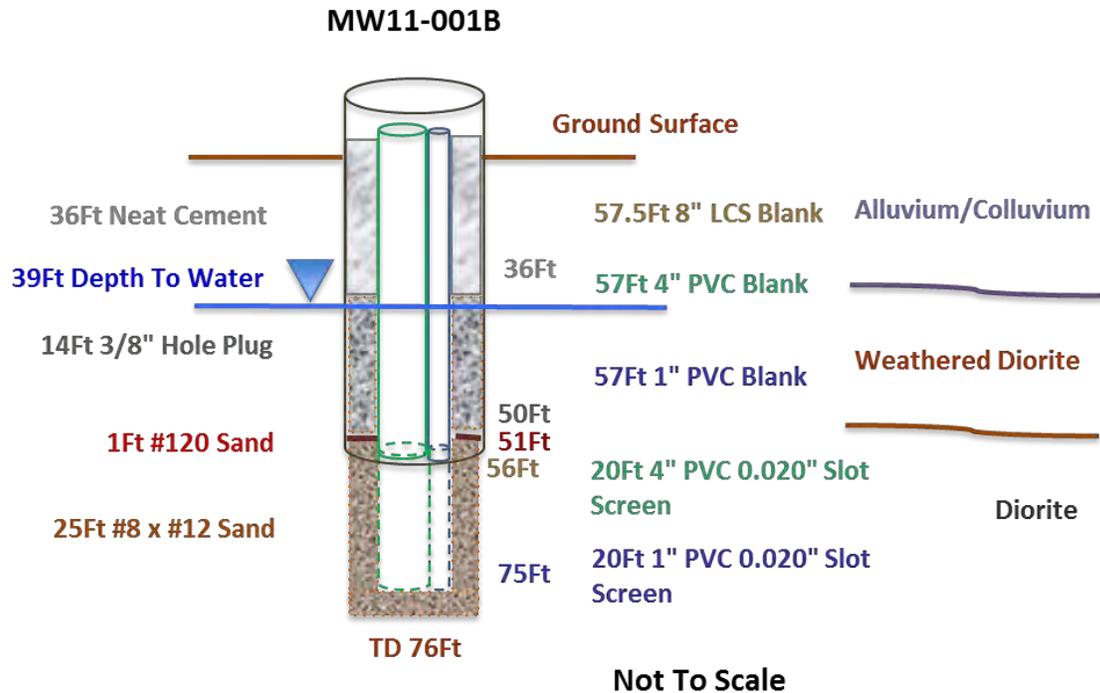
Photo 2 – Completed Well at Surface



Figure 1 - Location Map



Well Diagram 1:



Well Development:

Development of MW11-001B was completed on September 14, 2011 after 6 hours of airlifting at 16gpm and a total of 5760 gallons were evacuated. The well was deemed developed after all water samples taken were clear of sand and turbidity for one hour. The well was sampled immediately following development. Field parameters (pH, Temp, DO, and EC) were taken at the time of sampling.

Photo 3: Well Development



Pump Installation:

A Dedicated pump was installed in MW11-001B for water sampling on November 29, 2011. The system installed is as follows:

- ◆ Brand: Grundfos
- ◆ Model: 2" Dedicator
- ◆ Motor: Redi-Flo 2/MP1
- ◆ Full load Rating: 0.5 Horse Power/220 Volts/3 Phase/400 Hertz/5.5 Amps
- ◆ Set Depth: 65'
- ◆ Shrouded
- ◆ Maximum pumping rate of 6.0 gpm

MW11-001A Installation:

Summary details for MW11-001A are provided in **Table 2** and **Well Diagram 2**. A sounder tube was installed to facilitate water depth monitoring. The well was drilled with air and a minimum of water was added for dust control purposes only. This well was drilled to monitor the alluvial/colluvial groundwater between the Dry Stack Tailings Facility (DSTF) and the RTP.

Table 2. Summary of MW11-001A Completion Details

Description	MW11-001A
Ground Elevation (Feet AMSL)	~2130'
Total Depth (Feet)	38
Static Water Level (Feet BGS)	21
Well Casing Diameter and Material	4" Sched 40 PVC
Sounder Casing Diameter and Material	1" Sched 40 PVC
Well Screen Material and Slot Size	4" Sched 40 PVC, 0.020" Slot
Sounder Screen Material and Slot Size	1" Sched 40 PVC, 0.020" Slot
Screen Interval (Feet BGS)	17 - 37
Surface Casing Diameter and Material	8" LCS
Gravel Pack Size, Type, & Interval (Feet BGS)	8x12, Silica Sand, 12 - 38
3/8Inch Bentonite Pellets (Feet BGS)	5 - 11
Neat Cement (Feet BGS)	0 - 5
Surface Monument (Feet AGS)	+1.5

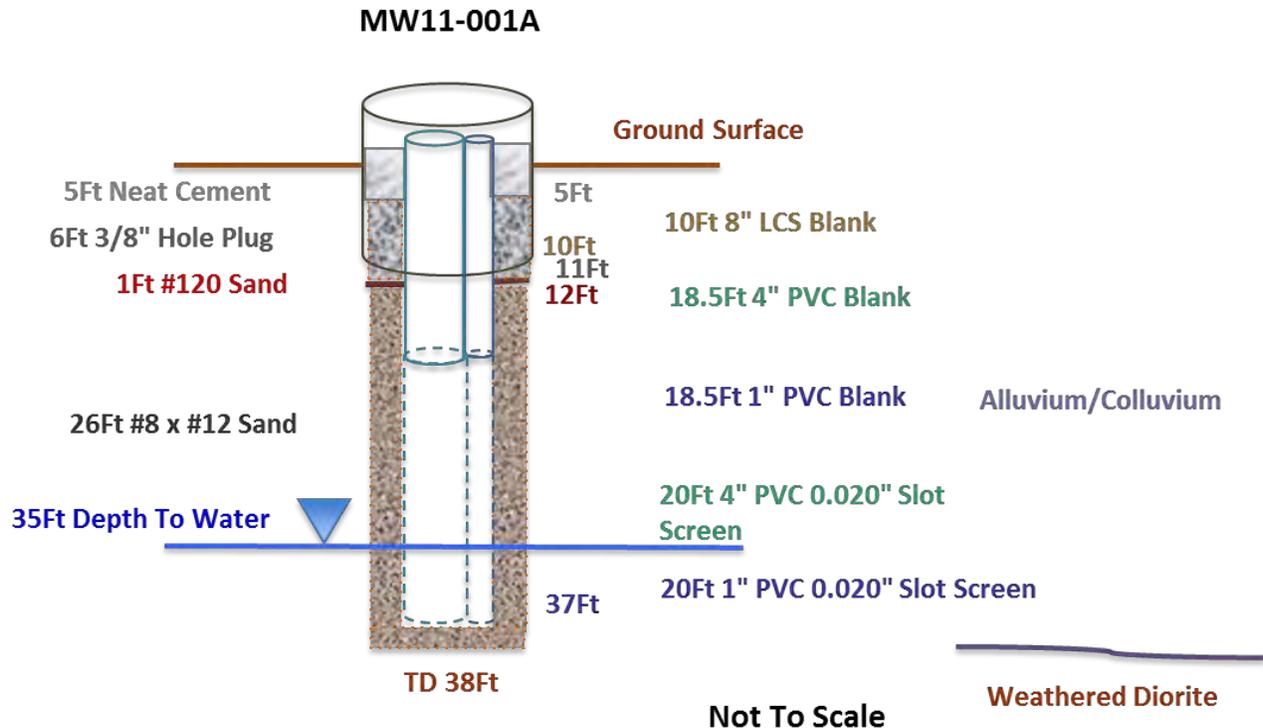
Photo 4 - Location of MW11-001A (on Right)



Photo 5 – Completed Well at Surface



Well Diagram 2:



Well Development:

Initial airlift development of MW11-001A was unsuccessful and hand bailing was attempted on September 17, 2011. GF Back returned September 28 and developed the well with a pump for 3 hours at 4gpm and a total of 720 gallons were evacuated. The well was deemed developed after all water samples taken were clear of sand and turbidity for one hour. The well was sampled immediately following development. Field parameters (pH, Temp, DO, and EC) were taken at the time of sampling.

Pump Installation:

A Dedicated pump was received for MW11-001A for water sampling in November 2011. The system was not installed as it arrived broken. The system is as follows:

- ◆ Brand: Grundfos
- ◆ Model: 2" Dedicator
- ◆ Motor: Redi-Flo 2/MP1
- ◆ Full load Rating: 0.5 Horse Power/220 Volts/3 Phase/400 Hertz/5.5 Amps
- ◆ Set Depth: 36.5'
- ◆ Shrouded
- ◆ Maximum pumping rate of 2.2 gpm

Well Water Chemistry:

Samples from MW11-001A and MW11-001B were sent to Analytica for analysis. Initial results are provided in **Table 3**.

Table 3 - Water Chemistry Comparison MW11-001A and MW11-001B

Monitoring Well	Sample Date	Field Data Static Water Level (Ft)	Field Data Specific Conductance (umhos/cm)	pH, Field, Standard Units	Field Temperature (° F)	Alkalinity, (mg/l)	Antimony, Total (ug/l)
MW11-001A	09/28/2011	21	1193	6.42	45.9	200	0.161
MW11-001A	10/11/2011	32	1479	6.4	50	210	0.425
MW11-001A	11/30/2011	34	354	6.64	32.8	180	0.253
MW11-001A	12/20/2011	35	404	6.64		170	0.226
MW11-001B	09/14/2011	34	1137	7.63		140	0.122
MW11-001B	10/11/2011		1232	6.75		130	0.144
MW11-001B	11/30/2011	39	325	6.72	39.4	130	0.143
MW11-001B	12/20/2011	39	354	6.99		120	0.125
Monitoring Well	Sample Date	Arsenic, Dissolved (ug/l)	Calcium, Dissolved (mg/l)	Cadmium, Dissolved (ug/l)	Chloride, Total (mg/l)	Chromium, Total (ug/l)	Copper, Dissolved (ug/l)
MW11-001A	09/28/2011	0.0698	100	0.0698	2.05	1.23	4.67
MW11-001A	10/11/2011	0.0907	110	0.0907	2.19	2.38	7.4
MW11-001A	11/30/2011	-0.045	100	-0.045	1.32	14.7	7.19
MW11-001A	12/20/2011	9.25	90	-0.045	1.3	8.92	5.09
MW11-001B	09/14/2011	-0.045	94	-0.045	2.4	0.445	0.941
MW11-001B	10/11/2011	0.083	89	0.083	1.8	2.42	0.842
MW11-001B	11/30/2011	-0.045	85	-0.045	1.52	1.03	1.05
MW11-001B	12/20/2011	3.89	75	-0.045	0.981	0.718	0.861
Monitoring Well	Sample Date	Fluoride, Total (mg/l)	Hardness, (mg/l)	Iron, Dissolved (ug/l)	Lead, Dissolved (ug/l)	Magnesium, Dissolved (mg/l)	Manganese, Dissolved (ug/l)
MW11-001A	09/28/2011	0.125	340	9.7	0.0471	21	11.2
MW11-001A	10/11/2011	0.187	370	21	-0.03	22	2.04
MW11-001A	11/30/2011	-0.0044	340	140	0.106	20	6.48
MW11-001A	12/20/2011	-0.0044	300	700	0.345	18	15.8
MW11-001B	09/14/2011	0.0311	310	-2.7	-0.03	19	21.6
MW11-001B	10/11/2011	0.189	290	150	0.056	17	9.36
MW11-001B	11/30/2011	-0.0044	280	-2.7	-0.03	16	1.88
MW11-001B	12/20/2011	-0.0044	250	-2.7	-0.03	15	0.877

Table 3 - Water Chemistry Comparison MW11-001A and MW11-001B (cont.)

Monitoring Well	Sample Date	Mercury, Total (ug/l)	Nickel, Dissolved (ug/l)	Nitrite plus Nitrate, Total (mg/l)	Total Kjeldahl Nitrogen, (mg/l)	Potassium, Dissolved (mg/l)	Selenium, Dissolved (ug/l)
MW11-001A	09/28/2011	0.00275	6.8	25.1	1	2.9	1.7
MW11-001A	10/11/2011	0.00402	5.32	21.4	1.4	2.7	1.45
MW11-001A	11/30/2011	0.0191	6.3	16.5	1.4	2.6	1.95
MW11-001A	12/20/2011	0.00128*	5.72	14	0.817	3	0.884
MW11-001B	09/14/2011	0.000378	4.04	30.1	-0.5	3.6	1.91
MW11-001B	10/11/2011	0.000941	3.98	22.3	-0.5	2.7	1.51
MW11-001B	11/30/2011	0.000283	3.61	16.7	-0.05	2.1	1.35
MW11-001B	12/20/2011	0.000373*	4.22	12.3	0.485	2.5	0.857
Monitoring Well	Sample Date	Silver, Dissolved (ug/l)	Sodium, Dissolved (mg/l)	Sulfate, Total (mg/l)	TDS (mg/l)	WAD Cyanide (ug/l)	Zinc, Dissolved (ug/l)
MW11-001A	09/28/2011	-0.028	7.3	107	440	-1.2	6.32
MW11-001A	10/11/2011	0.0361	8	108	493	-1.2	-0.084
MW11-001A	11/30/2011	-0.028	7.9	93.3	425	-10	1.64
MW11-001A	12/20/2011	-0.028	8.5	89.9	398	-1.2	-0.084
MW11-001B	09/14/2011	-0.028	7.8	115	413	-1.2	-0.084
MW11-001B	10/11/2011	0.337	7	114	410	-1.2	0.23
MW11-001B	11/30/2011	-0.028	6.6	93.1	350	-10	1.03
MW11-001B	12/20/2011	-0.028	7.2	85.3	335	-1.2	-0.084

* Dissolved

January 9, 2012



Sally McLeod
Environmental Superintendent
Sumitomo Metal Mining Pogo LLC
P.O. Box 145
Delta Junction, AK 99737

RE: Pogo Mine, As-built Report for MW11-216 and MW99-216

Dear Ms. McLeod:

Sumitomo Metal Mining Pogo LLC's (Pogo) 2010 Annual Report documents an increase in arsenic (As) and selenium (Se) concentrations in monitoring well MW99-216 beginning in 2008. (Note: MW99-216 is an old exploration core hole that was converted to a monitoring well. Upon investigation it was discovered that the well was screened in an ore zone.) Pogo suggests that the increase is being caused by the air-lift method of purging the well which introduces compressed air into the system causing oxidation and release of metals.

After meeting with ADEC in May 2011 to discuss options and review all the data associated with MW99-216, it was determined that the best course of action would be to drill a replacement well and abandon MW99-216. All required sampling of MW99-216 was suspended for 2011.

Aspen Hydrologic Services, LLC (AHS) prepared the attached **MW11-216 As-built Report** in order to provide well construction information for new monitoring well MW11-216 and to document Pogo's plan for old monitoring well MW99-216.

If you have any questions concerning this report, please feel free to contact me at 775-296-3739 or sgaddy@aspenhydrologic.com.

Sincerely,

A handwritten signature in black ink that reads "Sherry L. Gaddy". The signature is written in a cursive, flowing style.

Sherry L Gaddy
Owner
Aspen Hydrologic Services, LLC

AS-BUILT REPORT FOR MW11-216

Drilling and development activities were conducted by GF Back in accordance with the ADEC Monitoring Well Guidance, February 2009 (18 AAC 75 and 18 AAC 78). All drilling, installation, development and sealing activities were observed and documented by AHS personnel.

Air rotary drilling commenced on September 7, 2011. The well was completed on September 11, 2011. The surface pad was completed on September 29, 2011. It was decided to complete MW99-216 with a surface seal down to the top of the seal placed at depth (385ft) rather than plug/abandon it as it is a key baseline well (depth to water). By keeping the well in place, Pogo can continue measuring water levels at this location quarterly.

MW11-216 Installation:

Summary details for MW11-216 are provided in **Table 1** and **Well Diagram 1**. A sounder tube was installed to facilitate water depth monitoring. The well was drilled with air and a minimum of water was added for dust control purposes only.

Table 1 - Summary of MW11-216 Completion Details

Description	MW11-216
Ground Elevation (Feet AMSL)	~1505'
Total Depth (Feet)	234
Static Water Level (Feet BGS)	154
Well Casing Diameter and Material	4" Schedule 40 PVC
Sounder Casing Diameter and Material	1" Schedule 40 PVC
Well Screen Material and Slot Size	4" Schedule 40 PVC, 0.020" Slot
Sounder Screen Material and Slot Size	1" Schedule 40 PVC, 0.020" Slot
Screen Interval (Feet BGS)	193 - 233
Surface Casing Diameter and Material	8" LCS
Gravel Pack Size, Type, & Interval (Feet BGS)	8x12, Silica Sand, 187 - 234
3/8 inch Bentonite Pellets (Feet BGS)	36 - 186
Neat Cement (Feet BGS)	0 - 36
Surface Monument (Feet AGS)	+1.5

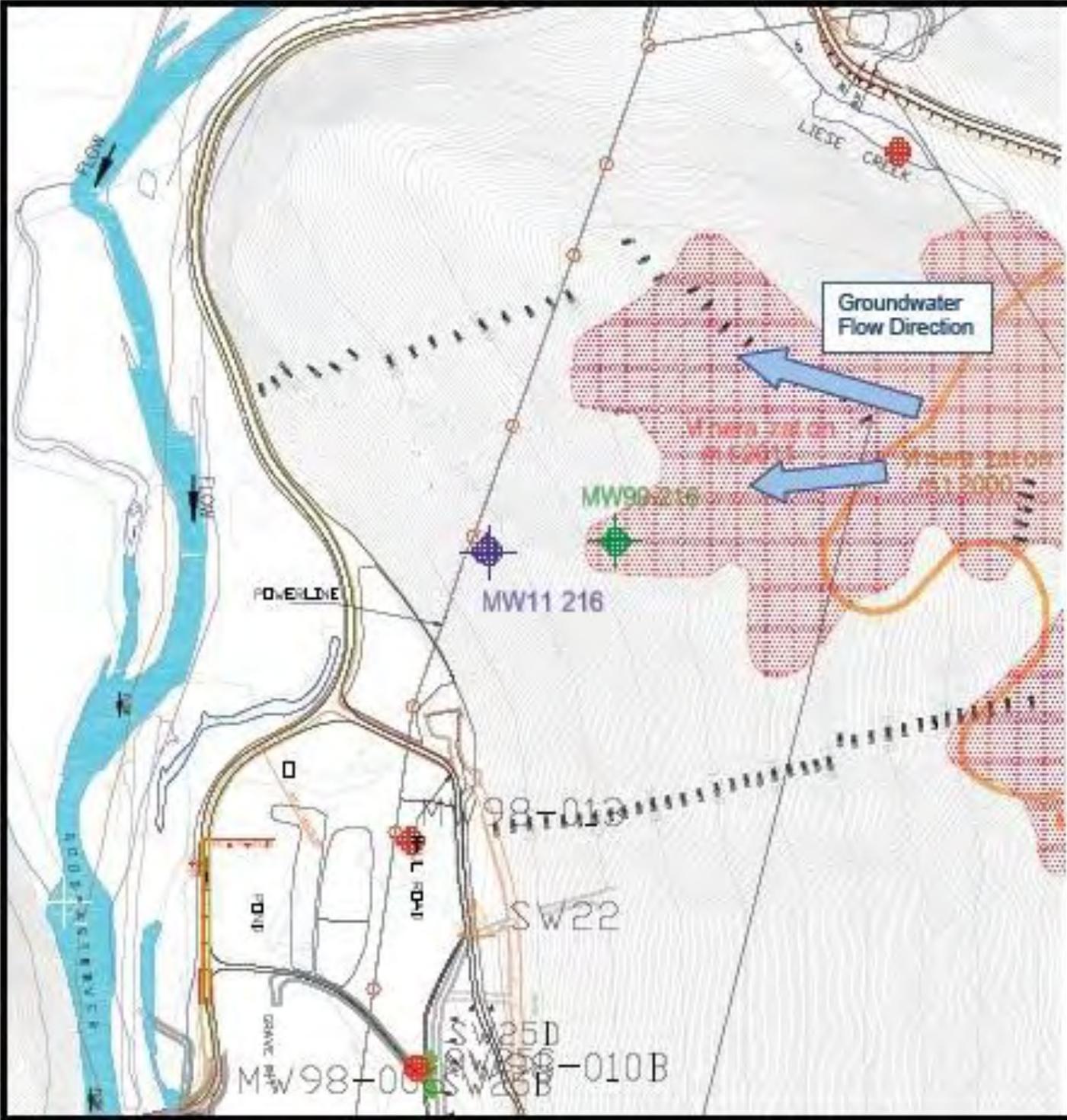
Photo 1 - Location of MW11-216



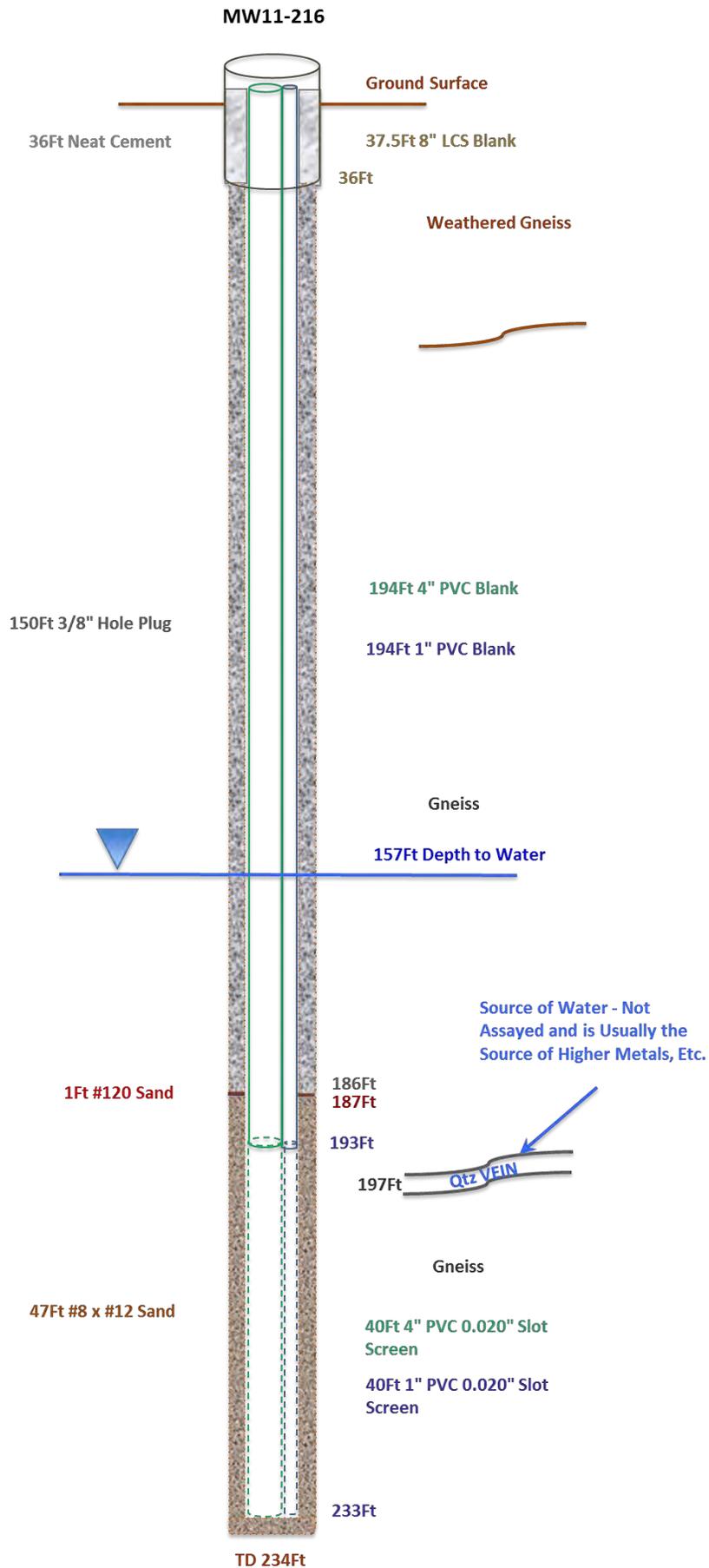
Photo 2 - Surface Monument Interior



Figure 1 - Location Map



Well Diagram 1:



Not To Scale

Well Development:

Development of MW11-216 was completed on September 9, 2011. Water was airlifted for 10 hours at 7 gpm. A total of 4,200 gallons were evacuated. The well was deemed developed after all water samples taken were clear of sand and turbidity for one hour. The well was sampled immediately following development. Field parameters (pH, Temp, DO, and EC) were taken at the time of sampling.

Photo 3: Well Development



Well Water Chemistry:

Samples from MW11-216 were sent to Analytica for analysis. Initial results are provided in **Table 2** and compared to MW99-216. Only the two constituents of concern are provided.

Table 2 - Water Chemistry Comparison MW99-216 and MW11-216

Description	MW99-216 ug/L	MW11-216 ug/L
Arsenic, Dissolved, 05/25/2010	74.3	--
Arsenic, Dissolved, 09/28/2010	109	--
Arsenic, Dissolved, 09/09/2011	--	0.107
Arsenic, Dissolved, 11/30/2011	--	0.109
Selenium, Dissolved, 05/25/2010	1.72	--
Selenium, Dissolved, 09/28/2010	2.67	--
Selenium, Dissolved, 09/09/2011	--	1.01
Selenium, Dissolved, 11/30/2011	--	1.83

Pump Installation:

A Dedicated pump was installed in MW11-216 for water sampling on November 29, 2011. The system installed is as follows:

- ◆ Brand: Grundfos
- ◆ Model: 2" Dedicator
- ◆ Motor: Redi-Flo 2/MP1
- ◆ Full load Rating: 0.5 Horse Power/220 Volts/3 Phase/400 Hertz/5.5 Amps
- ◆ Set Depth: 210'
- ◆ Shrouded
- ◆ Maximum pumping rate of 2.3 gpm

MW99-216 will not have a pump installed as it will only be utilized for piezometric water level readings.

Well Completion MW99-216:

Material, water and grout equipment was mobed to site via helicopter on September 13, 2011. GF Back pumped Cetco grout down the outside of the previously installed casing from 385 ft up to surface. The surface casing was then re-installed following completion of the surface seal. See **Well Diagram 2**.

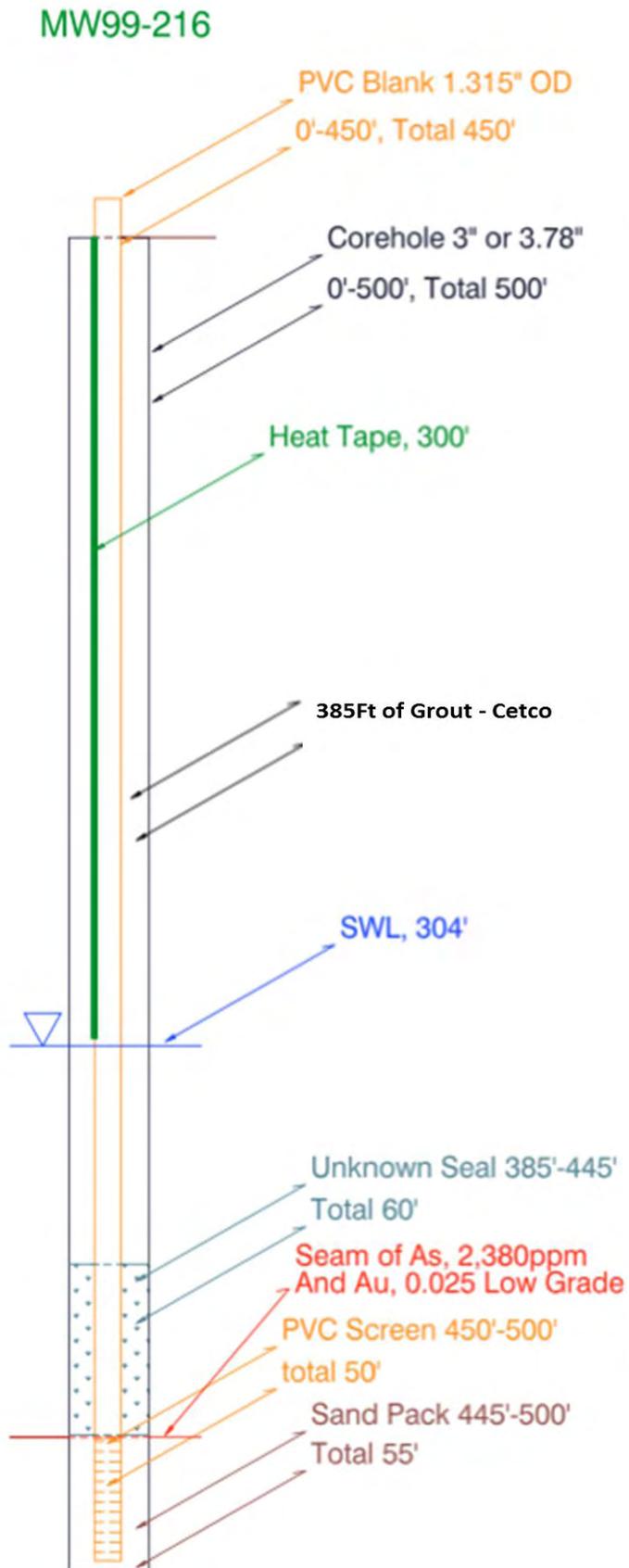
Photo 4 – MW99-216 location



Photo 5 – Seal Pumped to Surface



Well Diagram 2



January 19, 2012



Sally McLeod
Environmental Superintendent
Sumitomo Metal Mining Pogo LLC
P.O. Box 145
Delta Junction, AK 99737

RE: Pogo Mine, Abandonment/Plugging Report for SCW-1 through 4

Dear Ms. McLeod:

Sumitomo Metal Mining Pogo LLC's (Pogo's) has a system of nine seepage collection wells (SCW) located below the Recycled Tailings Pond (RTP). These wells collect any water that seeps from the RTP and into the alluvial/colluvial substrate. SCW-1 through 4 were installed following the completion of the RTP dam in 2005. These wells were fairly shallow (<30 ft) and installed with an excavator (determined from picture record and design drawings). SCW-5 through 9 were completed prior to 2008 by GF Back. SCW-5 through 8 range in depth from 66 to 74 feet and are five-inches in diameter. SCW-9 is shallower (13 feet) and of larger diameter (20 inches). They function as the primary collection system for RTP seepage.

SCW-1 through 4 have been offline since 2008 due to casing failures (frost heave) and failure of poorly placed gravel pack to keep soils out of the casing. As SCW-1 thru 4 were not only too shallow, but also compromised beyond repair (determined by Aspen Hydrologic Services (AHS)), Pogo decided to properly plug and abandon the wells.

AHS prepared the attached **Plug and Abandonment Report for SCW-1, SCW-2, SCW-3, and SCW-4** to document the abandonment of these wells.

If you have any questions concerning this report, please feel free to contact me at 775-296-3739 or sgaddy@aspenhydrologic.com.

Sincerely,

A handwritten signature in black ink that reads "Sherry L. Gaddy". The signature is written in a cursive, flowing style.

Sherry L. Gaddy
Owner
Aspen Hydrologic Services, LLC

PLUG AND ABANDONMENT REPORT FOR SCW-1, SCW-2, SCW-3 AND SCW-4

Plug and abandonment activities were conducted by GF Back in accordance with 18 AAC 80.010(b)(1) ANSI/AWWA Standard A100-97, Water Wells, Appendix H (Decommissioning of Test Holes, Partially Completed Wells, and Abandoned Completed Wells), in effect as of February 1, 1998, American Water Works Association. All preparation, abandonment/plugging and sealing activities were observed and documented by AHS personnel.

The wells are located below the Recycled Tailings Pond or RTP (**Figure 1**). Abandonment commenced on September 11, 2011. The wells were plugged on September 12, 2011. The surface was regraded by Pogo on September 13, 2011.

Figure 1 - Location Map



Abandonment:

Pogo used an excavator to dig out the surface monuments and casing (**Photo 1 thru 3**). GF Back pulled any remaining casing and screen with a boom truck. Cetco grout was pumped down each borehole to the surface on September 11 (**Photo 4**). After the grout set, Pogo filled in the surface excavations and regraded the surface (**Photo 5**).

Photo 1. SCW-1 thru 3 Before Abandonment/Plugging**Photo 2. SCW-3 and SCW-4 Before Abandonment/Plugging**

Photo 3. Surface Preparation and Removal of Surface Casing



Photo 4. SCW-1 thru 4 Plugged with Grout

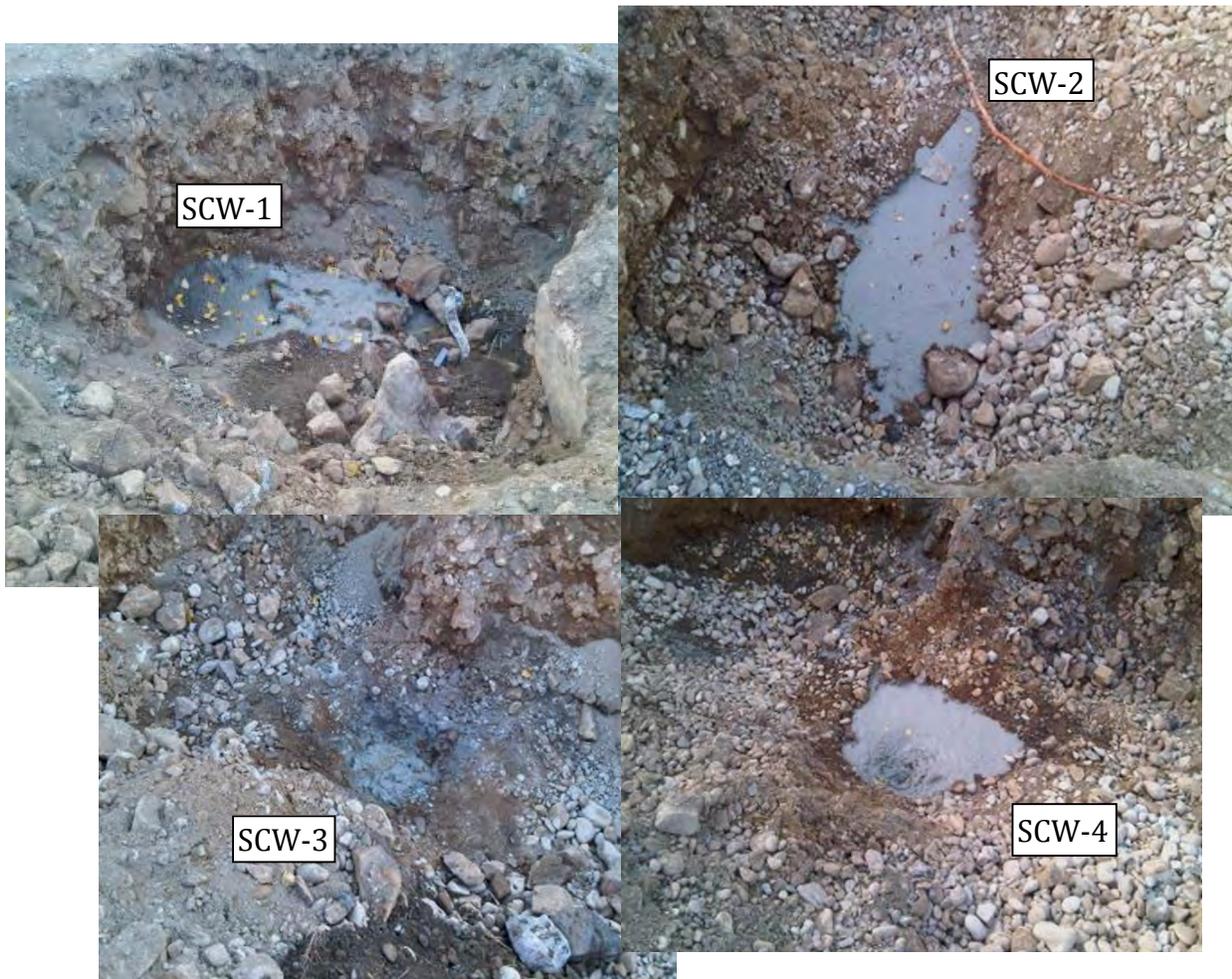


Photo 5. SCW-1 Thru 4 Abandoned and Plugged

