

2019 ANNUAL REPORT

Submit the completed document and any additional information identified to the Division by March 31, 2020.

GENERAL INFORMATION

| | | | |
|-----------------|--|------------------------|------------------------------|
| Company Name | PacifiCorp | Mine Name | Cottonwood/Wilberg |
| Permit Number | C/015/0019 | Permit Expiration Date | July 6, 2024 |
| Operator Name | PacifiCorp Thermal Generation Env Services | Phone Number | +1 (435) 220-4632 |
| Mailing Address | 1407 West North Temple, Suite 210 | Email | dennis.oakley@pacificorp.com |
| City | Salt Lake City | | |
| State | Utah | Zip Code | 84116 |

DOGM File Location or Annual Report Location

| | | |
|--------------------|---|--|
| Excess Spoil Piles | <input type="checkbox"/> Required <input checked="" type="checkbox"/> Not Required | |
| Refuse Piles | <input type="checkbox"/> Required <input checked="" type="checkbox"/> Not Required | |
| Impoundments | <input type="checkbox"/> Required <input checked="" type="checkbox"/> Not Required | |
| Other: | | |

OPERATOR COMMENTS

The Cottonwood/Wilberg Mine final reclamation was completed March 2018. Phase I Bond Release was approved May 7, 2019.

REVIEWER COMMENTS

Met Requirements Did Not Meet Requirements

COMMITMENTS AND CONDITIONS

The Permittee is responsible for ensuring annual technical commitments in the Mining and Reclamation Plan and conditions accepted with the permit are completed throughout the year. The Division has identified these commitments below and has provided space for you to report what you have done during the past year for each commitment. If additional written response is required, it should be filed as an attachment to this report.

Title: **VEGETATION MONITORING**

Objective: To evaluate vegetation success

Frequency: Annual

Status: Ongoing

Reports: All vegetation monitoring data will be reported annually. This report will contain a narrative of the actual monitoring methods used, results, and a discussion of the overall success or failure of each area. Raw data sheets will also be included in the annual reports.

Citation: Volume 2, part 4, page 16

OPERATOR COMMENTS

Vegetation Monitoring Schedule for mine and remote areas:

Mine: 2022.

Leach Field: monitoring for bond release was conducted in 2017 and 2018, respectively.

Rock and Soil Storage: 2022.

TMA Access: 4th year completed 2018. Years 9/10 will be conducted in 2023 and 2024, respectively.

There was no vegetation monitoring in 2019.

REVIEWER COMMENTS

Met Requirements

Did Not Meet Requirements

REPORTING OF OTHER TECHNICAL DATA

Please list other technical data or information that was not included in the form above, but is required under the approved plan, which must be periodically submitted to the Division.

Please list attachments:

Attachment 1: Cottonwood Sediment, Erosion, and Vegetation Monitoring 2019 Attachment 2: Cottonwood Hydrology Monitoring Rpt
Note: The mine discharge data from the UPDES point source in Cottonwood Canyon ((UT0022896-001) can be found in DOGM's Water Data Base as well as on EPA's ECHO data base (<https://echo.epa.gov/tools/data-downloads/icis-npdes-dmr-and-limit-data-set>)

REVIEWER COMMENTS

Met Requirements

Did Not Meet Requirements

MAPS

Copies of mine maps, current and up-to-date, are to be provided to the Division as an attachment to this report in accordance with the requirements of R645-301-525.240. The map copies shall be made in accordance with 30 CFR 75.1200 as required by MSHA. Mine maps are not considered confidential.

| Map Name | Map Number | Included | | Confidential | |
|----------|------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | | Yes | No | Yes | No |
| NA | NA | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

REVIEWER COMMENTS Met Requirements Did Not Meet Requirements



Cottonwood/Wilberg Mine August 2019

2019 Annual Report – Cottonwood/Wilberg Mine

Attachments

An aerial photograph showing a dry, eroded gully. A path of gravel and sediment runs down the center of the gully. The surrounding slopes are covered in sparse vegetation, including cottonwoods and shrubs. In the distance, a winding road is visible in a valley. The text "Cottonwood Sediment, Erosion, and Vegetation Monitoring" is overlaid in yellow.

Cottonwood Sediment, Erosion, and Vegetation Monitoring

Attachment 1



LEFT FORK

As noted in the picture (taken 6/5/2019) there was spring runoff in the Left Fork of Grimes Wash. Flow measurements were recorded of the runoff on a monthly basis. Once the runoff reached the reclaimed riprapped channel, it flowed along the bottom of the channel. Because of this, the Stream Gage (vertical white pipe in center of channel) did not pick up any flow for sampling.

RIGHT FORK

During monitoring of the Right Fork in the 3rd quarter, there was evidence of ephemeral flow. However, the flow had by-passed the float switch and suction end of the Stream Gage and no samples were taken.

Note: Because of freezing conditions, the Stream Gages were taken out of service in early 4th quarter.

Cottonwood Sediment Monitoring

| 2019 | | | | | | | | | | | | | | | |
|------|-----------|--------------|---|---------|---------|--------|------|------|------|------------------|--------|------|--------|---|--------------------|
| Qtr | Date | Precip Total | Samplers | | | Gouges | | | | Transect Lines | | | | Notes | Data Files |
| | | | S-1 | S-2 | S-3 | TP-1 | TP-2 | TP-3 | TP-4 | TL-1 | | TL-2 | | | |
| | | | | | | | | | | Top | Bottom | Top | Bottom | | |
| 1st | | | Instrumentation not set up. Site covered with snow for most of the quarter. | | | | | | | | | | | | |
| 2nd | 6/6/2019 | | No Flow | No Flow | No Flow | 0 | 0 | 0 | 0 | See Note 1 below | | | | Runoff occurring in LF. Flow is below surface of riprap. No flow at bottom site | Precip Malfunction |
| 3rd | 9/30/2019 | | No Flow | No Flow | No Flow | 0.8 | 0.9 | 1 | 0.8 | See Note 1 below | | | | Evidence of flow in Right Fork. Did not record. Mannings units turned off. | Precip Malfunction |
| 4th | | | Instrumentation taken out of service because of freezing conditions. | | | | | | | | | | | | |
| 2020 | | | | | | | | | | | | | | | |
| Qtr | Date | Precip Total | Samplers | | | Gouges | | | | Transect Lines | | | | Notes | Data Files |
| | | | S-1 | S-2 | S-3 | TP-1 | TP-2 | TP-3 | TP-4 | TL-1 | | TL-2 | | | |
| | | | | | | | | | | Top | Bottom | Top | Bottom | | |
| 1st | | | | | | | | | | | | | | | |
| 2nd | | | | | | | | | | | | | | | |
| 3rd | | | | | | | | | | | | | | | |
| 4th | | | | | | | | | | | | | | | |
| 2021 | | | | | | | | | | | | | | | |
| Qtr | Date | Precip Total | Samplers | | | Gouges | | | | Transect Lines | | | | Notes | Data Files |
| | | | S-1 | S-2 | S-3 | TP-1 | TP-2 | TP-3 | TP-4 | TL-1 | | TL-2 | | | |
| | | | | | | | | | | Top | Bottom | Top | Bottom | | |
| 1st | | | | | | | | | | | | | | | |
| 2nd | | | | | | | | | | | | | | | |
| 3rd | | | | | | | | | | | | | | | |
| 4th | | | | | | | | | | | | | | | |

Note 1: No observed erosion along the transect of either TL-1 or TL-2 in quarters 2 and 3. Rain gages not installed to date. Since early in the monitor of the site after reclamation, mostly rock and bare ground. Estimate 50% rock, 45% bare ground, 5% vegetation.



Sites TP-1 thru TP-4 (6/6/2019): First official monitoring of the CTW mine site. Since installation of the staff gages the ground has settled. No noticeable sedimentation. Growth starting to emerge.

2nd Qtr. 2019



- **Sites TL-1 and TL-2 (6/6/2019):** Fairly good growth beginning along TL-1. TL-2 not showing good progress in terms of growth. No noticeable rilling noted.

2nd Qtr. 2019

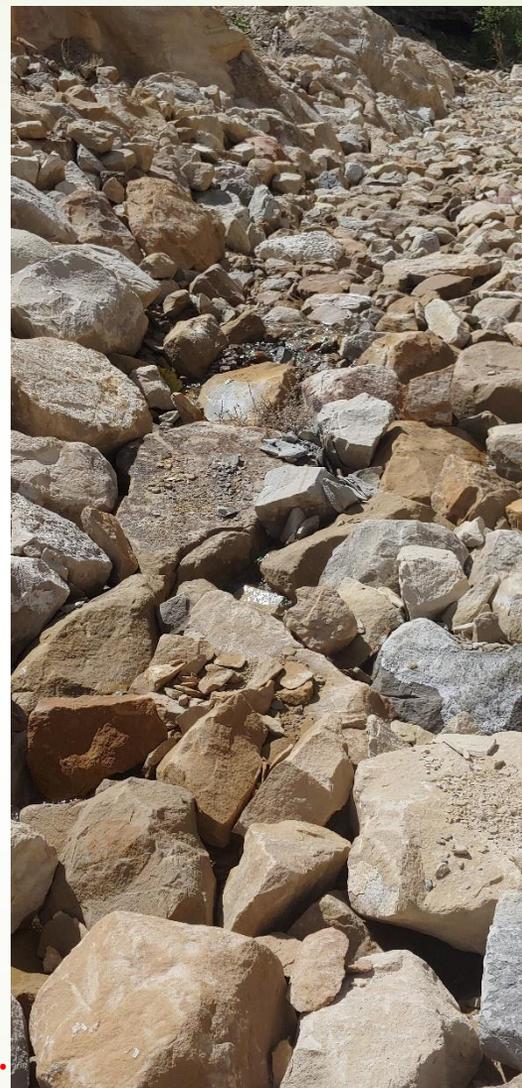


Areas to Watch

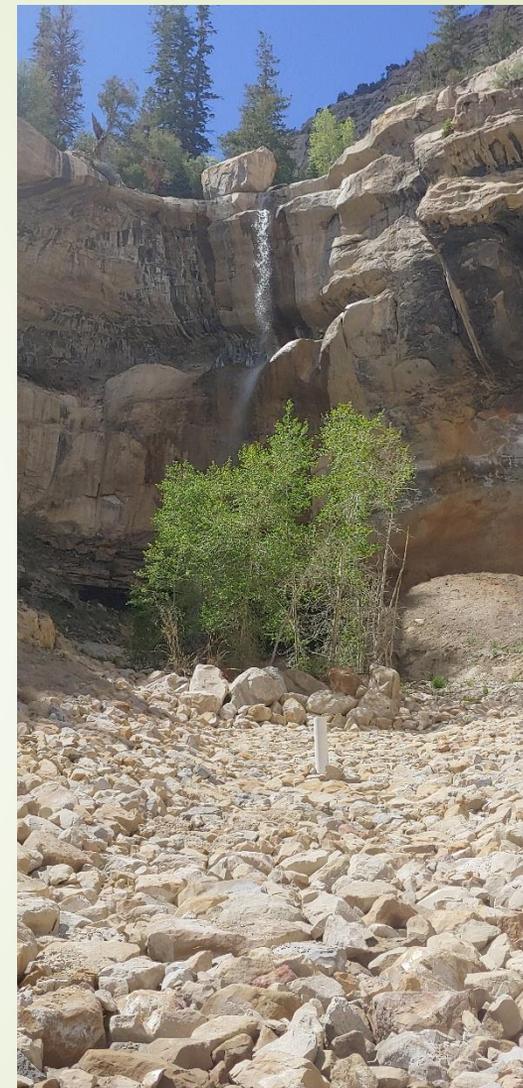
2nd Qtr. 2019



Right Fork channel at approx. Sta. 9+00. Sink area.



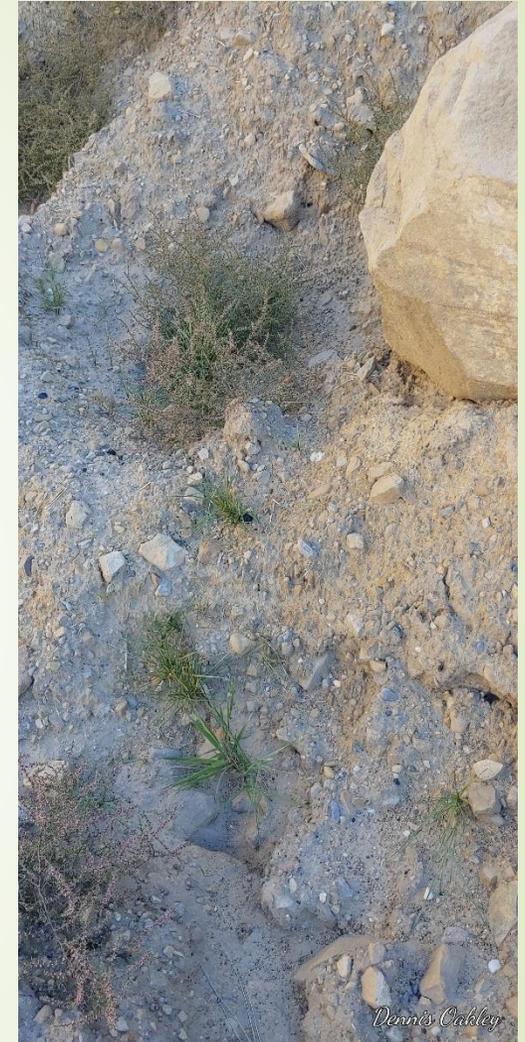
Left Fork channel flow disappears into ground near cliff outcrop area. Flow estimated at 400 – 500 gpm.





Sites TP-1 thru TP-4 (9/30/2019): Monitoring of individual pocks at the CTW mine site. Summer storms occurred that filled in the pocks with approximately 0.9 tenths of sediment. Growth of vegetation continuing. Many weedy species for first year of growth.

3rd Qtr. 2019



- **Sites TL-1 and TL-2 (9/30/2019):** Growth continuing along TL-1. TL-2 not showing good progress in terms of growth but grasses are emerging. No noticeable rilling noted. Many weedy species dominate the site.



Areas to Watch

3rd Qtr. 2019



Right Fork channel at approx. Sta. 9+00. Sink area. No change.



Left Fork channel flow disappears into ground near cliff outcrop area. Flow estimated at 20 – 30 gpm. No flow off-site.

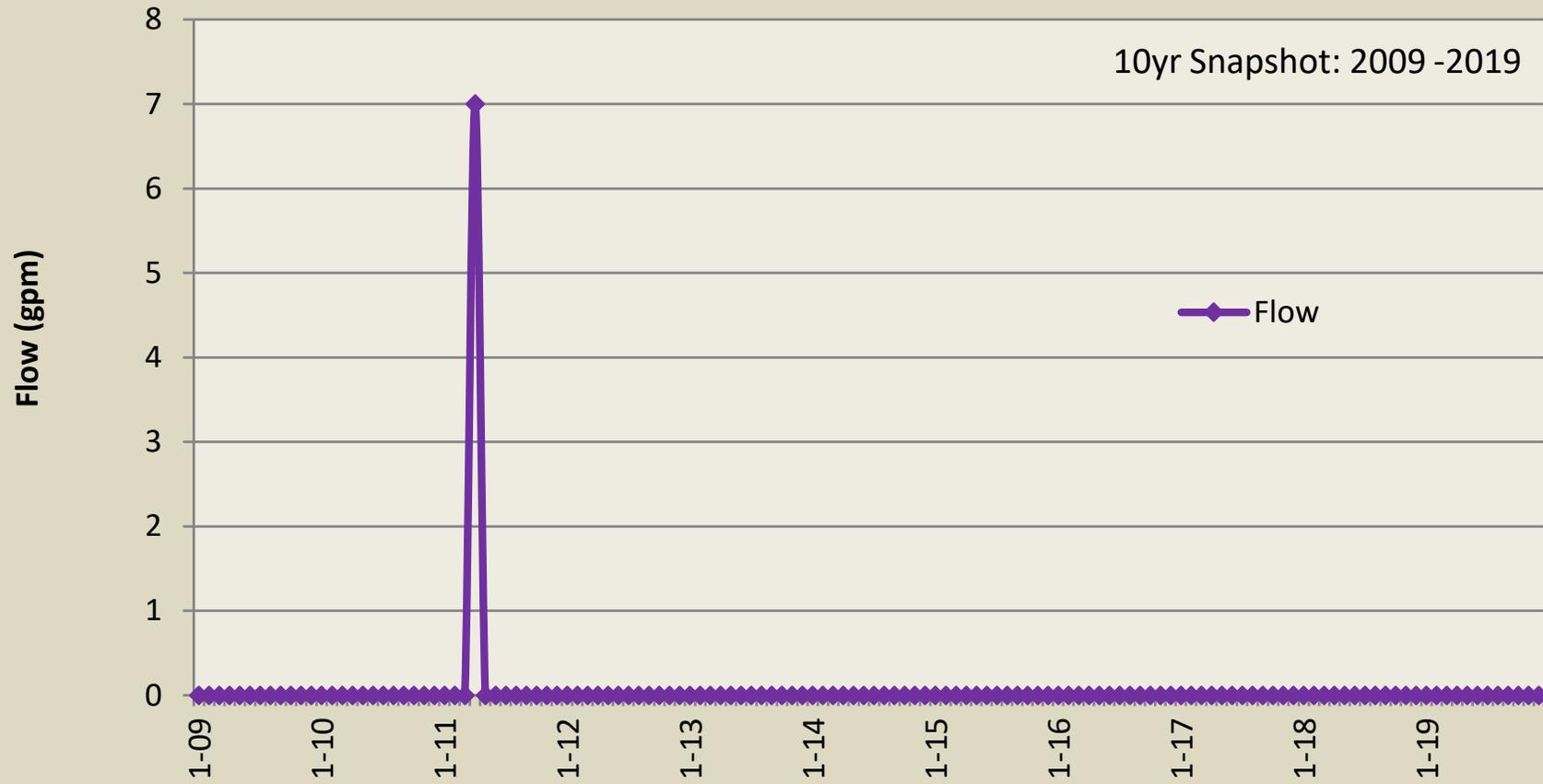
Attachment 2

Cottonwood Hydrology Monitoring Report



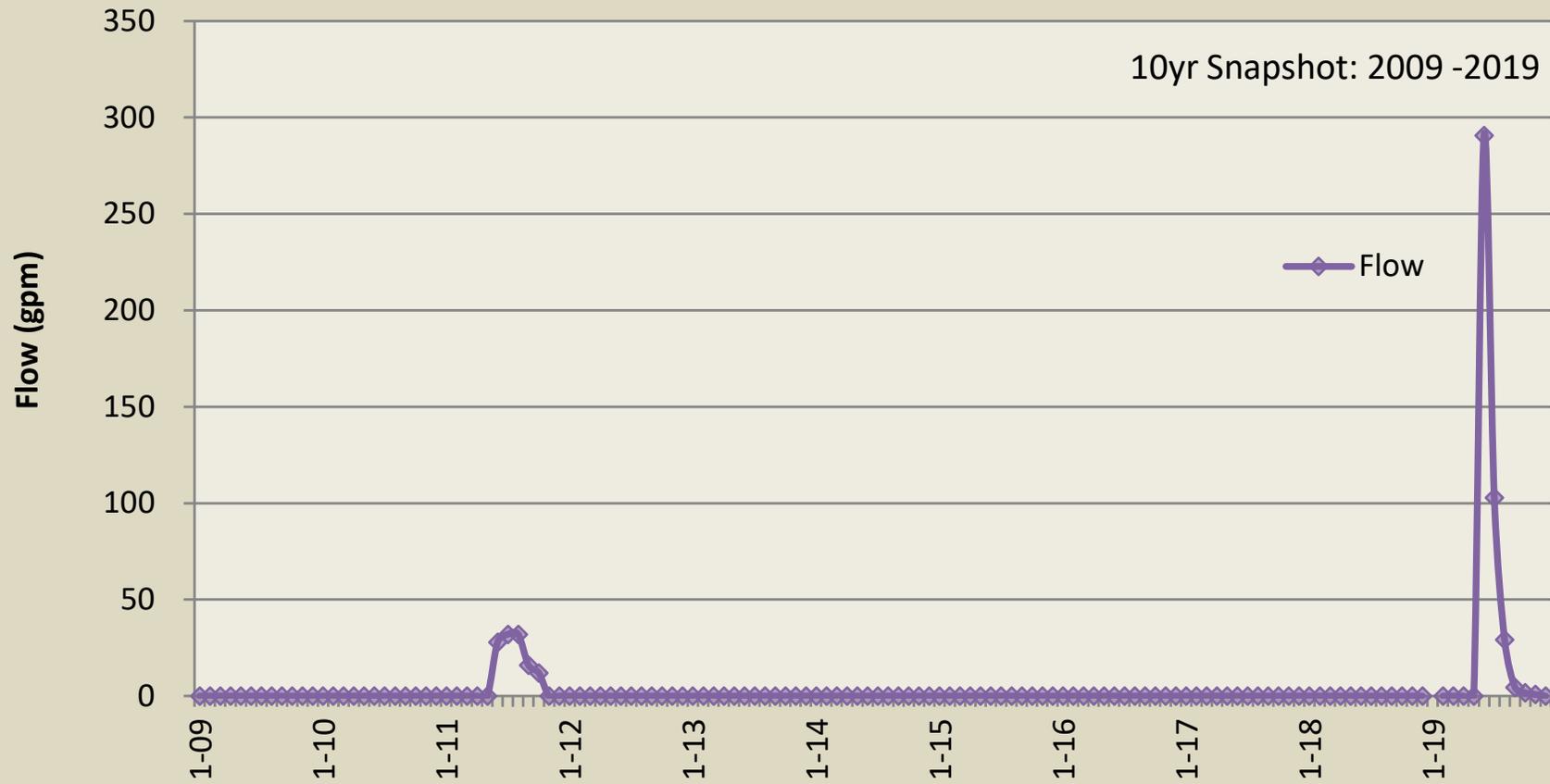
GRIMES WASH (GWR01) RIGHT FORK DISCHARGE RECESSION CURVE

10yr Snapshot: 2009 -2019



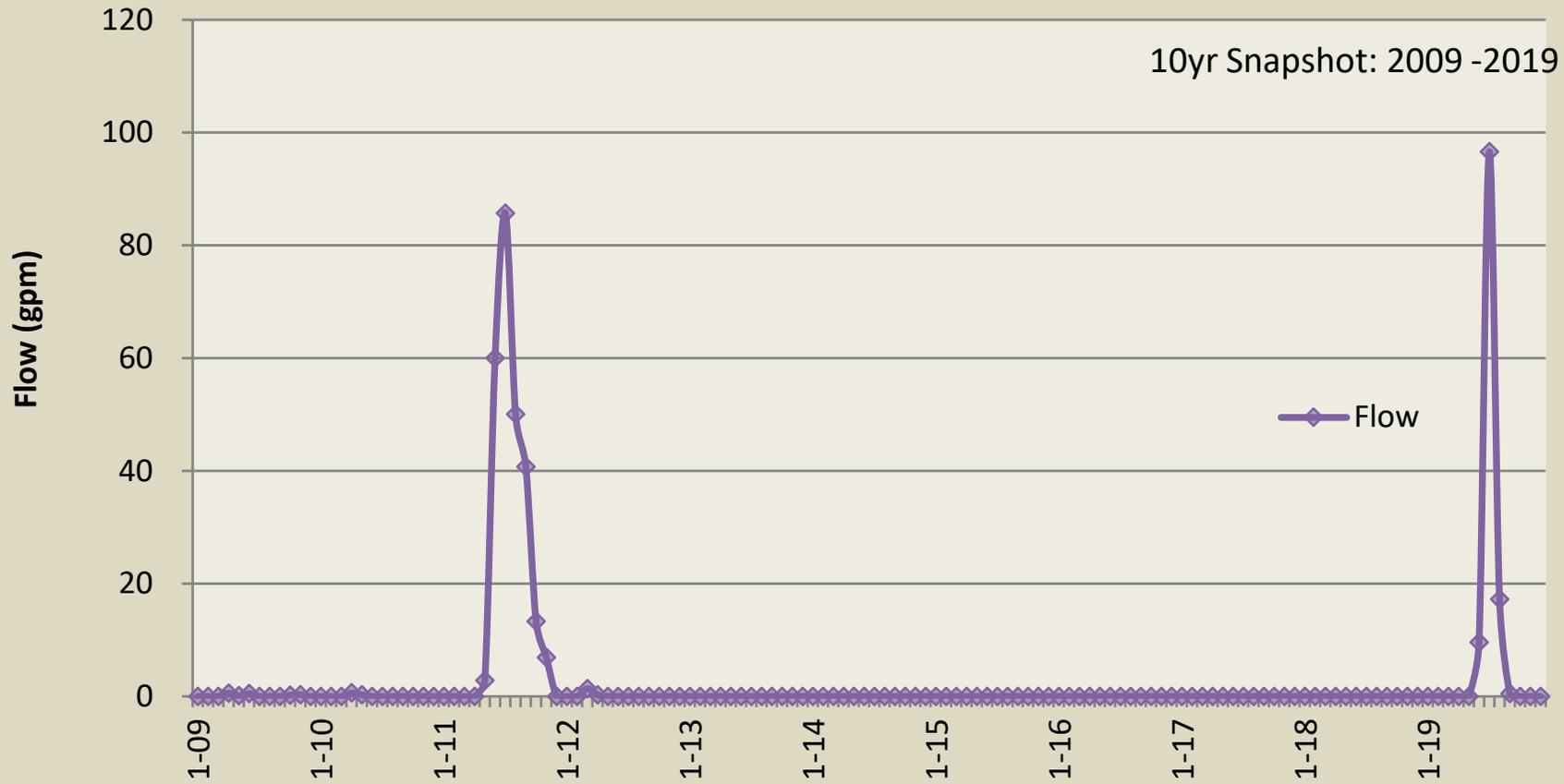
GRIMES WASH (GWR02) LEFT FORK DISCHARGE RECESSON CURVE

10yr Snapshot: 2009 -2019



GRIMES WASH (GWR03) BELOW MINE DISCHARGE RECESSON CURVE

10yr Snapshot: 2009 -2019



WILBERG/COTTONWOOD - DISCHARGE WATER QUALITY

TMA001*

| | 2019 | | | | Historical - (2001-2018) | | | |
|--------------------------------|---------------------------|------------|-------------|------------------------|---------------------------------|------------|-------------|------------------------|
| | Min | Max | Mean | No. of Analysis | Min | Max | Mean | No. of Analysis |
| <i>Acidity**</i> | | | | | 6 | 6 | 6.00 | 1 |
| <i>Chloride**</i> | 13 | 16 | 14.75 | 12 | 0 | 41 | 15.66 | 209 |
| <i>Conductivity (umhos/cm)</i> | 1323 | 1506 | 1417.25 | 12 | 913 | 1436 | 1145.44 | 209 |
| <i>Iron - Total**</i> | 0 | 0.09 | 0.01 | 12 | 0 | 0.4 | 0.02 | 135 |
| <i>Oil & Grease</i> | No sheen detected in 2019 | | | | No sheen detected historically | | | |
| <i>pH (units)</i> | 7.22 | 7.44 | 7.31 | 12 | 6.2 | 8.08 | 7.38 | 208 |
| <i>Sulfate**</i> | 395 | 453 | 427.50 | 12 | 141 | 396 | 251.01 | 209 |
| <i>TDS**</i> | 971 | 1088 | 1039.83 | 12 | 667 | 988 | 752.65 | 209 |
| <i>TSS**</i> | 0 | 6 | 0.50 | 12 | 0 | 14 | 1.15 | 131 |

* Discharge Re-located From Grimes Wash to TMA July 2001

** In mg/L unless otherwise noted.