TETRA TECH

MEMO

To:	Ms. Mary Beth Marks – On Scene Coordinator/COR, Custer Gallatin National Forest
From:	Shane Matolyak – Environmental Scientist/Project Manager, Tetra Tech
Date:	April 5, 2018
Subject:	2017 Annual Activities Report (Contract AG-0343-B-12-0001, AG-0343-K-16-0020)

Introduction

The New World Mining District Response and Restoration Project entered a long-term (20-year) operations and maintenance phase in 2012. Activities that will occur during this phase of the project are described in detail in the Long-Term Operations and Maintenance Plan (Tetra Tech, 2012) and are summarized below;

- Annual high flow (June) surface water monitoring,
- Annual low flow (September) surface water monitoring,
- Annual groundwater monitoring (July),
- Aquatics / biological monitoring (2013, 2014, and 2015),
- Area-wide reclamation / revegetation monitoring (5-year intervals beginning in 2016),
- Maintenance and erosion control (as needed),
- Preparation of an annual water resources monitoring report, and
- Preparation of an annual activities report.

Operations and maintenance activities for the 2017 project year are complete. This Annual Activities Report summarizes project activities completed during the year and activities that will occur during the 2018 project year.

Maintenance and Erosion Control

No erosion or major maintenance issues were observed in 2017 and no maintenance was performed.

Repository Sump Drain Field Construction

A passive water disposal system (i.e. drain field) to dispose of water that accumulates in the Selective Source Repository sump was constructed in August 2017. This system eliminates the need for annual pumping and off-site disposal of sump fluid. Details of the system and its construction are provided in the Final Construction Completion Report submitted to USFS in April 2018 (Tetra Tech, 2018a).

It should be noted that, prior to construction of the drain field, water would collect in the sump then be pumped out each year. This resulted in annual flushing of the sump gravel, alternating cycles of saturation and unsaturation, and the potential for mineral oxidation during unsaturated conditions. With the drain field complete, a pool of water will be maintained within the sump up to the level of the outlet pipe invert. The establishment of permanently saturated conditions will reduce the potential for oxidation which may influence the chemistry of water within the sump. The sump and downgradient wells SBGW-107 and -107T will continue to be monitored annually to evaluate sump water chemistry.

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Water Resources Monitoring

Surface water monitoring activities were completed at the same locations and schedule described in the Long-Term Operations and Maintenance Plan with the exception that Daisy Creek and the Stillwater River were inaccessible during the September low flow monitoring event. For this reason the following surface water stations were not monitored during the event; DCT-8, DC-2, DC-5, and SW-7. Additionally, station DCT-8 could not be located during the June monitoring event due to deep snowpack. This station was monitored in August during the groundwater monitoring event.

Groundwater monitoring activities were completed at the same locations described in the Long-Term Operations and Maintenance Plan although the monitoring schedule was adjusted due to site conditions. Wells SBGW-107 and -107T were monitored in June to ensure that water levels were sufficient to allow sample collection since they tend to go dry in early July. The remaining wells were sampled in August as a lingering snowpack prevented access in July.

Total recoverable and dissolved arsenic were added to the list of analyses for 2014 surface water samples to evaluate whether changing redox and pH conditions mobilize arsenic in area streams based on a January 2014 discussion with the Board of Environmental Review. To date, arsenic has been below analytical detection limits in all surface water samples collected in the District. Arsenic analysis will not continue in 2018.

Surface water and groundwater monitoring will continue in 2018 in accordance with the Long-Term Operations and Maintenance Plan (Tetra Tech, 2012).

Water Resources Monitoring Report

The final 2017 water resources monitoring report was submitted to USFS in April 2018 (Tetra Tech, 2018b). Data presented in the report show that 2017 monitoring results are similar to previous post-response action results and that water quality improvements have been maintained post-response. These data are discussed in greater detail in the annual water resources monitoring report.

Discontinuation of Groundwater Monitoring

The USDA-FS proposed discontinuing groundwater monitoring in 2018 at all sites except for SBGW-107 and -107T which monitor groundwater below the New World waste repository. While concentrations of some parameters continue to decrease at certain wells, groundwater quality throughout the district is largely stable following initial improvements after reclamation. Additionally, it appears that groundwater data are not being used for regulatory purposes.

The proposal to discontinue groundwater monitoring was presented to Montana Department of Environmental Quality (MDEQ) in January 2018. MDEQ reviewed the proposal and stated that groundwater monitoring should be continued at least through the completion of MDEQ's Use Attainability Analysis in the event that groundwater data is needed to support that effort or during the subsequent process of approving site-specific surface water quality standards. The proposal and MDEQ's response are included in **Attachment 1** (MDEQ 2018 and Tetra Tech 2018c).

The USDA-FS will monitor groundwater during the 2018 work season upon which time they will revisit groundwater ARARs to determine the need for continued groundwater monitoring.

Supporting Montana DEQ Surface Water Monitoring

Fisher Creek and Clark's Fork of the Yellowstone River are currently included on EPA's 303(d) list as being impaired due to elevated silver concentrations. MDEQ is collecting data to support removal of this listing as part of their work to establish site-specific water quality standards for these streams. The USDA-FS assisted with the data collection effort by adding total recoverable silver concentrations to the analytical suite for selected surface water stations regularly monitored as part of the New World project and collected samples from two additional locations. This additional sampling and analysis is discussed in greater detail in **Attachment 2** (Tetra Tech, 2018d).

References

Montana Department of Environmental Quality (MDEQ). 2018. Email from Myla Kelly to Mary Beth Marks: Groundwater memo for DEQ. January.

Tetra Tech. 2012. Long-Term Operations and Maintenance Plan. New World Mining District Response and Restoration Project. June.

Tetra Tech. 2018a. Construction Completion Report. New World Repository Sump Drain Field. April.

Tetra Tech. 2018b. 2017 Surface Water and Groundwater Monitoring Report. New World Mining District Response and Restoration Project. April.

Tetra Tech. 2018c. Memo: Proposal to discontinue monitoring at selected groundwater wells within the New World Mining District. January.

Tetra Tech. 2018d. Memo: Additional monitoring activities to support DEQ impairment delisting study. April.

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Attachment 1

Proposal and MDEQ Response to Proposed Groundwater Monitoring Discontinuation

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Matolyak, Shane

To: Marks, MaryBeth -FS
Subject: RE: Groundwater memo for DEQ

From: Kelly, Myla [mailto:MKelly2@mt.gov]
Sent: Wednesday, January 10, 2018 11:44 AM
To: Marks, MaryBeth -FS <mmarks@fs.fed.us>; Coleman, Autumn <AColeman@mt.gov>; Henderson, Thomas <THenderson@mt.gov>; Regensburger, Eric <ERegensburger@mt.gov>
Subject: RE: Groundwater memo for DEQ

Mary Beth –
Standards and Abandoned Mine Lands discussed your request for altering groundwater monitoring in the New World Mine site.

These are our recommendations.

- The memo included groundwater data for copper, iron, zinc, and pH. The summary should include all the parameters with temporary water quality standards (i.e. cadmium, aluminum and manganese should be included) and all the wells in the 2012 Long Term Monitoring Plan (i.e. MW-10A and MW-10B should also be included).
- Given the commitment in the 2012 Long-term O&M Plan to continue groundwater and surface water monitoring through 2032, groundwater monitoring should be continued, at a minimum, through the completion of the Use Attainability Analysis (UAA) process.
- The UAA process will result in new water quality standards for the New World Mine site based on the highest attainable use of those waters. A change in water quality standards in Montana requires approval by the Board of Environmental Review and US EPA, as well as a public review process. Groundwater monitoring data may be requested in that approval process.
- At that point, from the water quality standards perspective, we would be OK with removing the groundwater wells from the long-term monitoring plan.
- Something to keep in mind though, as I'm sure you know, CECRA/CERCLA "certification of completion" referenced in the 1998 consent decree will require groundwater standards to be met, so again, that data will important.

That is a summary of our discussion, yesterday, and let me know if you have follow-up questions.

Myla
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Myla Kelly
Water Quality Standards and Modeling Manager
MT Dept of Environmental Quality
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406-444-3639
~~~~~~

From: Marks, MaryBeth -FS [mailto:mmarks@fs.fed.us]
Sent: Monday, January 08, 2018 5:06 PM
To: Kelly, Myla <MKelly2@mt.gov>; Coleman, Autumn <AColeman@mt.gov>
Cc: Shane Matolyak (Shane.Matolyak@tetratech.com) <Shane.Matolyak@tetratech.com>; Marks, MaryBeth -FS

<mmarks@fs.fed.us>
Subject: FW: Groundwater memo for DEQ

Myla and Autumn – attached is a memo summarizing the groundwater monitoring at the New World Mine site. This memo states our proposal to end some of this ongoing groundwater quality monitoring.

Thanks, both Shane and I are around tomorrow morning if you would like to discuss the information in the memo.

Mary Beth Marks, Geologist
On Scene Coordinator

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Caring for the land and serving people

From: Matolyak, Shane [mailto:Shane.Matolyak@tetratech.com]
Sent: Monday, January 08, 2018 3:33 PM
To: Marks, MaryBeth -FS <mmarks@fs.fed.us>
Subject: Groundwater memo for DEQ

New version with changes we discussed.

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TETRA TECH

MEMO

To:	Ms. Myla Kelly - Water Quality Standards and Modeling Manager, Montana DEQ
From:	Ms. Mary Beth Marks – On Scene Coordinator/COR, Custer Gallatin National Forest Mr. Shane Matolyak – Environmental Scientist/Project Manager, Tetra Tech
Date:	January 8, 2018
Subject:	Proposal to discontinue monitoring at selected groundwater wells within the New World Mining District.

Introduction

Annual groundwater monitoring is currently conducted at 14 monitoring wells (**Table 1** and **Figure 1**) within the New World Mining District as part of the Long-Term Operations and Maintenance Plan (Tetra Tech, 2012). These wells which are located in the McLaren Pit area, Como Basin/Glengarry Adit area, and below the Selective Source Repository, have been monitored since the early 2000s or longer. The USDA-FS proposes to discontinue monitoring at most of these locations as water quality has stabilized and groundwater data is not being used to support reclamation work or administrative closure of the New World CERCLA project.

Monitoring will continue at SBGW-107, -107T, and the Repository Sump in order to evaluate sump fluid chemistry and the performance of the recently constructed (August, 2017) sump fluid infiltration gallery.

The remainder of this memo summarizes the groundwater monitoring network, data, and the proposed changes to the monitoring program.

Table 1. New World Mine District Monitoring Wells

Well Identification	Year Installed	Completion Formation
McLaren Pit Area		
DCGW-101S	2001	Colluvium downgradient of McLaren Pit
DCGW-101D	2001	Lulu Pass Rhyodacite Porphyry downgradient of McLaren Pit
DCGW-104	2001	Waste rock within McLaren Pit
DCGW-105	2001	Waste rock within McLaren Pit
DCGW-132	2002	Colluvium downgradient of McLaren Pit
Como Basin / Glengarry Adit Area		
EPA-11	1996	Tertiary intrusive dike within Como Basin
EPA-12	1996	Scotch Bonnet Diorite within Como Basin
FCGW-100	2004	Glengarry adit workings
MW-1	1989	Wolsey Shale within Como Basin
MW-9A	1990	Alluvium downgradient of Glengarry Adit
MW-9B	1990	Precambrian gneiss downgradient of Glengarry Adit
Tracer-5	1997	Fisher Mtn. Intrusive south of Como Basin
Selective Source Repository Area		
Repository Sump	2002	Gravel within repository sump
SBGW-107T	1999	Glacial till downgradient of repository
SBGW-107	1999	Granite bedrock downgradient of repository

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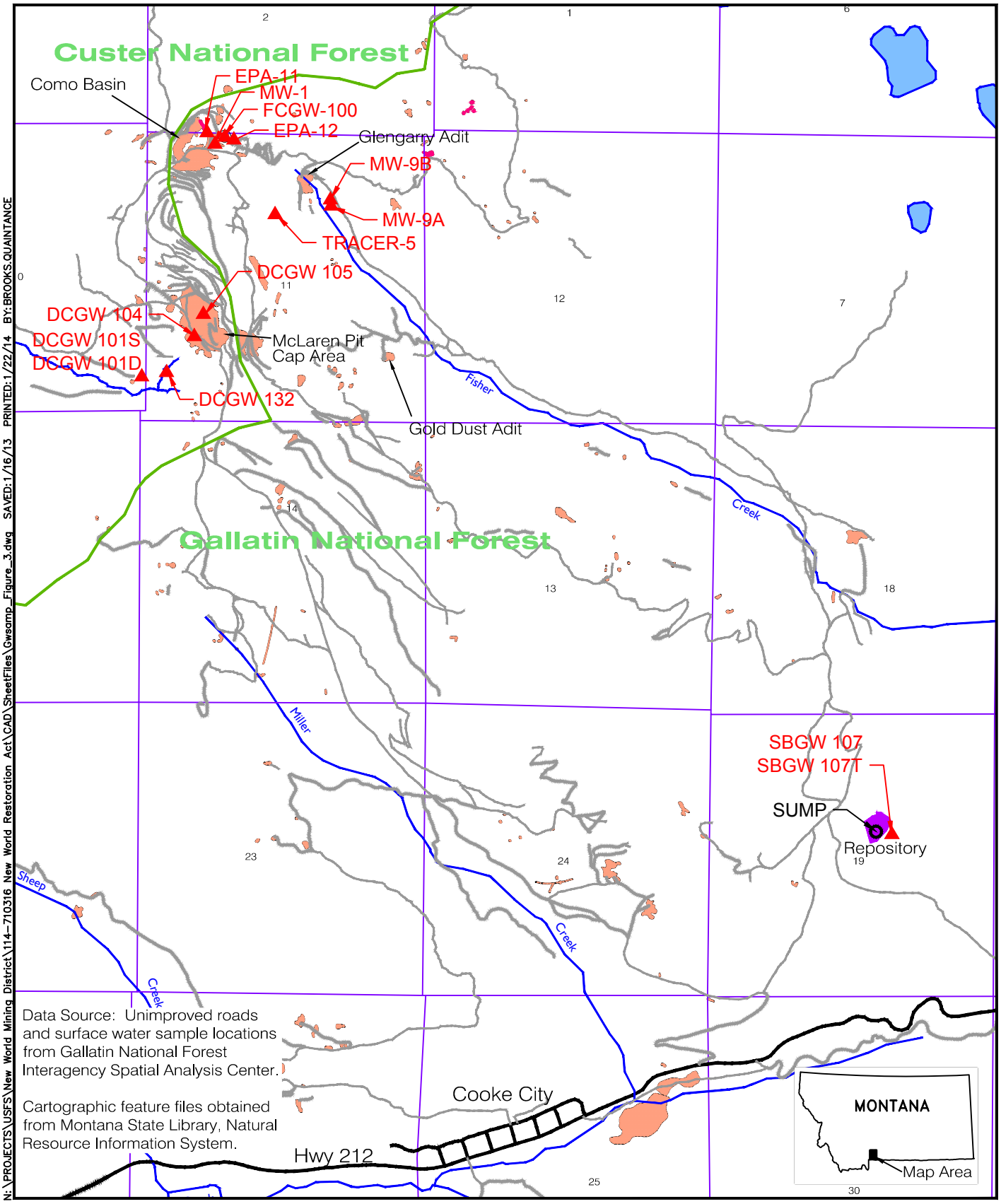

114-710324A.800

Groundwater Monitoring Stations
New World Mining District
Response and Restoration Project
Cooke City Area, Montana
FIGURE 1

Groundwater Monitoring and Data

Groundwater wells are typically monitored in mid-July with the exception of SBGW-107 and -107T which are monitored in late June as these wells are often dry in July. Other schedule adjustments are occasionally necessary due to site access.

Graphs plotting water level, pH, and metal concentrations over time for McLaren and Como/Glengarry wells are provided in **Attachment 1**. Groundwater quality in the District can generally be characterized as pH neutral to acidic with elevated metal concentrations. It appears that groundwater quality has not changed significantly in response to reclamation as data for most wells appear consistent with pre-reclamation conditions. For wells where improvement may have occurred (i.e. Tracer-5, EPA-11), metal concentrations were decreasing prior to the completion of reclamation.

Groundwater quality trends can be summarized by the following;

- In the McLaren Pit area, groundwater quality has remained stable following reclamation except that some metal concentrations (i.e. copper, iron, and zinc) continue to trend downward in waste rock monitored by well DCGW-104.

- In the Como Basin, groundwater quality has remained stable following reclamation except that iron and zinc concentrations monitored at EPA-11 continued to decrease steadily following reclamation until about 2013 when they appear to have stabilized. At FCGW-100, completed within the Glengarry Adit workings, iron concentrations peaked in 2011, decreased through 2015, and were stable through 2017.

- Downgradient of the Glengarry Adit, groundwater quality monitored by MW-9B (completed in bedrock) remained stable following reclamation. Water monitored by MW-9A (completed in shallow alluvium) tend to be stable however relative high concentrations of metals peaking in 2014-2015 suggest that a metal-rich slug of shallow groundwater was intercepted by this well. Data collected since 2016 are consistent with historic low concentrations measured at MW-9A.

Proposed Monitoring Program Change

Based on the data and rationale presented in this memo, the USDA-FS proposes to discontinue monitoring all wells located within the McLaren Pit and Como Basin / Glengarry Adit areas.

Annual monitoring of the Selective Source Repository Area would continue at SBGW-107, -107T, and the Repository Sump and would be conducted in conjunction with the high flow surface water monitoring event in late June.

References

Tetra Tech. 2012. Long-Term Operations and Maintenance Plan. New World Mining District Response and Restoration Project. June.

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Attachment 1

New World Mining District Groundwater Quality Trends

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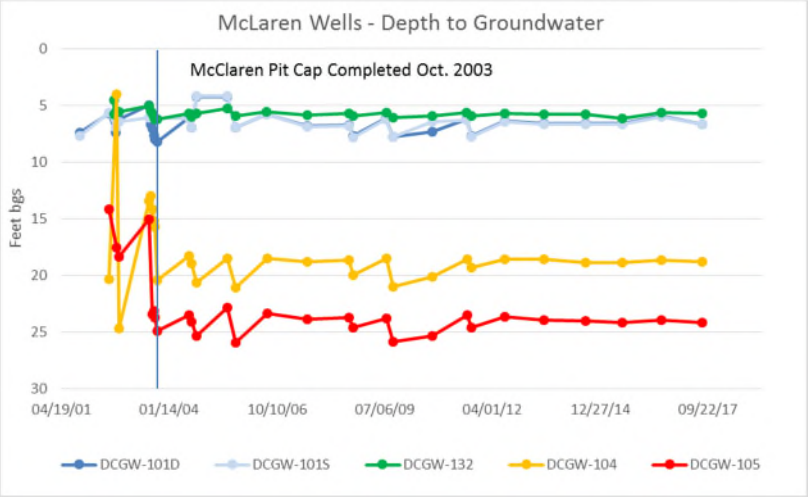
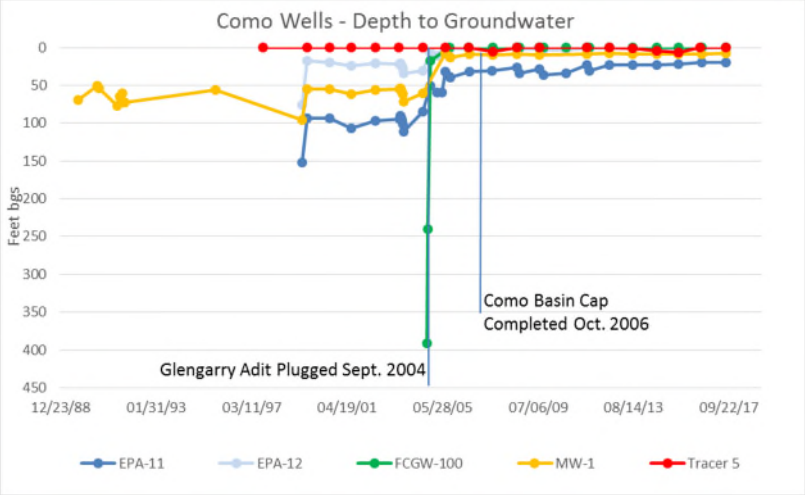
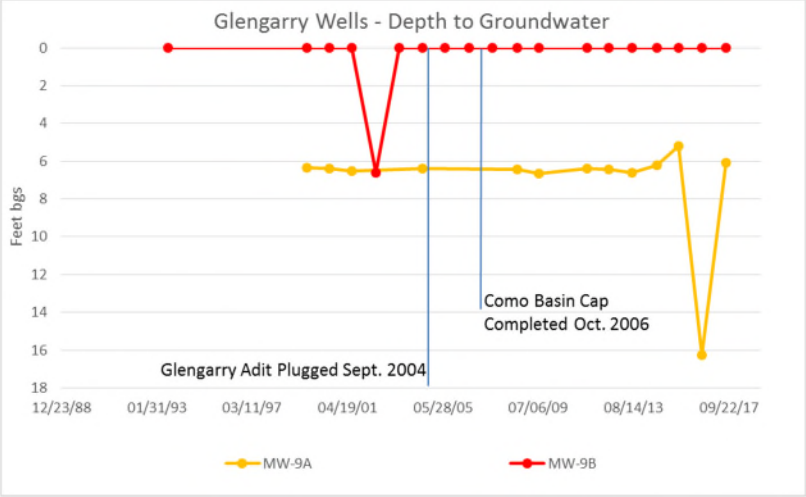
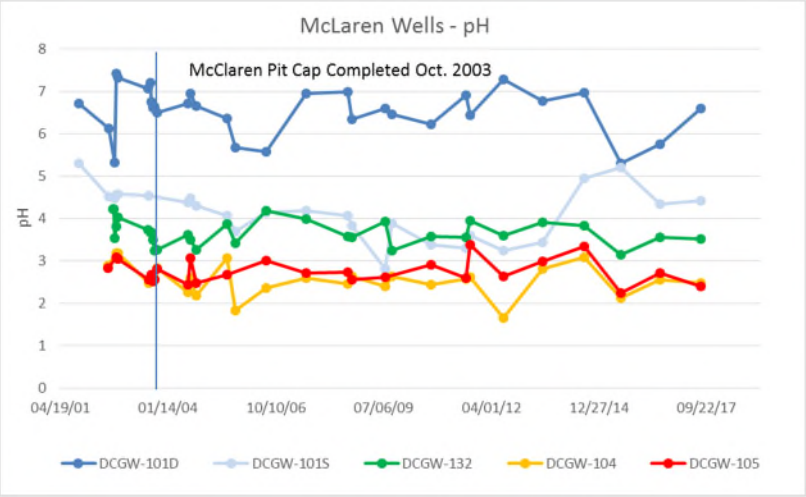
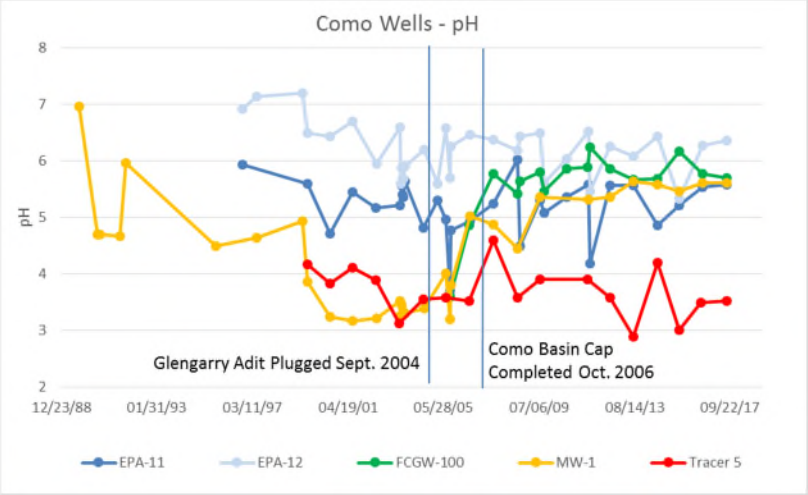
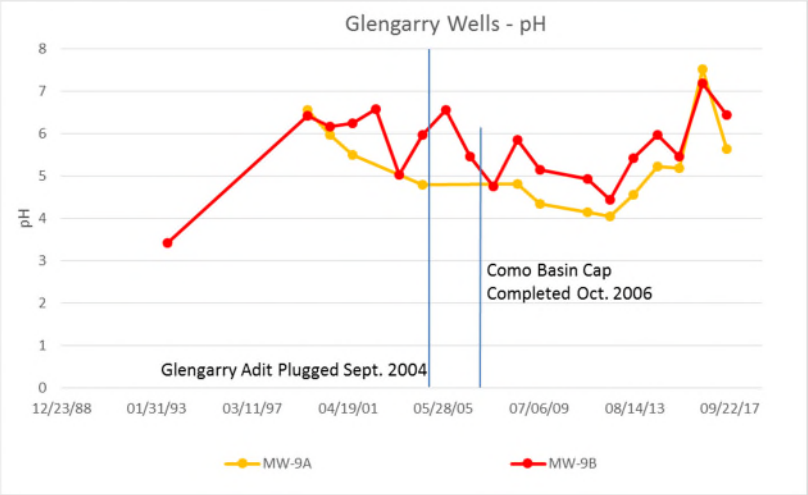

McLaren Wells - Depth to Groundwater
McClaren Pit Cap Completed Oct. 2003
Feet bgs
0
5
10
15
20
25
30
04/19/01
01/14/04
10/10/06
07/06/09
04/01/12
12/27/14
09/22/17
DCGW-101D
DCGW-101S
DCGW-132
DCGW-104
DCGW-105

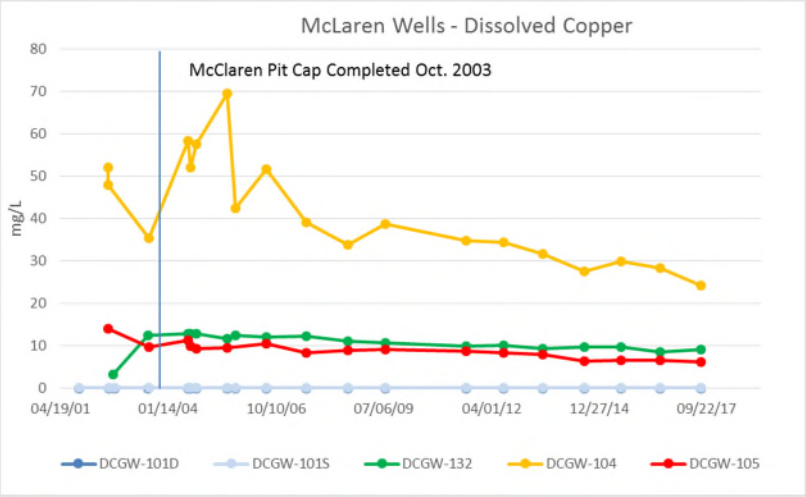

Como Wells - Depth to Groundwater
Feet bgs
0
50
100
150
200
250
300
350
400
450
Como Basin Cap
Completed Oct. 2006
Glengarry Adit Plugged Sept. 2004
12/23/88
01/31/93
03/11/97
04/19/01
05/28/05
07/06/09
08/14/13
09/22/17
EPA-11
EPA-12
FCGW-100
MW-1
Tracer 5

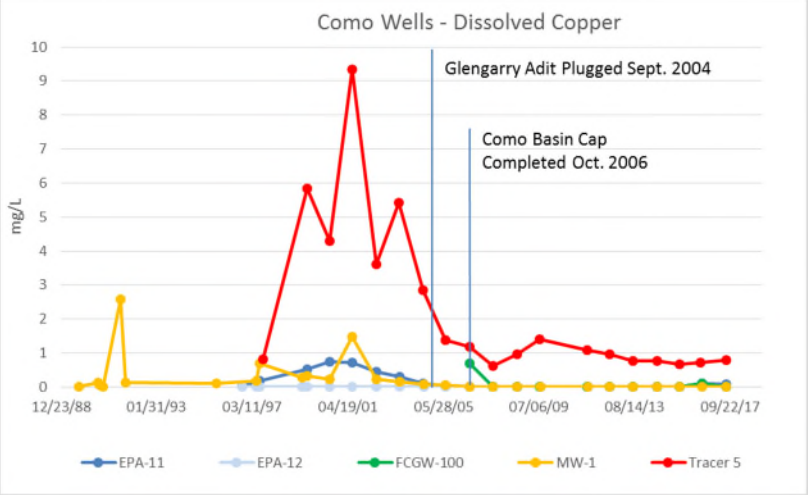

Glengarry Wells - Depth to Groundwater
Feet bgs
0
2
4
6
8
10
12
14
16
18
Como Basin Cap
Completed Oct. 2006
Glengarry Adit Plugged Sept. 2004
12/23/88
01/31/93
03/11/97
04/19/01
05/28/05
07/06/09
08/14/13
09/22/17
MW-9A
MW-9B

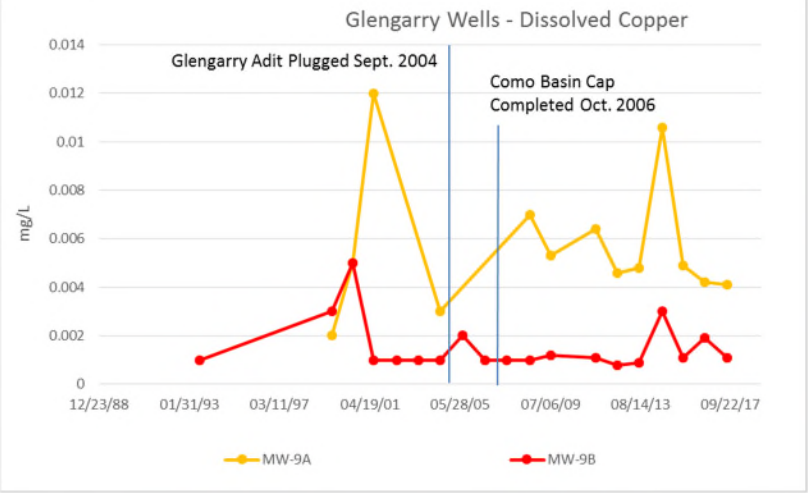

McLaren Wells - pH
McClaren Pit Cap Completed Oct. 2003
pH
0
1
2
3
4
5
6
7
8
04/19/01
01/14/04
10/10/06
07/06/09
04/01/12
12/27/14
09/22/17
DCGW-101D
DCGW-101S
DCGW-132
DCGW-104
DCGW-105

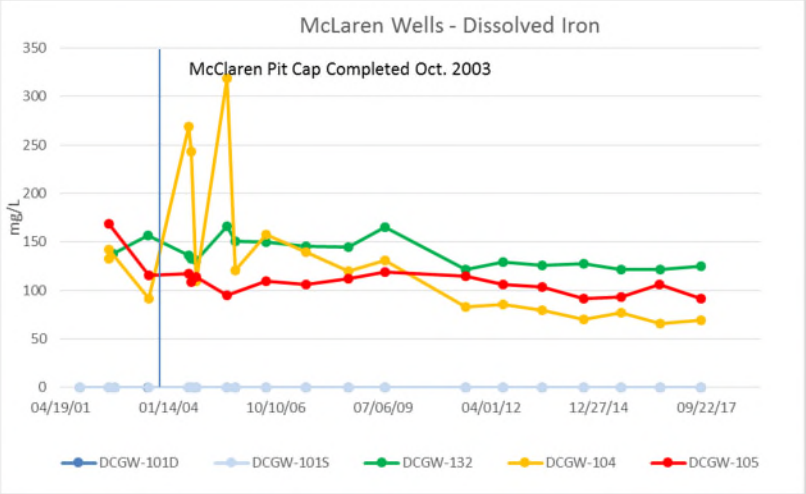

Como Wells - pH
pH
2
3
4
5
6
7
8
Glengarry Adit Plugged Sept. 2004
Como Basin Cap
Completed Oct. 2006
12/23/88
01/31/93
03/11/97
04/19/01
05/28/05
07/06/09
08/14/13
09/22/17
EPA-11
EPA-12
FCGW-100
MW-1
Tracer 5

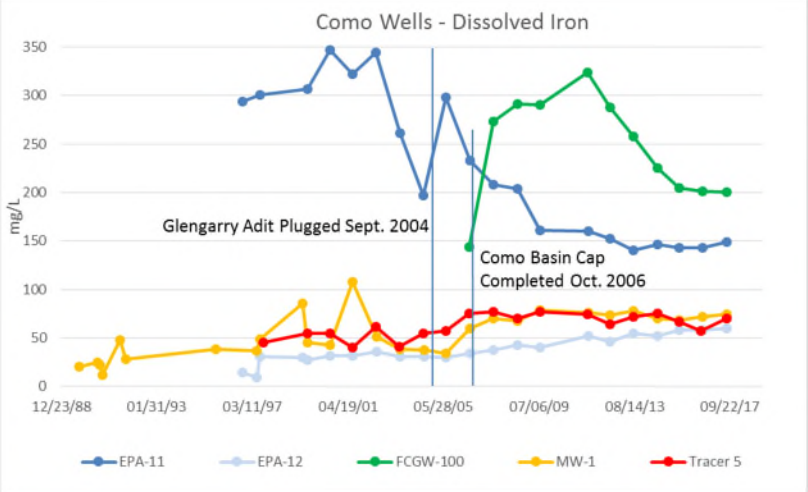

Glengarry Wells - pH
pH
0
1
2
3
4
5
6
7
8
Glengarry Adit Plugged Sept. 2004
Como Basin Cap
Completed Oct. 2006
12/23/88
01/31/93
03/11/97
04/19/01
05/28/05
07/06/09
08/14/13
09/22/17
MW-9A
MW-9B


McLaren Wells - Dissolved Copper
McClaren Pit Cap Completed Oct. 2003
mg/L
80
70
60
50
40
30
20
10
0
04/19/01
01/14/04
10/10/06
07/06/09
04/01/12
12/27/14
09/22/17
DCGW-101D
DCGW-101S
DCGW-132
DCGW-104
DCGW-105


Como Wells - Dissolved Copper
Glengarry Adit Plugged Sept. 2004
Como Basin Cap
Completed Oct. 2006
mg/L
10
9
8
7
6
5
4
3
2
1
0
12/23/88
01/31/93
03/11/97
04/19/01
05/28/05
07/06/09
08/14/13
09/22/17
EPA-11
EPA-12
FCGW-100
MW-1
Tracer 5


Glengarry Wells - Dissolved Copper
Glengarry Adit Plugged Sept. 2004
Como Basin Cap
Completed Oct. 2006
mg/L
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
12/23/88
01/31/93
03/11/97
04/19/01
05/28/05
07/06/09
08/14/13
09/22/17
MW-9A
MW-9B


McLaren Wells - Dissolved Iron
McClaren Pit Cap Completed Oct. 2003
mg/L
350
300
250
200
150
100
50
0
04/19/01
01/14/04
10/10/06
07/06/09
04/01/12
12/27/14
09/22/17
DCGW-101D
DCGW-101S
DCGW-132
DCGW-104
DCGW-105


Como Wells - Dissolved Iron
Glengarry Adit Plugged Sept. 2004
Como Basin Cap
Completed Oct. 2006
mg/L
350
300
250
200
150
100
50
0
12/23/88
01/31/93
03/11/97
04/19/01
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07/06/09
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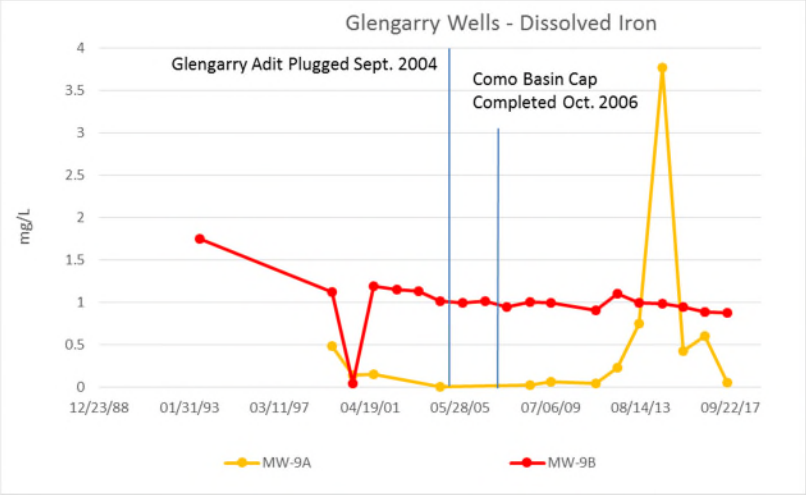
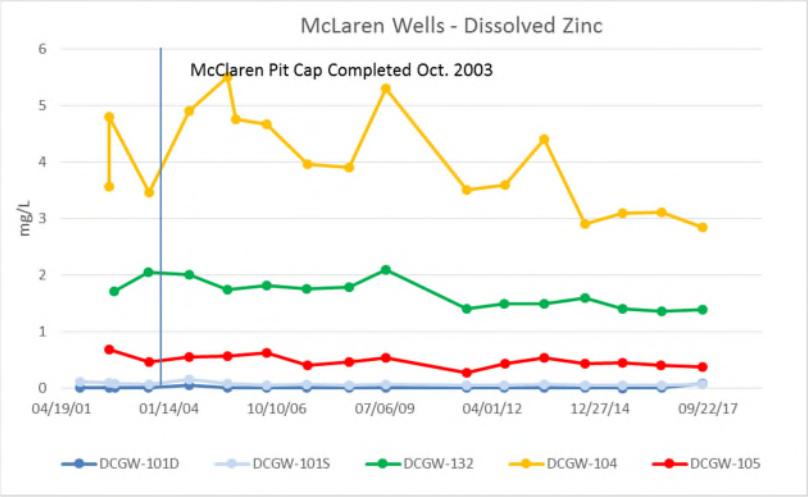
EPA-11
EPA-12
FCGW-100
MW-1
Tracer 5


Glengarry Wells - Dissolved Iron
Glengarry Adit Plugged Sept. 2004
Como Basin Cap
Completed Oct. 2006
mg/L
4
3.5
3
2.5
2
1.5
1
0.5
0
12/23/88
01/31/93
03/11/97
04/19/01
05/28/05
07/06/09
08/14/13
09/22/17
MW-9A
MW-9B


McLaren Wells - Dissolved Zinc
McClaren Pit Cap Completed Oct. 2003
mg/L
6
5
4
3
2
1
0
04/19/01
01/14/04
10/10/06
07/06/09
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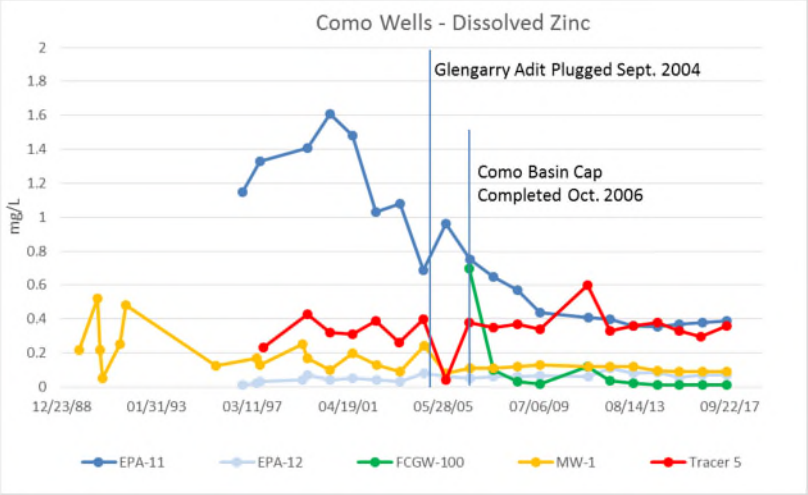
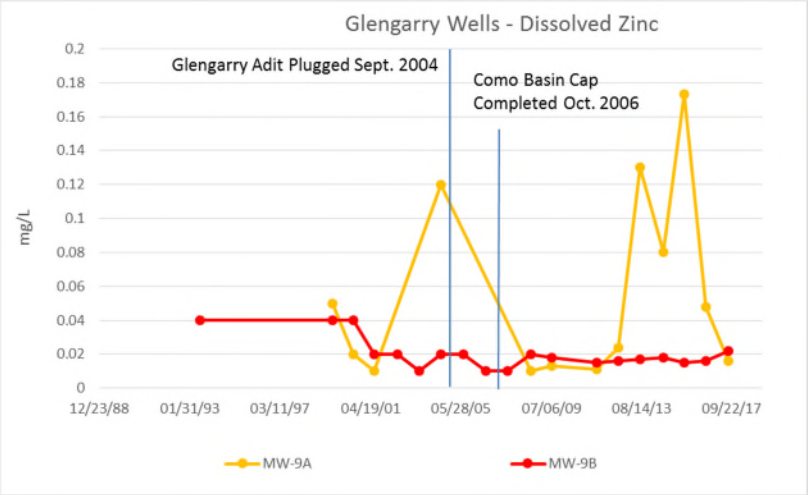
DCGW-101S
DCGW-132
DCGW-104
DCGW-105


Como Wells - Dissolved Zinc
Glengarry Adit Plugged Sept. 2004
Como Basin Cap
Completed Oct. 2006
mg/L
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
12/23/88
01/31/93
03/11/97
04/19/01
05/28/05
07/06/09
08/14/13
09/22/17
EPA-11
EPA-12
FCGW-100
MW-1
Tracer 5


Glengarry Wells - Dissolved Zinc
Glengarry Adit Plugged Sept. 2004
Como Basin Cap
Completed Oct. 2006
mg/L
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
12/23/88
01/31/93
03/11/97
04/19/01
05/28/05
07/06/09
08/14/13
09/22/17
MW-9A
MW-9B

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Attachment 2

Additional Monitoring Activities to Support DEQ Impairment Delisting Study

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TETRA TECH

MEMO

To:	Ms. Mary Beth Marks – On Scene Coordinator/COR, Custer Gallatin National Forest
From:	Shane Matolyak – Environmental Scientist/Project Manager, Tetra Tech
Date:	April 5, 2018
Subject:	Additional Monitoring Activities to Support DEQ Impairment Delisting Study. (Contract AG-0343-B-12-0001, AG-0343-K-16-0020)

Introduction

Fisher Creek and Clark's Fork of the Yellowstone River are currently included on EPA's 303(d) list as being impaired due to elevated silver concentrations. Montana Department of Environmental Quality (DEQ) is collecting data to support removal of this listing as part of their work to establish site-specific water quality standards for these streams in the New World Mining District. The USDA-FS assisted with the data collection effort by adding total recoverable silver and hardness concentrations to the analytical suite for selected surface water stations regularly monitored as part of the New World project and also collecting samples from two additional locations in 2017. These data are not included in the 2017 water resources monitoring report (Tetra Tech, 2018) and are therefore presented in this memo.

Methods

At the request of DEQ, total recoverable silver concentrations were measured from samples collected at the surface water locations shown on **Figure 1**. Four of these sites (CFY-2, SW-3, SW-4, and SW-6) are monitored twice per year as part of the New World Project Long-Term Operations and Maintenance Plan (Tetra Tech, 2012). Silver was added to the analytical list for SW-3, SW-4, and SW-6 in June and September while silver concentrations were only measured at CFY-2 in September.

Two additional monitoring sites (Silver-1 and Silver-2) were established and sampled for total recoverable silver and hardness concentrations. Silver-1, located immediately below confluence of Fisher Creek and Lady of the Lake Creek, was monitored in June and September. Silver-2, located near the Clark Forks Picnic Area off of Highway 212, was monitored in September.

A field-duplicate sample was collected at station SW-3 to assess sampling and analysis variability. Duplicate sample collection is specified in the Long-Term Operations and Maintenance Plan (Tetra Tech, 2012).

Results

Total recoverable silver and hardness data are summarized in **Table 1**. Silver was not detected above the method detection limit of 0.00005 mg/L in any sample.

Relevant pages from the analytical laboratory reports for Silver-1 and Silver-2 samples are provided in **Attachment 1**. Complete laboratory reports including laboratory quality control data and the laboratory reports for other locations are available in the 2017 water resources monitoring report (Tetra Tech, 2018).

References

Tetra Tech. 2012. Long-Term Operations and Maintenance Plan. New World Mining District Response and Restoration Project. June.

Tetra Tech. 2018. 2017 Surface Water and Groundwater Monitoring Report. New World Mining District Response and Restoration Project. April.

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Figures

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114-710324C

4/5/2018

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- Additional Surface Water Station
- Regularly Monitored New World Surface Water Station, per the 2012 Long-Term Operations and Maintenance Plan

Figure 1
Surface Water Monitoring Locations
Supporting DEQ Impairment Study
New World Mining District
Park County, Montana

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Tables

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Table 1. Summary of Analytical Data for Silver Impairment Study			
Location	**Date**	**Total Recoverable Silver (mg/L)**	**Hardness (mg/L)**
High Flow Monitoring Event			
SW-3	6-27-17	< 0.00005	22
SW-3 (duplicate)	6-27-17	< 0.00005	22
SW-4	6-27-17	< 0.00005	31
Silver-1	6-27-17	< 0.00005	28.0
SW-6	6-27-17	< 0.00005	21
Low Flow Monitoring Event			
SW-3	9-27-17	< 0.00005	54
SW-3 (duplicate)	9-27-17	< 0.00005	55.0
SW-4	9-27-17	< 0.00005	51
CFY-2	9-27-17	< 0.00005	47
Silver-1	9-27-17	< 0.00005	16
SW-6	9-27-17	< 0.00005	36
Silver-2	9-27-17	< 0.00005	32

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Attachment 1

Analytical Laboratory Reports for Silver-1 and Silver-2.

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Tetra Tech
Project ID: 114-710324C.300
Sample ID: SILVER-1

ACZ Sample ID: ***L38199-15***
Date Sampled: *06/27/17 15:00*
Date Received: *07/03/17*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Recoverable Digestion	M200.2 ICP-MS								07/11/17 18:58	mfm

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	1	8.4			mg/L	0.1	0.5	07/14/17 0:19	dcm
Magnesium, dissolved	M200.7 ICP	1	1.7			mg/L	0.2	1	07/14/17 0:19	dcm
Silver, total recoverable	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	07/18/17 0:59	enb

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Hardness as CaCO3 (dissolved)	SM2340B - Calculation		28.0			mg/L	0.2	5	07/21/17 0:00	calc
Lab Filtration (0.45um) & Acidification	M200.7/200.8/3005A	1							07/10/17 9:00	sck

Tetra Tech
Project ID: 114-710324C.300
Sample ID: SILVER-1

ACZ Sample ID: ***L40280-10***
Date Sampled: *09/27/17 09:50*
Date Received: *10/04/17*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Recoverable Digestion	M200.2 ICP-MS								10/18/17 12:31	bsu

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	1	9.2			mg/L	0.1	0.5	10/10/17 0:39	dcm
Magnesium, dissolved	M200.7 ICP	1	2.2			mg/L	0.2	1	10/10/17 0:39	dcm
Silver, total recoverable	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	10/19/17 21:11	msh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Hardness as CaCO3 (dissolved)	SM2340B - Calculation		32.0			mg/L	0.2	5	01/05/18 0:00	calc

Tetra Tech
Project ID: 114-710324C.300
Sample ID: SILVER-2

ACZ Sample ID: ***L40280-11***
Date Sampled: *09/26/17 09:50*
Date Received: *10/04/17*
Sample Matrix: *Surface Water*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Recoverable Digestion	M200.2 ICP-MS								10/18/17 12:48	bsu

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	1	4.7			mg/L	0.1	0.5	10/10/17 0:42	dcm
Magnesium, dissolved	M200.7 ICP	1	1.1			mg/L	0.2	1	10/10/17 0:42	dcm
Silver, total recoverable	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	10/19/17 21:13	msh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Hardness as CaCO3 (dissolved)	SM2340B - Calculation		16			mg/L	0.2	5	01/05/18 0:00	calc