



# SAN ANTONIO WATER COMPANY

## BOARD OF DIRECTORS MEETING

Tuesday, June 18, 2019

5:00 p.m.

In the Upland City Hall Council Chambers

- Call to Order
- Salute to the Flag

1. Recognitions and Presentations:

2. Additions-Deletions to the Agenda:

3. Shareholder-Public Testimony:

This is the time for any shareholder or member of the public to address the board members on any topic under the jurisdiction of the Company, which is on or not on the agenda. Please note, pursuant to the Brown Act the board is prohibited from taking actions on items not listed on the agenda. For any testimony, speakers are requested to keep their comments to no more than four (4) minutes, including the use of any visual aids, and to do so in a focused and orderly manner. Anyone wishing to speak is requested to voluntarily fill out and submit a speaker's form to the manager prior to speaking.

4. Consent Calendar Items:

All items listed hereunder are considered to be routine and there will be no separate discussion of these items unless members of the board request specific items to be removed from the consent calendar for separate action. All items listed or remaining will be voted upon in a single action.

- A. Approval of Board Meeting Minutes  
Regular Meeting Minutes of May 21, 2019.
- B. Planning, Resources, and Operations Committee (PROC) Meeting Minutes  
Meeting Minutes of March 26, 2019.
- C. Administration and Finance Committee (AFC) Meeting Minutes  
No meeting minutes to report.
- D. Financial Statement  
Income Statement and Balance Sheet for April 30, 2019 and year-to-date.
- E. Investment Activity Report  
Monthly Report of Investments Activity
- F. Water Production  
Bi-Monthly water production [Jan/Feb, Mar/Apr, May/June, July/Aug, Sept/Oct, Nov/Dec.]
- G. Prominent Issues Update  
Status summaries on certain on-going active issues.
- H. Projects and Operations Update  
Status summaries on projects and operations matters.
- I. Groundwater Level Patterns [Quarterly in January, April, July, and October]  
Tracking patterns of groundwater elevations relative to ground surface.
- J. Correspondence of Interest

5. Board Committee – Delegate Report:

A. PVPA Representative's Report

Verbal report on activities at the Pomona Valley Protective Association that have an impact on the Company.

B. Six Basins Representative Report

Verbal report on activities at the Six Basins Watermaster that have an impact on the Company.

C. Chino Basin Representative Report

Verbal report on activities at the Chino Basin Watermaster that have an impact on the Company.

D. Cucamonga Basin Representative Report

Verbal update by staff.

E. Administration and Finance Committee (AFC) Chairman's Report

No meeting to report.

F. Planning, Resources, and Operations Committee (PROC) Chairman's Report

Report on meeting held May 28, 2019.

G. Office Feasibility Study Ad Hoc Committee

Report on meeting held June 12, 2019.

6. General Manager's Report on Activities

A. Nitrate Study

Discuss possible action regarding final report

7. Closed Session: None

8. Director's Comments and Future Agenda Items:

Adjournment:

*The next regular Board Meeting will be held on Tuesday, July 16, 2019 at 5:00 p.m.*

NOTE: All agenda report items and back-up materials are available for review and/or acquisition at the Company Office (139 No. Euclid Avenue, Upland, CA.) during regular office hours, Monday through Thursday [7:00 am – 11:30 am & 12:30 pm – 5:00 pm] and alternating Fridays [7:00 am – 11:30 am & 12:30 pm – 4:00 pm]. The agenda is also available for review and copying at the Upland Public Library located at 450 N. Euclid Avenue.

POSTING STATEMENT: On June 14, 2019 a true and correct copy of this agenda was posted at the entry of the Company Office (139 No. Euclid Avenue), on the public bulletin board at 450 No. Euclid Avenue (Upland Public Library) and on the Company Website.

**SAN ANTONIO WATER COMPANY**  
**MINUTES OF THE SAN ANTONIO WATER COMPANY**  
**Tuesday, May 21, 2019**

An open meeting of the Board of Directors of the San Antonio Water Company (SAWCo) was called to order at 5:02 p.m. on the above date at the Upland City Hall Council Chambers, 460 North Euclid Avenue, Upland, California. Directors present were Tom Thomas, Jose Sanchez, Bob Cable, Gino Filippi, Martha Goss, and Rudy Zuniga. Also in attendance were SAWCo's General Manager Brian Lee, Assistant General Manager Teri Layton, and Senior Administrative Specialist Kelly Mitchell. Director Thomas presided.

- Salute to the Flag led by Director Goss
- 1. Recognitions and Presentations: Interim City of Upland Manager Rosemary Hoerning was recognized in attendance.
- 2. Additions-Deletions to the Agenda: None.
- 3. Shareholder-Public Testimony: None.
- 4. Consent Calendar Items:
  - A. Approval of Board Meeting Minutes  
Regular Meeting Minutes of April 16 2019.
  - B. Approval of Organizational Meeting Minutes  
Organizational Meeting Minutes of April 9, 2019.
  - C. Planning, Resources and Operations Committee (PROC) Meeting Minutes  
No meeting minutes to report.
  - D. Administration and Finance committee (AFC) Meeting Minutes  
Meeting minutes of February 26, 2019.
  - E. Financial Statement  
Income Statement and Balance Sheet for March 31, 2019 and year-to-date.
  - F. Investment Activity Report  
Monthly Report of Investments Activity
  - G. Water Production  
Bi-Monthly water production [Jan/Feb, Mar/Apr, May/June, July/Aug, Sept/Oct, Nov/Dec]
  - H. Prominent Issues Update  
Status summaries on certain on-going active issues.
  - I. Projects and Operations Update  
Status summaries on projects and operations matters.
  - J. Groundwater Level patterns [Quarterly in January, April, July, and October]  
Tracking patterns of groundwater elevations relative to ground surface.
  - K. Correspondence of Interest

Director Sanchez moved and Director Zuniga seconded to approve the Consent Calendar Items as presented. Motion carried.

- 5. Board Committee – Delegate Report:
  - A. **Pomona Valley Protective Association (PVPA) Representative's Report** – Director Thomas reported on the May PVPA meeting. Water continues to be spread in the basin as rainfall reaches nearly 40 inches since the beginning of the year.

Discussion continued regarding the National Recreation Area. Congresswoman Judy Chu is proposing extending the National Recreation Area to below the San Antonio Dam where some houses are located. There is concern that government appointed committees would then be making land use decisions which could prevent new wells from being dug and water from being spread.

Claremont Councilmember Jennifer Stark announced at the Six Basins Watermaster Meeting the possibility of renaming the Thompson Creek Spreading Grounds in honor of the efforts of Claremont resident Marilee K. Scaff who recently passed away. The PVPA voted approval of renaming the spreading grounds as the Marilee K. Scaff Thompson Creek Spreading Grounds.

An extension of the land use agreement with the Harvey Mudd Colleges to continue using the bee study facility is in the works.

**B. Six Basins Representative Report** – Mr. Lee reported that the Six Basins Board approved a reconnaissance level recharge study in collaboration with the MS4 (Municipal Separate Storm Sewer System) group. The study will identify appropriate sites for the required storm water recharge. In exchange, the cities will receive funding to build facilities at those locations.

**C. Chino Basin Representative Report** – Ms. Layton reported Watermaster is in the process of revising the past Assessment Packages. SAWCo staff has been reviewing the desalter replenishment obligation and asking Watermaster to take out of their storage on a year to year basis to avoid storage losses.

Staff attended a Chino Basin sponsored event on water quality on May 2<sup>nd</sup>. We heard about a variety of topics on contaminants of emergency concern including PFAS. PFAS are a group of man-made chemicals that include PFOA and PFOS. PFAS have been manufactured and used in a variety of industries around the globe, including in the United States since the 1940s. There is evidence PFAS can cause adverse health effects.

Certain PFAS chemicals are no longer manufactured in the US but are still produced internationally. PFAS are found in a wide range of consumer products that people use daily such as cookware, pizza boxes and stain repellants.

Because SAWCo has wells near a landfill (15<sup>th</sup> & Campus), we have been noticed to sample our Cucamonga Basin wells #2, 3, 24, & 22.

SAWCo is not required to sample in Chino Basin. The parties in Chino Basin that have to sample want to comply as necessary and share the information with Chino Basin Watermaster. Watermaster has asked the parties to consider Watermaster sampling for the basin. The parties desire to work together and share information with Watermaster but wish to do their own sampling.

Staff attended the Optimum Basin Management Program (OBMP) Update Listening Session #4 and participated in the process. The OBMP was last completed in 1999.

The Watermaster Budget 2019-2020 was approved by all of the Pools and will go to the Board for approval. Wildermuth Environmental, Inc. (WEI) is the engineering firm for Watermaster. Their contract will go to the Board for a 5 year renewal.

Director Thomas inquired when SAWCo would need to submit payment or authorize a transfer of water from storage for their replenishment obligation. Ms. Layton responded the method for calculating the replenishment obligation has been agreed upon. SAWCo has met their obligation for the 2013-2014 assessment year and is working on meeting their obligation for the 2015-2016 assessment year.

**D. Cucamonga Basin Representative Report** – Ms. Layton reported no meeting was held in May. The next meeting is scheduled for June 4<sup>th</sup> at 1:30 p.m.

WEI provided the Sustainable Groundwater Management Act report for Cucamonga Basin. A conference call with WEI was held to discuss the 13,000 acre feet change in storage amount.

**E. Administration and Finance Committee (AFC) Chairman's Report** – No report given.

**F. Planning, Resources, and Operations Committee (PROC) Chairman's Report** – No meeting to report.

**G. Office Feasibility Study Ad Hoc Committee** – No meeting to report.

6. General Manager's Report on Activities:

**A. Authorized Signer on Account** – Director Thomas stated there have been some changes on the Board of Directors that begets a change in the signers of record with certain entities.

Mr. Lee recommended the Board authorize Secretary/CFO Jose R. Sanchez to add and remove names from Citizen's Business Bank Accounts.

Director Cable moved and Director Filippi seconded to authorize Secretary/CFO Jose R. Sanchez to add and remove names from Citizen's Business Bank Accounts. Motion carried.

**B. Article X of Company Bylaws; Right to Service, Classes of Service, Tolls or Charges, and Basic and Extended Areas** – Mr. Lee stated that Calmat's Representative Bob Bowcock was notified of that the agenda item would be presented at the meeting.

Staff recommended taking no action until such time that the shareholder complies with the Bylaws of the Company.

Director Thomas commented the AFC believed they had found a way to provide the water to the shareholder in compliance with the Bylaws. Looking further into the details of the proposed option revealed it was not feasible.

**C. Time Extension for Benson Street Escrow** – Mr. Lee advised that the City of Upland State Revolving Fund (SRF) loan for reservoir construction continues to be delayed. The City has requested a 60-day extension to the current May 31, 2019 close of escrow. The newly proposed close of escrow is July 29, 2019. Additionally, the presented amendment allows the Board President and General Manager to approve a onetime 60-day extension beyond July 29, 2019 without returning to the Board for approval.

Mr. Lee recommended the Board authorize the Board President to execute the presented amendment to purchase contract.

Director Cable moved and Director Goss seconded to approve the authorizing the Board President to execute the presented amendment to purchase contract. Motion carried.

7. Closed Session: The Directors, Mr. Lee, and Ms. Layton recessed to close session with legal counsel Tom McPeters present via telephone pursuant to Government Code Sections 54956.9(c) and 54956.9(b) at 5:19 p.m. The Directors, Mr. Lee, and Ms. Layton reconvened in open session at 5:44 p.m. with no action taken.

8. Director's Comments and Future Agenda Items:

Director Goss thanked staff for the tour of the facilities they provided new Board members the previous day. Director Zuniga also expressed appreciation for the tour and knowledge shared by staff.

Director Thomas reiterated the Sister City Mildura, Australia 50 year celebration is taking place the last week of the month. He, his wife, and several other Upland residents will be attending the celebration.

Adjournment: Seeing no further business, the meeting was adjourned at 5:48 p.m.

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Assistant Secretary  
Brian Lee



MINUTES OF THE SAN ANTONIO WATER COMPANY  
 PLANNING, RESOURCES, and OPERATIONS COMMITTEE  
 March 26, 2019

An open meeting of the Planning, Resources, and Operations Committee (PROC) of the San Antonio Water Company (SAWCo) was called to order at 3:00 p.m. on the above date at the company office located at 139 N. Euclid Avenue, Upland, California. Committee members present were Gino Filippi and Tom Thomas. Also in attendance were Bob Bowcock representing CalMat Co. and SAWCo's General Manager Brian Lee, Assistant General Manager Teri Layton, and Senior Administrative Specialist Kelly Mitchell. Mr. Thomas presided.

1. Recognitions and Presentations – None.
2. Additions-Deletions to the Agenda – None.
3. Public Comments – None.
4. Approval of Committee Meeting Minutes:
  - A. ***Regular Committee Minutes of November 27, 2018*** – Typographical error corrections to information on page 3 of the minutes were noted. Mr. Filippi moved and Mr. Thomas seconded to approve the meeting minutes of November 27, 2018 as corrected. Motion carried.
5. Planning and Operational Issues:
  - A. ***Article X of Company Bylaws; Right to Service, Classes of Service, Tolls or Charges and Basic and Extended Area*** – Mr. Lee brought to the Committee's attention to Article X of the Company Bylaws which covers the right to service, classes of service and tolls or charges, right-of-way for distributing system, and the basic area and extended area. He advised the Committee that he clarified with legal counsel how this article was meant to be interpreted. He then reviewed each category covered under Article X with the Committee.

Mr. Lee explained the Bylaws state that all water shall be supplied at cost that is available for distribution. However, not all water sources are created equally and not all water that is held by SAWCo is available for distribution. Water is held back for a variety of reasons.

The three classes of service recognized in the Bylaws are domestic, miscellaneous, and municipal. Domestic and miscellaneous are similar in that the water is directly delivered to the shareholders through SAWCo's distribution system. The Municipal class of service provides for water delivered to shareholders but does not have verbiage that the water is provided via SAWCo's distribution system.

Tolls and charges incurred by shareholders may be different within and without each class where the cost of service is not uniform. The Bylaws assume shareholders have local use for the water and the means to receive the water from SAWCo's.

Mr. Thomas stated that SAWCo has sold unproduced water to shareholders in the past. Other than service agreements, the water sold by this means was done so outside of entitlement and was done at a negotiated price. Capital improvement projects over the course of 10 years were funded through the sale of stored water.

Mr. Bowcock stated SAWCo is a company of shareholders and each individual share represents a share in the water. He stated CalMat Co. stays current on their water availability charge which affords them the right to own the water shares, nothing else. He felt that paying the Tier 1 rate was subsidizing the domestic system and the City of Upland's shareholdings. He felt management makes a decision to store water based on good management practice but it does not release his interest in that accumulated share. He stated SAWCo has melded assets and charges a published melded rate and to do something different, he thinks, runs counter intuitive of that process.

Mr. Lee informed all present that when proposing annual water entitlements SAWCo considers groundwater production rights and canyon water but does not factor in storage water. The entitlements are based on water that is available assuming that the water is going to be put to use immediately.

Mr. Thomas stated that according to the Bylaws, miscellaneous shareholders do not have right to the water unless they can receive it directly from SAWCo's delivery system. Mr. Bowcock disagreed with Mr. Thomas' statement.

Mr. Thomas felt that to be willing to approve something it would have to be negotiated and because of the replenishment value of the water and other obligations SAWCo has in the Chino Basin the price should be something higher than the commodity rate. He stated the Board wanted to do what is fair and reasonable. In taking a closer look at the Bylaws SAWCo is trying to adhere to them and alter them if necessary. However, it did not appear this would be a case to warrant altering them. He reiterated that past practice has been to negotiate the price for the sale of stored water in Chino Basin.

Mr. Bowcock stated he cannot bring a negotiated rate to his employer because it is different from the published rate and he cannot justify the difference in pricing.

Mr. Lee stated he felt exceptions to the Bylaws weaken the Bylaws.

There was consensus on the Committee to have the General Manager take the information discussed in the meeting back to legal counsel and then bring it to the Board for possible action.

**B. *Development Will Serve Letters*** – Mr. Lee brought to the Committee's attention the San Bernardino County's request for proof of water service for a home in the San Antonio Heights currently going through a remodel. He felt it in the best interest of the Company and shareholders to revert back to requiring one share of water stock for a one acre parcel, one-half share of water stock for a half acre parcel and so forth, with a one-half share being the minimum required.



Mr. Thomas described the current process shareholders are required to take in order to receive a will serve letter to submit to the San Bernardino County.

There was consensus on the Committee to have staff issue will serve letters based upon the size of the parcel the building is being built on with a minimum of ½ share of water stock required. The item will not be brought to the full Board.

6. Planning and Operational Update -

**A. Project Status Report** –

- **Holly Drive Reservoir Phase I** – The final environmental paperwork was recently received and the Notice to Proceed is expected shortly.
- **Reservoir 7** – Reroofing – Staff is currently working on the Notice to Proceed for this project.

7. Basin Issues and Updates

- **San Antonio Canyon Watershed** – A committee meeting is scheduled for the following week. Mr. Lee expects to start outreach to the communities in this area to convey the importance of the health of the watershed.
- **Chino Basin** – Nothing new to report.
- **Six Basins** – The Board meeting is scheduled for the following day where they will be approving the Six Basins Annual Report.
- **Cucamonga Basin** – A meeting with Cucamonga Valley Water District, West End Consolidated Water Company, and SAWCo to discuss modernizing the judgment is scheduled for April 2<sup>nd</sup>. Staff is building relationships and taking in everyone’s comments on updating the judgment.

8. Closed session: – None.

9. Committee’s Comments and Future Agenda Items: None.

Adjournment: – Mr. Filippi moved to adjourn the meeting at 3:50 p.m. Motion carried.

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Assistant Secretary  
Brian Lee





San Antonio Water Company, CA

# Income Statement

## Group Summary

For Fiscal: 2019 Period Ending: 04/30/2019

IncomeStatement	Original Total Budget	Current Total Budget	MTD Activity	YTD Activity	Budget Remaining
<b>Category: 4 - Income</b>					
<b>SubCategory: 40 - Shareholder Revenue</b>					
1185 - Domestic Water Income (Base)	340,000.00	340,000.00	28,152.91	45,967.55	294,032.45
1215 - Domestic Water Income (Supplemental)	246,000.00	246,000.00	21,063.57	31,837.07	214,162.93
1220 - Domestic Water Income (Tier 3)	206,000.00	206,000.00	20,985.66	39,925.22	166,074.78
1230 - Domestic Water Income (Readi/Chrg)	200,000.00	200,000.00	33,316.92	66,612.25	133,387.75
1235 - Domestic Water Availability Charge (WAC)	60,000.00	60,000.00	9,981.87	19,987.67	40,012.33
1245 - Municipal Water Income (Base)	2,500,000.00	2,500,000.00	296,325.64	697,706.04	1,802,293.96
1268 - Municipal Water Income (Readi/Chrg)	80,000.00	80,000.00	6,900.00	26,850.00	53,150.00
1274 - Misc Water Income (Base)	189,000.00	189,000.00	15,867.30	33,756.22	155,243.78
1275 - Misc Water Income (Supplemental)	174,000.00	174,000.00	13,542.35	25,938.64	148,061.36
1276 - Munnicipal Water Availability Charge (WAC)	477,000.00	477,000.00	39,712.00	158,846.00	318,154.00
1280 - Misc Water Income (Tier 3)	15,000.00	15,000.00	4,667.88	4,667.88	10,332.12
1288 - Misc Water Income (Readi/Chrg)	23,000.00	23,000.00	1,900.00	7,480.00	15,520.00
1290 - Misc Water Availability Charge (WAC)	23,000.00	23,000.00	1,922.00	7,688.00	15,312.00
1295 - Dormant Water Availability Charge (WAC)	54,000.00	54,000.00	8,905.80	17,779.86	36,220.14
1400 - Stock Transfer	5,000.00	5,000.00	270.00	840.00	4,160.00
1410 - Late/Re-establishment Fee	5,000.00	5,000.00	830.00	1,950.00	3,050.00
1420 - Return Check Fee	0.00	0.00	0.00	50.00	-50.00
1430 - Stock Certificate Storage and Handling Fee	0.00	0.00	20.00	40.00	-40.00
<b>SubCategory: 40 - Shareholder Revenue Total:</b>	<b>4,597,000.00</b>	<b>4,597,000.00</b>	<b>504,363.90</b>	<b>1,187,922.40</b>	<b>3,409,077.60</b>
<b>SubCategory: 42 - Non-Shareholder Revenue</b>					
1725 - Misc. Income	1,000.00	1,000.00	1,052.32	1,499.66	-499.66
1728 - Plans & Spec Fee	2,000.00	2,000.00	0.00	0.00	2,000.00
1750 - Service/Litigation Agreements	1,000.00	1,000.00	47.69	214.40	785.60
1753 - Ground Lease Income	52,000.00	52,000.00	2,040.00	20,021.52	31,978.48
1755 - Interest Earned	48,000.00	48,000.00	19,997.96	42,045.71	5,954.29
1785 - Gain on Sale of Asset	344,000.00	344,000.00	0.00	0.00	344,000.00
1875 - Overhead Income	0.00	0.00	108.50	108.50	-108.50
<b>SubCategory: 42 - Non-Shareholder Revenue Total:</b>	<b>448,000.00</b>	<b>448,000.00</b>	<b>23,246.47</b>	<b>63,889.79</b>	<b>384,110.21</b>
<b>Category: 4 - Income Total:</b>	<b>5,045,000.00</b>	<b>5,045,000.00</b>	<b>527,610.37</b>	<b>1,251,812.19</b>	<b>3,793,187.81</b>
<b>Category: 5 - O &amp; M Expense</b>					
<b>SubCategory: 50 - Operating Facilities</b>					
2175 - Facility Related Field Labor	228,000.00	228,000.00	15,933.77	66,145.96	161,854.04
2235 - Repairs to Facilities and Equipment	393,000.00	393,000.00	2,184.25	-220,221.44	613,221.44
2265 - Power-Gas & Electric (utilities)	725,000.00	725,000.00	41,301.47	120,346.78	604,653.22
<b>SubCategory: 50 - Operating Facilities Total:</b>	<b>1,346,000.00</b>	<b>1,346,000.00</b>	<b>59,419.49</b>	<b>-33,728.70</b>	<b>1,379,728.70</b>
<b>SubCategory: 51 - Operating Activities</b>					
2475 - Customer Service	85,000.00	85,000.00	16,454.72	28,905.78	56,094.22
2498 - Conservation	45,000.00	45,000.00	3,163.76	4,367.39	40,632.61
<b>SubCategory: 51 - Operating Activities Total:</b>	<b>130,000.00</b>	<b>130,000.00</b>	<b>19,618.48</b>	<b>33,273.17</b>	<b>96,726.83</b>
<b>SubCategory: 52 - Other Operating Expense</b>					
2205 - Non-Facility Related Labor	87,000.00	87,000.00	6,479.79	23,293.17	63,706.83
2210 - O & M - All Other	2,000.00	2,000.00	0.00	0.00	2,000.00
2295 - Supplies (Inventory & Tools Expense)	10,000.00	10,000.00	377.19	3,378.47	6,621.53
2565 - Depreciation/Amortization	822,000.00	822,000.00	76,202.17	301,575.09	520,424.91
2715 - Property Taxes	247,000.00	247,000.00	0.00	107,474.59	139,525.41
2805 - Water Resource Mgmt.	300,000.00	300,000.00	-3,093.27	20,463.72	279,536.28
<b>SubCategory: 52 - Other Operating Expense Total:</b>	<b>1,468,000.00</b>	<b>1,468,000.00</b>	<b>79,965.88</b>	<b>456,185.04</b>	<b>1,011,814.96</b>
<b>Category: 5 - O &amp; M Expense Total:</b>	<b>2,944,000.00</b>	<b>2,944,000.00</b>	<b>159,003.85</b>	<b>455,729.51</b>	<b>2,488,270.49</b>

**Income Statement**

**For Fiscal: 2019 Period Ending: 04/30/2019**

IncomeStatement	Original Total Budget	Current Total Budget	MTD Activity	YTD Activity	Budget Remaining
<b>Category: 6 - G &amp; A Expense</b>					
<b>SubCategory: 60 - Personnel</b>					
2115 - Administrative Services	223,000.00	223,000.00	24,347.56	88,598.61	134,401.39
2130 - Development/Water Svc. App.	2,000.00	2,000.00	0.00	131.62	1,868.38
2325 - Payroll Taxes	70,000.00	70,000.00	5,567.26	24,154.73	45,845.27
2355 - Worker's Compensation Insurance	18,000.00	18,000.00	0.00	1,702.00	16,298.00
2385 - Benefit Pay (Vac., sick, etc.)	143,000.00	143,000.00	8,852.46	46,598.35	96,401.65
2415 - Benefit Insurance (Pension,Life,Medical,Vision etc	223,000.00	223,000.00	17,252.47	74,464.94	148,535.06
2430 - Benefit Administrative Services	2,000.00	2,000.00	0.00	0.00	2,000.00
<b>SubCategory: 60 - Personnel Total:</b>	<b>681,000.00</b>	<b>681,000.00</b>	<b>56,019.75</b>	<b>235,650.25</b>	<b>445,349.75</b>
<b>SubCategory: 61 - Other</b>					
2445 - Office/IT Support	62,000.00	62,000.00	8,016.03	23,116.32	38,883.68
2505 - Directors Fees & Expense	35,000.00	35,000.00	3,460.47	9,492.97	25,507.03
2535 - Liability Insurance	32,000.00	32,000.00	28,891.00	28,891.00	3,109.00
2595 - Communication	92,000.00	92,000.00	2,772.57	26,407.13	65,592.87
2625 - Dues & Publications	4,000.00	4,000.00	0.00	1,886.95	2,113.05
2655 - Outside Services	81,000.00	81,000.00	1,041.15	9,348.67	71,651.33
2745 - Income Tax Expense	8,000.00	8,000.00	0.00	9,900.00	-1,900.00
2775 - Accounting	59,000.00	59,000.00	5,139.19	46,330.73	12,669.27
2776 - Legal	242,000.00	242,000.00	22,997.41	47,632.91	194,367.09
2790 - Human Resources Expense	39,000.00	39,000.00	2,760.23	11,791.82	27,208.18
2865 - All other	40,000.00	40,000.00	5,844.07	13,284.77	26,715.23
<b>SubCategory: 61 - Other Total:</b>	<b>694,000.00</b>	<b>694,000.00</b>	<b>80,922.12</b>	<b>228,083.27</b>	<b>465,916.73</b>
<b>Category: 6 - G &amp; A Expense Total:</b>	<b>1,375,000.00</b>	<b>1,375,000.00</b>	<b>136,941.87</b>	<b>463,733.52</b>	<b>911,266.48</b>
<b>Total Surplus (Deficit):</b>	<b>726,000.00</b>	<b>726,000.00</b>	<b>231,664.65</b>	<b>332,349.16</b>	

**Fund Summary**

Fund	Original Total Budget	Current Total Budget	MTD Activity	YTD Activity	Budget Remaining
10 - 10	726,000.00	726,000.00	231,664.65	332,349.16	393,650.84
<b>Total Surplus (Deficit):</b>	<b>726,000.00</b>	<b>726,000.00</b>	<b>231,664.65</b>	<b>332,349.16</b>	





San Antonio Water Company, CA

Item 4D  
**Balance Sheet**  
 Account Summary  
 As Of 04/30/2019

Account	Name	Balance
<b>Fund: 10 - 10</b>		
<b>Assets</b>		
<b>BalSubCategory: 10 - Cash</b>		
<a href="#">10-00-00-10100-00000</a>	Petty Cash	250.00
<a href="#">10-00-00-10200-00000</a>	Checking Account	948,295.18
<a href="#">10-00-00-10300-00000</a>	Savings-Money Market	1,596,864.21
<a href="#">10-00-00-10400-00000</a>	Savings-CD Accounts	20,000.00
<a href="#">10-00-00-10415-00000</a>	D&O Checking Account	387,061.51
<a href="#">10-00-00-10438-00000</a>	Depre/Obsolescene Res (LAIF)	2,956,714.99
	<b>Total BalSubCategory 10 - Cash:</b>	<b>5,909,185.89</b>
<b>BalSubCategory: 11 - Accounts Receivable</b>		
<a href="#">10-00-00-11100-00000</a>	Accounts Receivable-Domestic	112,632.75
<a href="#">10-00-00-11200-00000</a>	Accounts Receivable-Municipal	342,937.64
<a href="#">10-00-00-11250-00000</a>	Accounts Receivable-Misc.	37,867.53
<a href="#">10-00-00-11260-00000</a>	Accounts Receivable - Dormant	8,229.80
<a href="#">10-00-00-11275-00000</a>	Contra Accounts Receivable - Unapplied Cre	-13,810.83
<a href="#">10-00-00-11300-00000</a>	Accounts Receivable-Other	331,062.30
	<b>Total BalSubCategory 11 - Accounts Receivable:</b>	<b>818,919.19</b>
<b>BalSubCategory: 12 - Inventory</b>		
<a href="#">10-00-00-12100-00000</a>	Inventories-Materials & Supply	87,012.30
	<b>Total BalSubCategory 12 - Inventory:</b>	<b>87,012.30</b>
<b>BalSubCategory: 13 - Prepaid</b>		
<a href="#">10-00-00-13100-00000</a>	Prepaid Insurance	8,868.75
<a href="#">10-00-00-13105-00000</a>	PREPAID POSTAGE	369.00
	<b>Total BalSubCategory 13 - Prepaid:</b>	<b>9,237.75</b>
<b>BalSubCategory: 14 - Investments</b>		
<a href="#">10-00-00-14150-00000</a>	P.V.P.A. Investment	1.00
<a href="#">10-00-00-14151-00000</a>	457B Plan Investment	7,579.72
	<b>Total BalSubCategory 14 - Investments:</b>	<b>7,580.72</b>
<b>BalSubCategory: 15 - Property, Plant, &amp; Equipment</b>		
<a href="#">10-00-00-15100-00000</a>	Land & Water Rights	924,864.03
<a href="#">10-00-00-15110-1507J</a>	Work in Progress "Proj J"	41,133.01
<a href="#">10-00-00-15110-1601N</a>	Work in Progress	24,792.61
<a href="#">10-00-00-15110-1602U</a>	Work in Progress	183,982.95
<a href="#">10-00-00-15110-1701A</a>	Work in Progress	134,475.83
<a href="#">10-00-00-15110-1801B</a>	Work in Progress	345,995.62
<a href="#">10-00-00-15110-1806K</a>	Work In Progress	14,258.68
<a href="#">10-00-00-15110-1807P</a>	Work In Progress	26,503.84
<a href="#">10-00-00-15110-1808D</a>	Work In Progress	17,809.60
<a href="#">10-00-00-15110-1901</a>	Work In Progress	400.00
<a href="#">10-00-00-15150-00000</a>	Buildings & Site Improvements	1,746,624.52
<a href="#">10-00-00-15200-00000</a>	Wells-Shafts, Bldgs, & Equip	4,877,875.22
<a href="#">10-00-00-15250-00000</a>	Boosters-Bldgs & Equip	2,181,280.63
<a href="#">10-00-00-15300-00000</a>	Reservoirs	1,712,021.73
<a href="#">10-00-00-15350-00000</a>	Tunnels, Forebay, & Ponds	1,587,111.19
<a href="#">10-00-00-15400-00000</a>	Spreading Works-Cucamonga Wash	54,859.53
<a href="#">10-00-00-15410-00000</a>	Spreading Works-SanAntonio Wsh	50,235.18
<a href="#">10-00-00-15450-00000</a>	Pipelines	15,902,209.07
<a href="#">10-00-00-15500-00000</a>	Autos & Equipment	483,249.00
<a href="#">10-00-00-15550-00000</a>	Tools	76,492.47
<a href="#">10-00-00-15600-00000</a>	Telemetry System	482,714.06
<a href="#">10-00-00-15650-00000</a>	Office Equipment	497,985.32

**Balance Sheet**

As Of 04/30/2019

Account	Name	Balance
<a href="#">10-00-00-15990-00000</a>	Accumulated Depreciation	-12,130,855.17
<b>Total BalSubCategory 15 - Property, Plant, &amp; Equipment:</b>		<b>19,236,018.92</b>
<b>BalSubCategory: 16 - Other Assets</b>		
<a href="#">10-00-00-16100-00000</a>	Documents & Studies	867,778.67
<a href="#">10-00-00-16990-00000</a>	Accumulated Amortization	-593,553.95
<b>Total BalSubCategory 16 - Other Assets:</b>		<b>274,224.72</b>
<b>Total Assets:</b>		<b>26,342,179.49</b>
		<b><u>26,342,179.49</u></b>
<b>Liability</b>		
<b>BalSubCategory: 13 - Prepaid</b>		
<a href="#">10-00-00-20650-00000</a>	Deferred Revenue Deposit	6,432.00
<b>Total BalSubCategory 13 - Prepaid:</b>		<b>6,432.00</b>
<b>BalSubCategory: 20 - Short-term less than 1 year</b>		
<a href="#">10-00-00-20100-00000</a>	Trade Accounts Payable	64,960.37
<a href="#">10-00-00-20115-00000</a>	D&O Trade Accounts Payable	4,400.00
<a href="#">10-00-00-20261-00000</a>	Section 125 - Dental	0.07
<a href="#">10-00-00-20262-00000</a>	Section 125 - Vision	0.08
<a href="#">10-00-00-20263-00000</a>	Section 125 - Medical	0.05
<a href="#">10-00-00-20600-00000</a>	Water Hydrant Meter Deposit	850.00
<a href="#">10-00-GN-20820-00000</a>	Accrued Vacation Payable	20,404.60
<a href="#">10-00-OP-20820-00000</a>	Accrued Vacation Payable	24,818.57
<b>Total BalSubCategory 20 - Short-term less than 1 year:</b>		<b>115,433.74</b>
<b>BalSubCategory: 21 - Long-term more than 1 year</b>		
<a href="#">10-00-00-20152-00000</a>	457B Deferred Comp Liability	7,762.50
<a href="#">10-00-00-21500-00000</a>	Unclaimed Credits	399,206.54
<b>Total BalSubCategory 21 - Long-term more than 1 year:</b>		<b>406,969.04</b>
<b>Total Liability:</b>		<b>528,834.78</b>
<b>Equity</b>		
<b>BalSubCategory: 30 - Stockholder equity</b>		
<a href="#">10-00-00-30200-00000</a>	Contributed Capital - Ext. Fee	447,258.02
<a href="#">10-00-00-30210-00000</a>	Contr. Property, Plant & Equip	2,426,040.00
<a href="#">10-00-00-30300-00000</a>	Capital Account	1,500,000.00
<a href="#">10-00-00-30310-00000</a>	Unissued Capital Stock	-861,100.00
<a href="#">10-00-00-30400-00000</a>	Retained Earnings-Brd Designated	3,529,386.35
<a href="#">10-00-00-30410-00000</a>	Retained Earnings-Unrestricted	18,439,411.18
<b>Total BalSubCategory 30 - Stockholder equity:</b>		<b>25,480,995.55</b>
<b>Total Beginning Equity:</b>		<b>25,480,995.55</b>
Total Revenue		1,251,812.19
Total Expense		919,463.03
<b>Revenues Over/Under Expenses</b>		<b>332,349.16</b>
<b>Total Equity and Current Surplus (Deficit):</b>		<b>25,813,344.71</b>
<b>Total Liabilities, Equity and Current Surplus (Deficit):</b>		<b><u>26,342,179.49</u></b>



### Monthly Investment Activity Summary - Compiled from Banking Statements for Correlation with Monthly Financials

Institution	Type of Investment	Date of Maturity	Rate of Interest	Amount of Deposit	*Accumulated Yearly Service Fees	Accumulated Yearly Interest Earnings
			(A.P.Y.)	as of 04/30/2019	thru April	thru April
Citizens Business Bank (CBB)	*Checking	N/A	No Interest	948,295.18	-	N/A
Citizens Business Bank (CBB)	*D&O Checking	N/A	No Interest	387,061.51		N/A
Citizens Business Bank	Pref. Money Mrkt	N/A	0.25%	1,596,864.21		1,309.43
Local Agency Investment Fund	LAIF	N/A	1.66%	2,956,714.99		40,709.77
Golden State Business Bank	12 Month C.D.	April 15,2020	0.40%	20,000.00		26.51
<b>TOTAL:</b>				\$ 5,908,935.89		
<b>TOTAL IN CD'S:</b>				\$ 20,000.00		



**A. Water Supply for 2019**

- Annual entitlement for CY2019 is 12,000 AF
- Through May:
  - Cumulative yearly production was 7,920 AF
  - Cumulative yearly consumption was 3,883 AF
  - Cumulative yearly spread was 4,201 AF
  - Cumulative unaccounted water was (164 AF). We did not consume more than we produced. Staff is checking accuracy of production meters.

**Six Basins Production for 2019**

- Annual production right is 932 AF.
- Cumulative production through May was 406 AF.
- Production is sent to the WFA treatment facility to meet City of Ontario and MVWD entitlement.
- The Company has spread a total of 335 AF through May.

**Cucamonga Basin Production for 2019**

- Annual production right is 6,060 AF.
- Cumulative production through May was 1,812 AF.
- The Company has spread a total of 2,666 AF through May.

**Chino Basin Production for 2019**

- Annual production right is 1,232 AF.
- Cumulative production through May was 4.5 AF.
- The Company has spread a total of 1,200 AF through May.

**Surface Water (San Antonio Creek) flow for 2019**

Total flow through May was 5,697AF.

**San Antonio Tunnel flow for 2019**

Tunnel flow through May was 1,201AF.

**B. Company Stock**

No shares of water stock are moving from dormant to active this transfer period.

**C. Communication and Information Activities**

Staff is communicating on our new "Facebook" page with 176 friends liking our page. Communication is posted regularly. Staff currently merging the two Facebook pages.

**D. Administration Matters**

Meetings of Interest:

- On April 22 the GM meet with the West Valley Mosquito & Vector Control District to discuss midge fly control at basins currently being used for spreading by the Company.
- On April 28 the GM meet with representatives of the Ontario Museum of History regarding an upcoming exhibit they are preparing that highlights local water.

Company staff are working with the museum regarding SAWCo's strong local history.

E. Groundwater Basin Matters

Chino Basin

**Assessment Revisions due to Court Action -**

Watermaster is in the process of revising the past Assessment Packages. The revisions start at Production Year 2013/14 and Assessment Year 2014/15. This is the first year that desalter replenishment obligations are due. The parties have agreed on the accounting method and the court has ordered Watermaster to implement the method per the agreement. The safe yield was finalized and changed from 140k to 135k effective production year 2014/15 and Assessment Year 2015/16. These revised packages will be coming through the Pool process. Staff has been reviewing the desalter replenishment obligation and asking Watermaster to take out of our storage on year to year basis to avoid storage losses.

**Chino Basin Water Quality Colloquium – May 2, 2019**

Staff attended a Chino Basin sponsored event on water quality on May 2<sup>nd</sup>. We heard about a variety of topics on contaminants of emergency concern including PFAS. PFAS are a group of man-made chemicals that include PFOA and PFOS. PFAS have been manufactured and used in a variety of industries around the globe, including in the United States since the 1940s. There is evidence that exposure to PFAS can lead to adverse human health effects. The most consistent findings are increased cholesterol levels, low infant birth weights, effects on the immune system, cancer and thyroid hormone disruption. PFAS can be found in food packaging, commercial household products such as stain and water repellent fabrics, workplace including production facilities for chrome plating, electronics, drinking water & living organisms.

Certain PFAS chemicals are no longer manufactured in the US but are still produced internationally. PFAS are found in a wide range of consumer products that people use daily such as cookware, pizza boxes and stain repellants.

Because SAWCo has wells near a landfill (15<sup>th</sup> & Campus), we have been noticed to sample our Cucamonga Basin wells #2, 3, 24, & 22.

SAWCo is not required to sample in Chino Basin. The parties in Chino Basin that have to sample want to comply as necessary and share the information with Chino Basin Watermaster. Watermaster has asked the parties to consider Watermaster sampling for the basin. The parties desire to work together and share information with Watermaster but desire to do their own sampling.

**OBMP Update Listening Session #4**

Staff attended Listening #4 and participated in the process.

The OBMP – Optimum Basin Management Program was last done in 1999.

**Other Business**

The Watermaster Budget 2019/2020 was approved by all the Pools and Board.

Wildermuth Environmental is the engineering firm for Watermaster and their contract was renewed for 5 years.

**Six Basins**

Regular Board Meeting held on May 22, 2019. A conflicting schedule prevented the GM from attending. Operations Supervisor attended. There were no action items on the agenda.

**Cucamonga Basin**

The working group last met on June 4<sup>th</sup>.

The group is working on a simpler MOU labeled Terms of Reference. Meanwhile, parties are participating in the cost sharing of projects.

Judgment review continues and comments are being collected for further refinement.

Cucamonga Valley Water District (CVWD) has received Prop. 1 funding for a biological study. The State is wanting information from SAWCo's inactive Well#19. Staff has been providing the information that is available. Management is considering additional requests.

Next meeting is scheduled for July 2, 2019 at 1:30pm.

**F. Monitoring of Assembly Bills Affecting the Water Company**

- In his inaugural address and subsequent budget proposal, Governor Newsom expressed interest in a State wide 'water tax' that would fund infrastructure in impoverished areas impacted by contaminated water sources or a lack of water sources. As currently understood, the State proposes to enforce a monthly 'per meter' tax on each water utility. How that tax is passed on to actual customers has not been addressed, specifically regarding Prop 218. There is opposition to the proposal, and nothing has been finalized yet. Staff assumes this concept is similar to SB845 (Monning) titled, "The Safe and Affordable Drinking Water Fund" that died in committee last year.

On May 15, 2019 the State Senate Budget Subcommittee on Resources, Environmental Protection, Energy and Transportation voted to reject the Governor's proposed water tax. The subcommittee voted to adopt \$150M General Fund appropriations instead. Staff will continue to watch and update as this concept progresses.

**1. AB 1668 and SB 606 - "Statewide Water Saving Mandates"**

AB1668 was approved by the Governor on May 31, 2018 – Establishes an immediate Statewide standard of 55 gallons per capita daily for indoor residential water use, eventually reducing to 50 gpcd by January 1, 2030. By October 1, 2021

the State Water Resources Control Board will adopt long-term standards for the efficient use of water.

SB606 was approved by the Governor on May 31, 2018. – Requires the Company to calculate an 'urban water use objective' no later than November 1, 2023 and every November thereafter. An urban water use objective is an estimate of aggregate efficient water use for the previous year based on adopted water use efficiency standards and local service area characteristics for that year. Additionally, the Company's Urban Water Management Plan will be required to incorporate a water shortage contingency plan.

Staff continues to assess the impact of these two approved Bills and will update as new information becomes available.

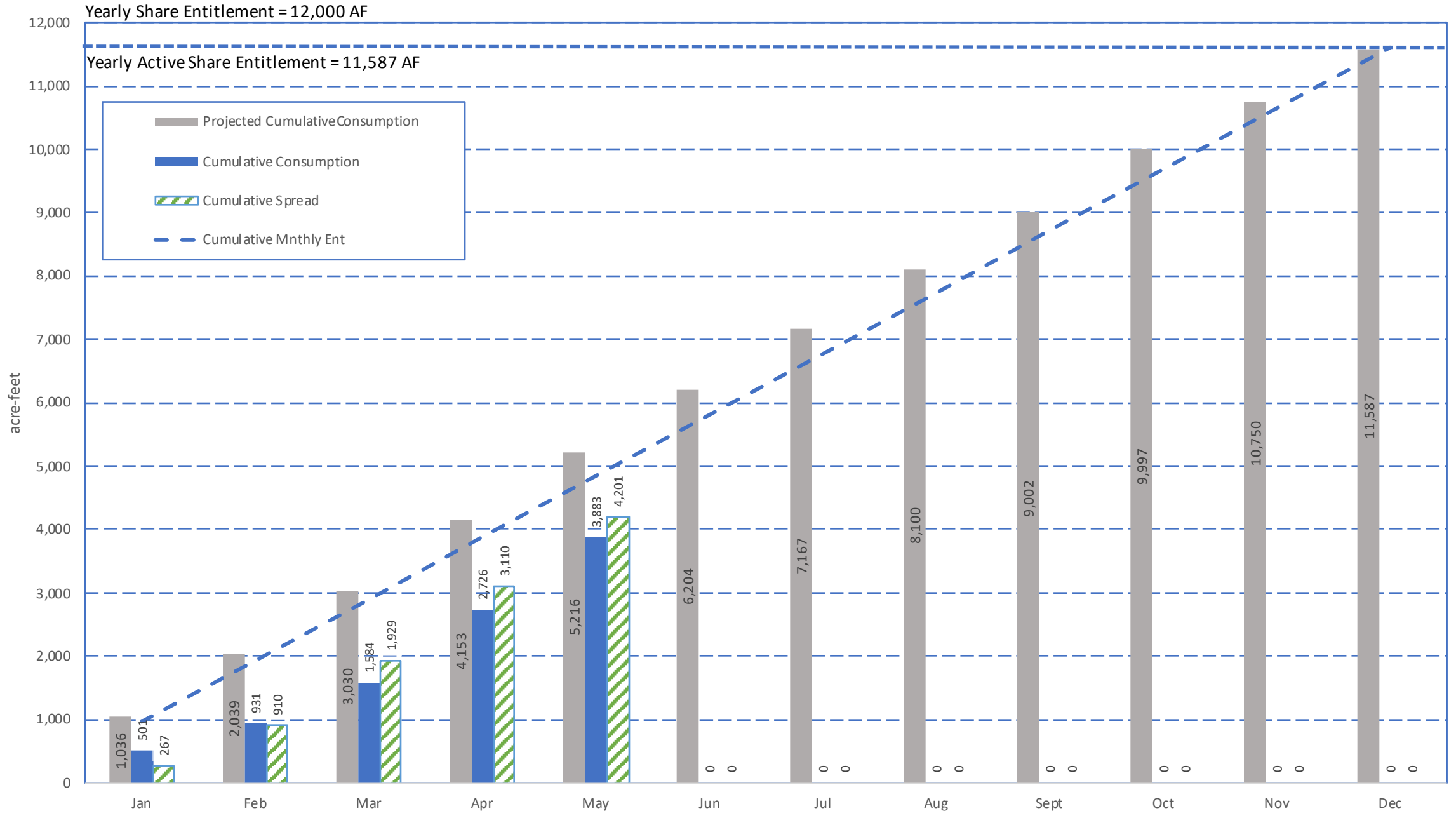
2. **AB3057** – California Water Not-For-Profit Tax Rules for Mutual Water Companies  
Proposed amendment to the California Revenue and Taxation Code to conform to federal income tax law by exempting not-for-profit mutual water, mutual ditch, or Irrigation corporations from California income taxes and franchise fees beginning on or after January 1, 2018. Ab3057 currently listed as 'In Committee: Held under submission'
3. **SB 998 (Dodd)** - SB 998 was approved by the Governor on Sept 28, 2018. This bill requires the Company to have a written policy on discontinuation of water service to certain types of residences for nonpayment available in; English, Spanish, Chinese, Tagalog, Vietnamese and Korean. The bill requires the policy to include certain components, be available on the Company's web site, and be provided to customers in writing, upon request. The bill provides for enforcement of these provisions, including making a violation of these provisions punishable by a civil penalty issued in an amount not to exceed \$1,000 for each day in which the violation occurs. The bill prohibits the Company from discontinuing residential service for nonpayment until a payment by a customer has been delinquent for at least 60 days. The bill requires the Company to contact the customer named on the account and provide the customer with the Company's policy on discontinuation of residential service for nonpayment no less than 7 business days before discontinuation of residential service.

This bill prohibits residential service from being discontinued under specified circumstances. The bill requires that when the Company discontinues residential service, the Company will provide the customer with information on how to restore service. The bill requires the Company to waive interest charges on delinquent bills and limits the amount of a reconnection of service fee imposed on a residential customer who demonstrates household income below 200% of the federal poverty line. The bill requires the Company to make every good faith effort to inform the residential occupants by written notice that service will be terminated and that the residential occupants have the right to become customers. The bill requires the Company to report the number of annual discontinuations of residential service for inability to pay on its web site and to the State.

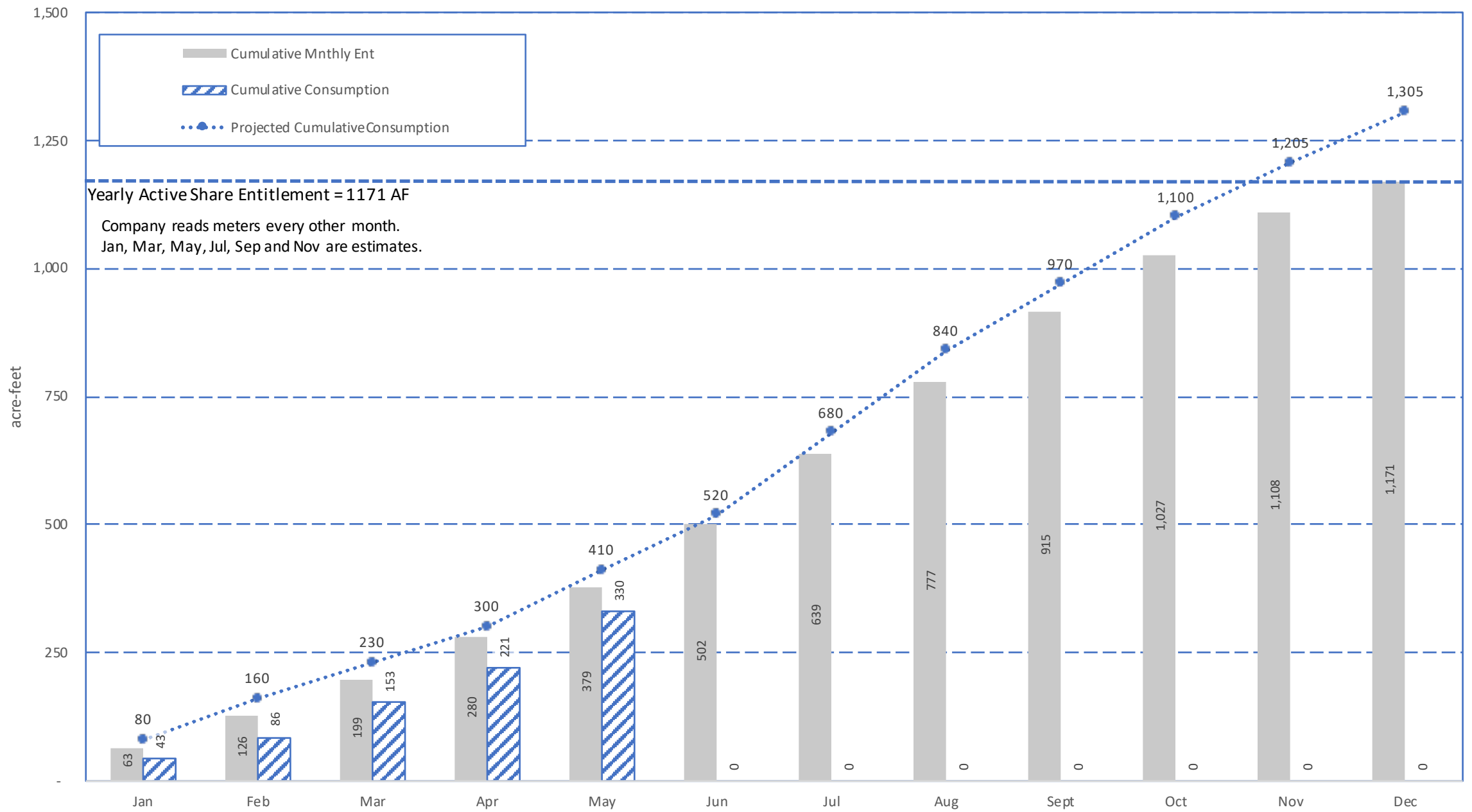
The bill requires the Company to comply with the bill's provisions on and after February 1, 2020.

Later this year staff will be presenting for review by the Board a shut-off policy that conforms to SB998 requirements.

# 2019 Production and Consumption

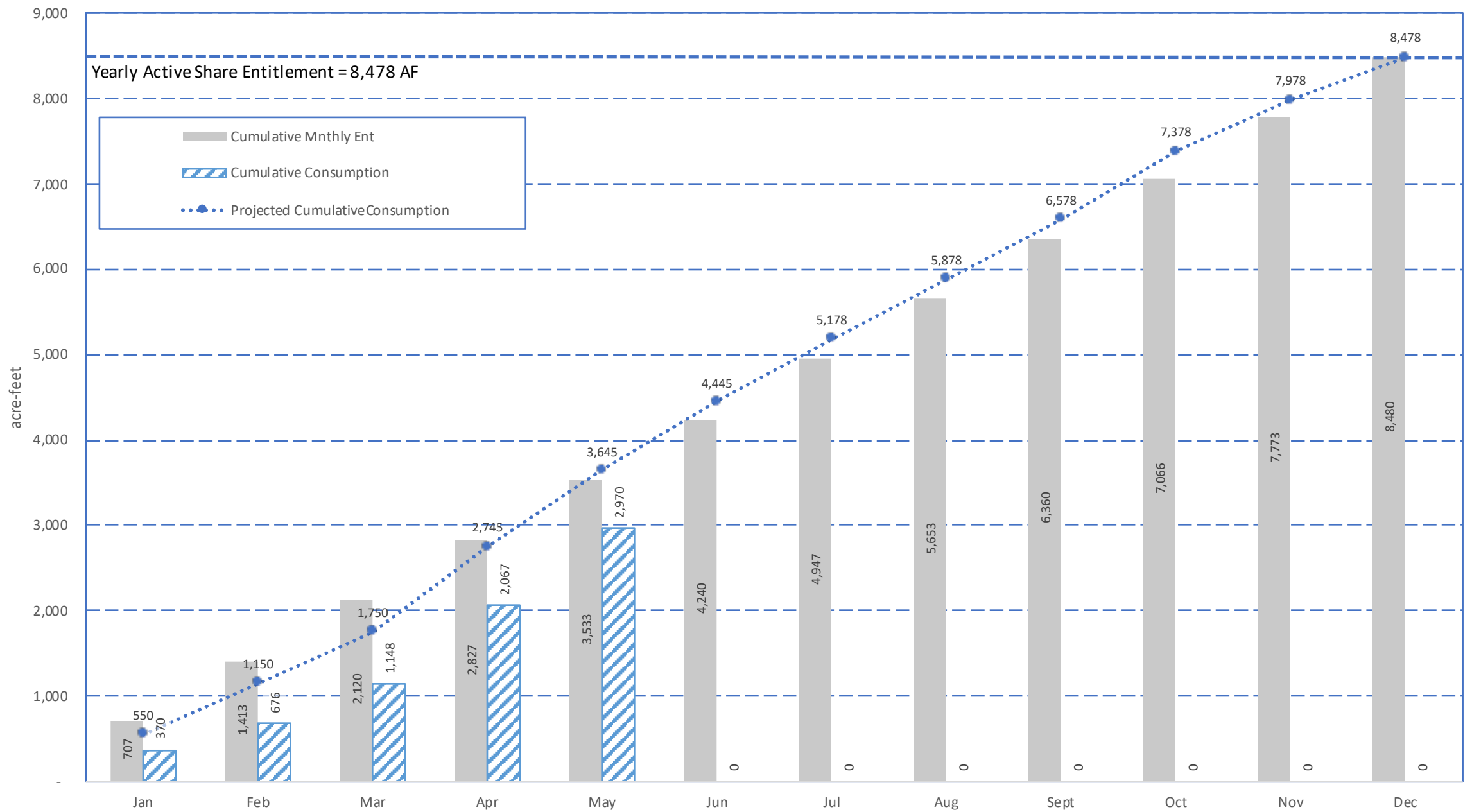


# 2019 Domestic Consumption

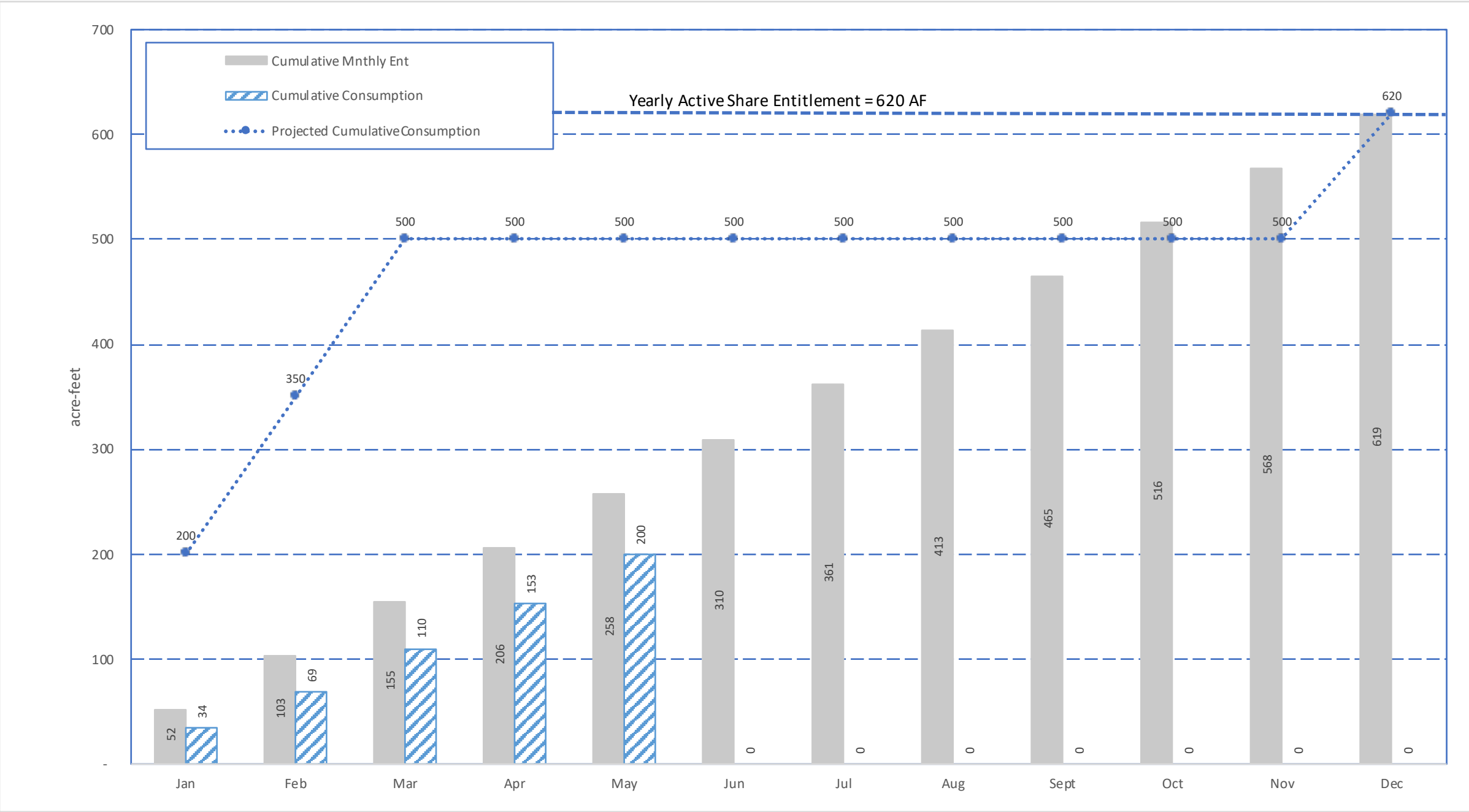




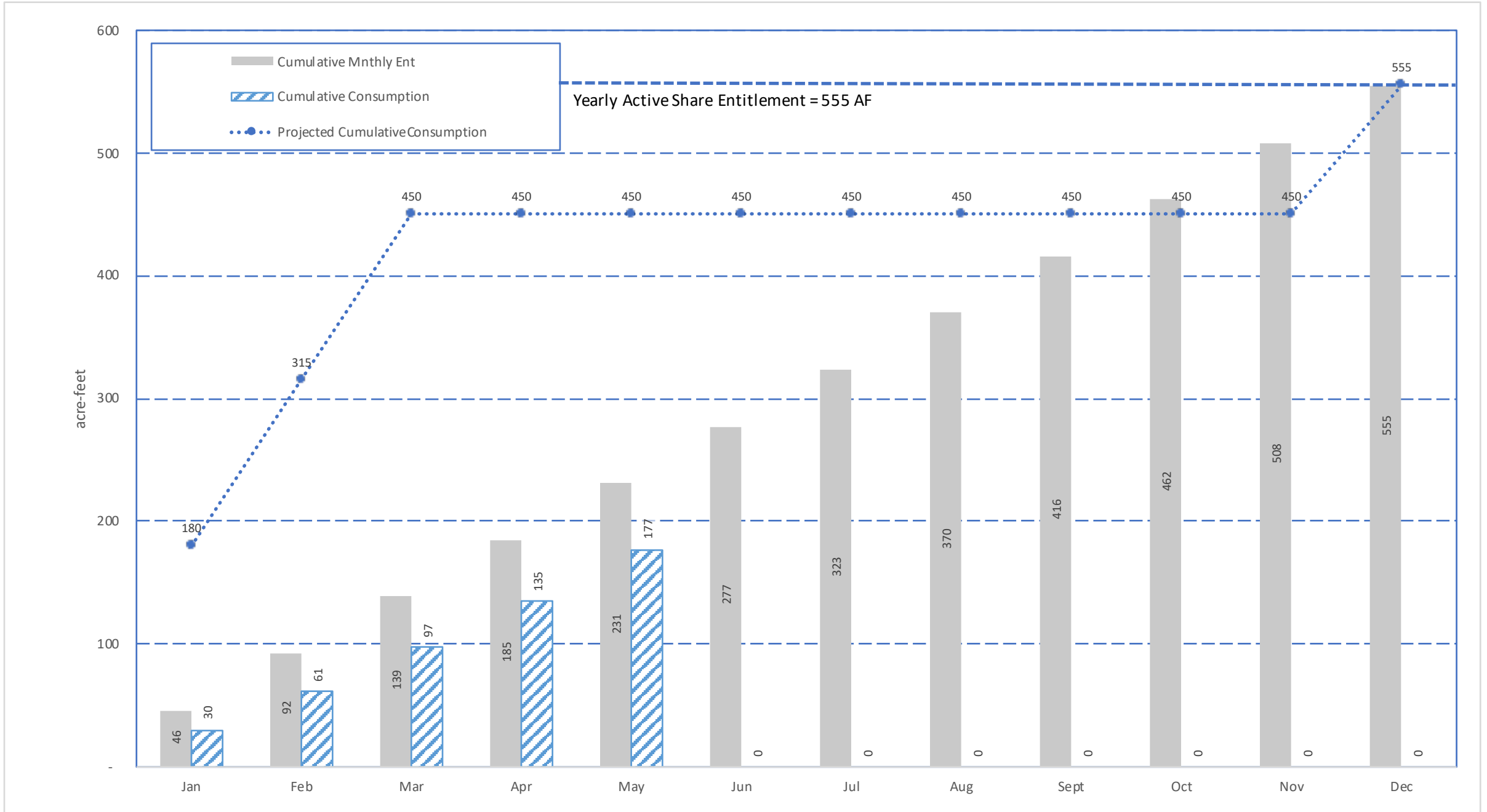
# 2019 Upland Consumption



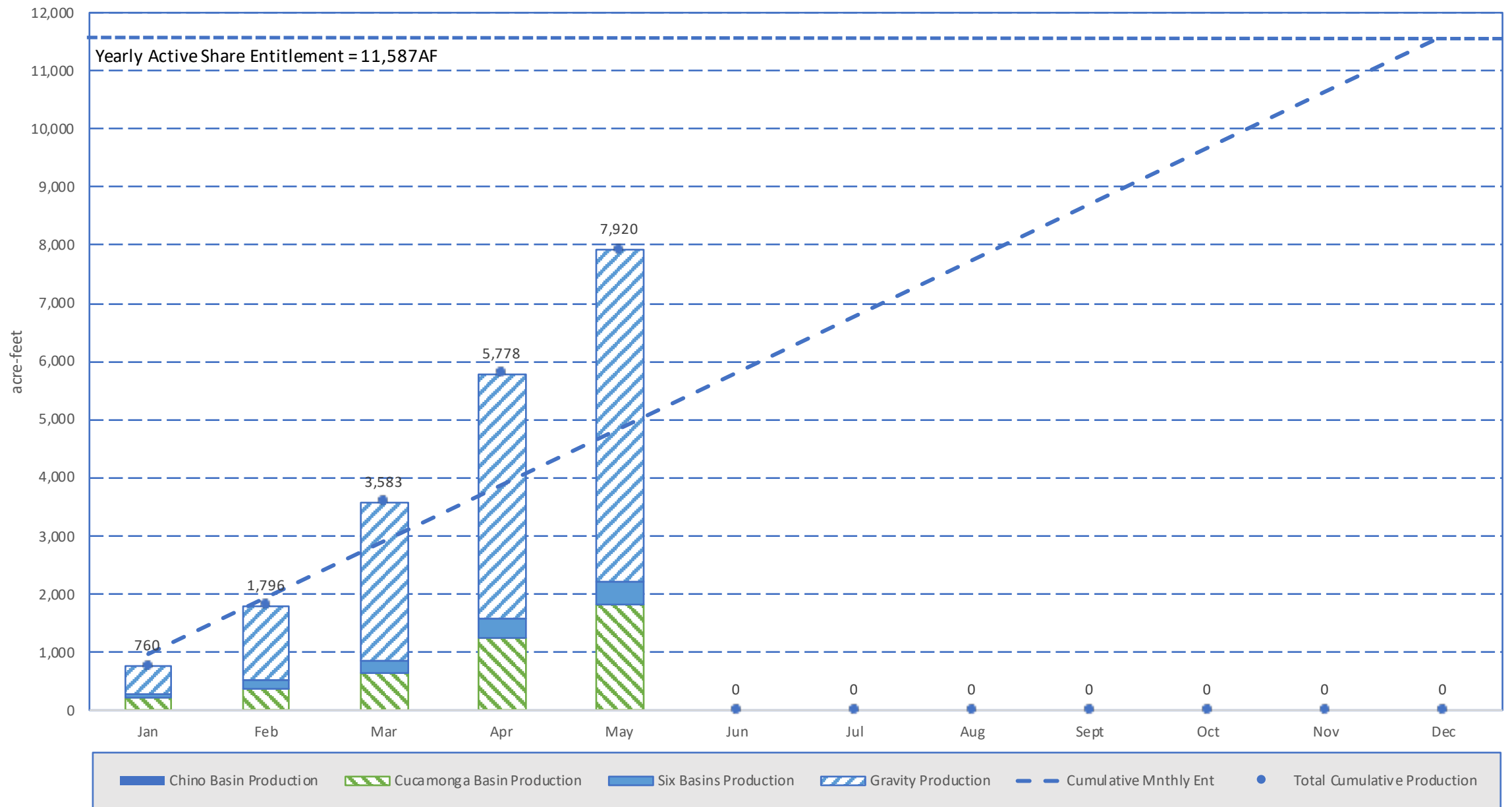
# 2019 Monte Vista Consumption



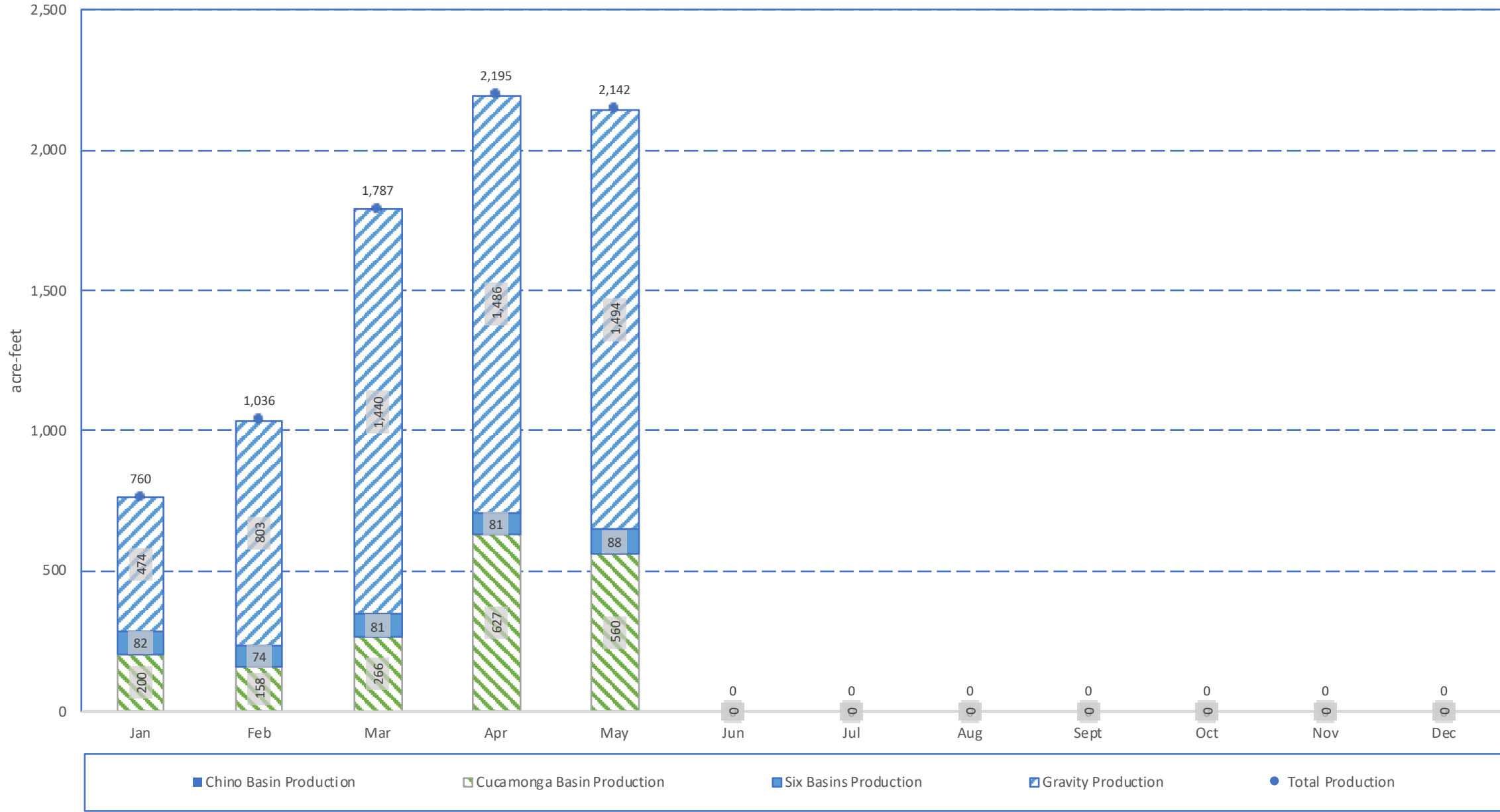
# 2019 Ontario Consumption



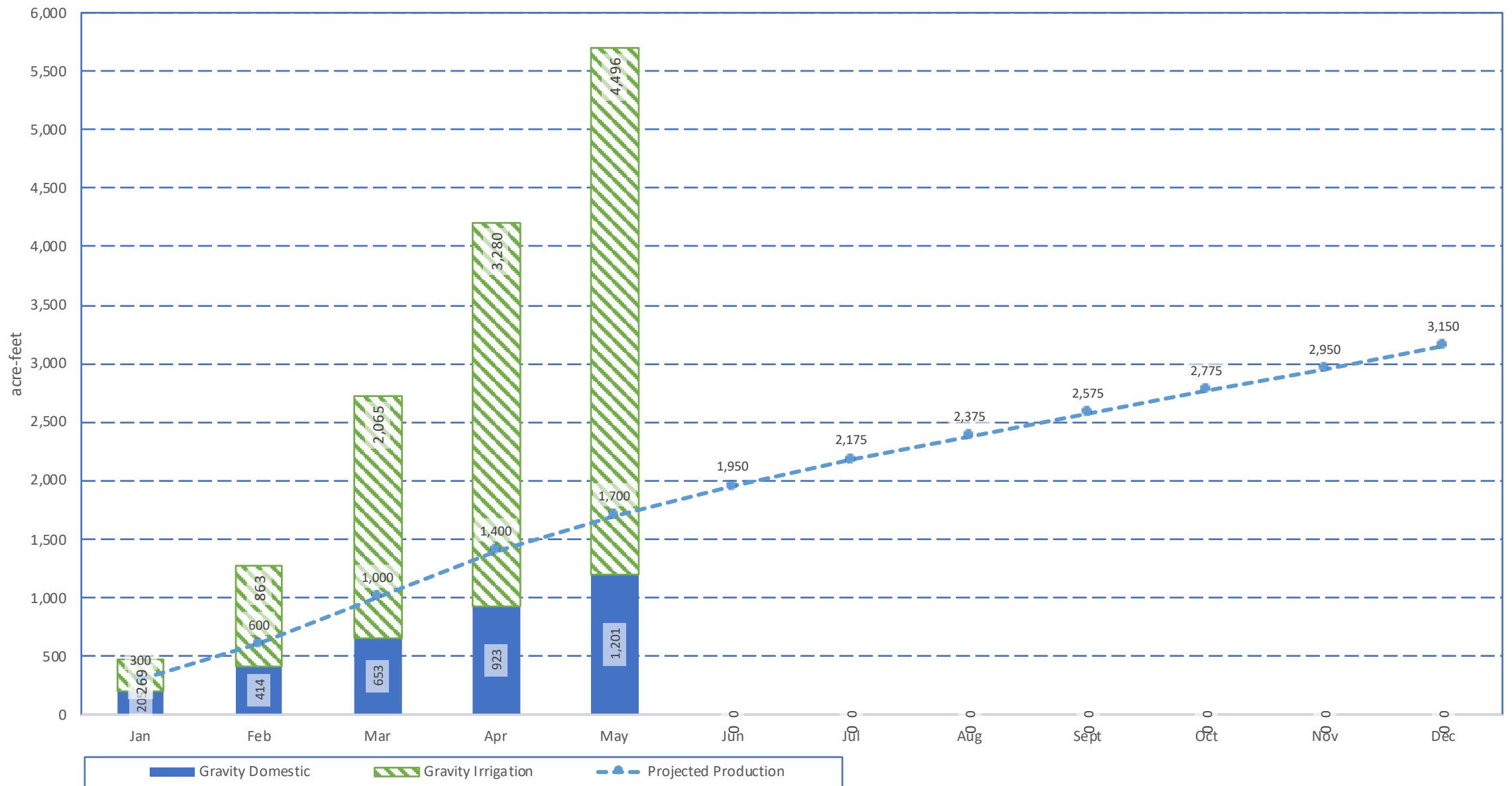
# 2019 Total Yearly Production



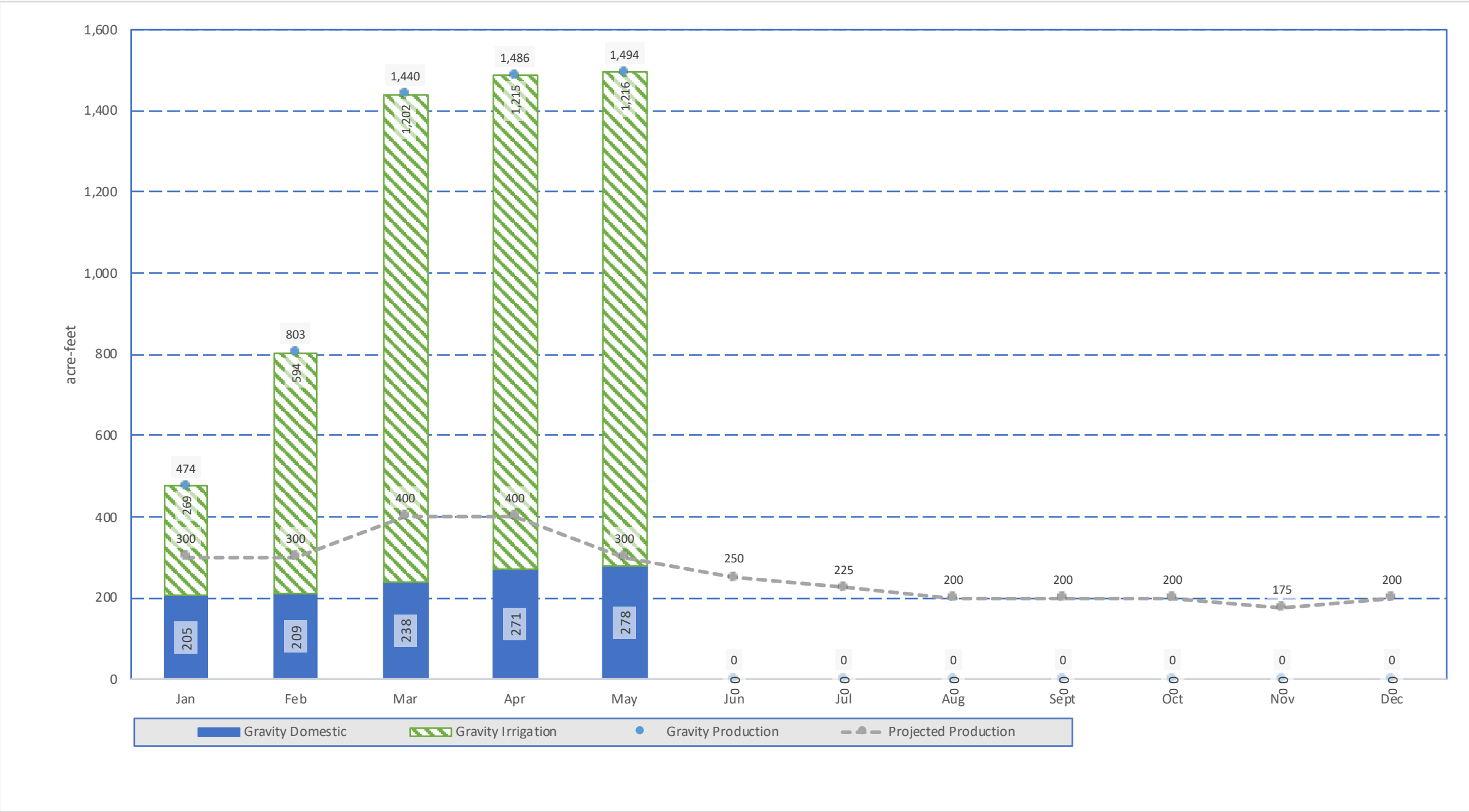
# 2019 Monthly Production



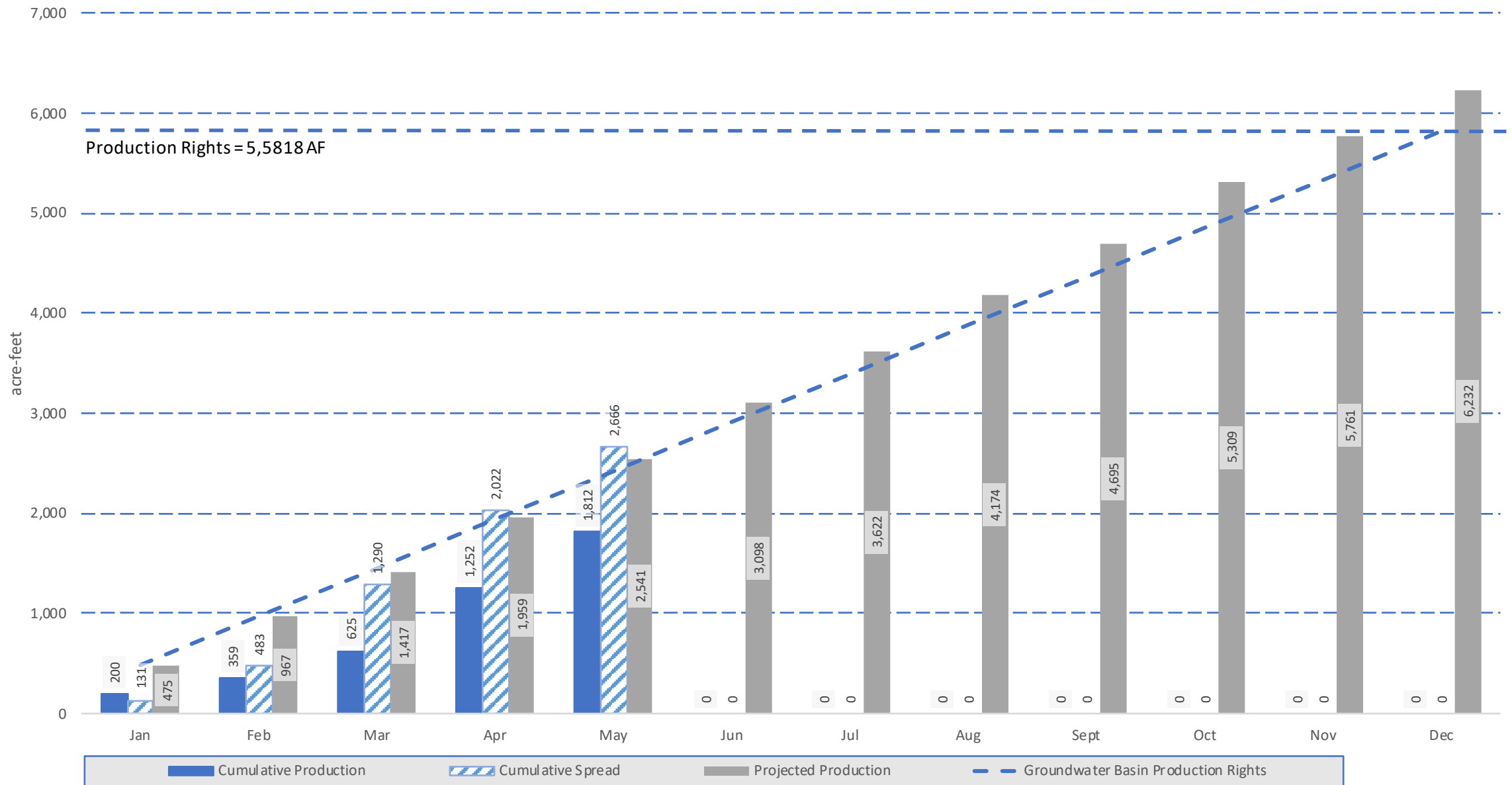
# 2019 Gravity Cumulative



# 2019 Gravity Monthly

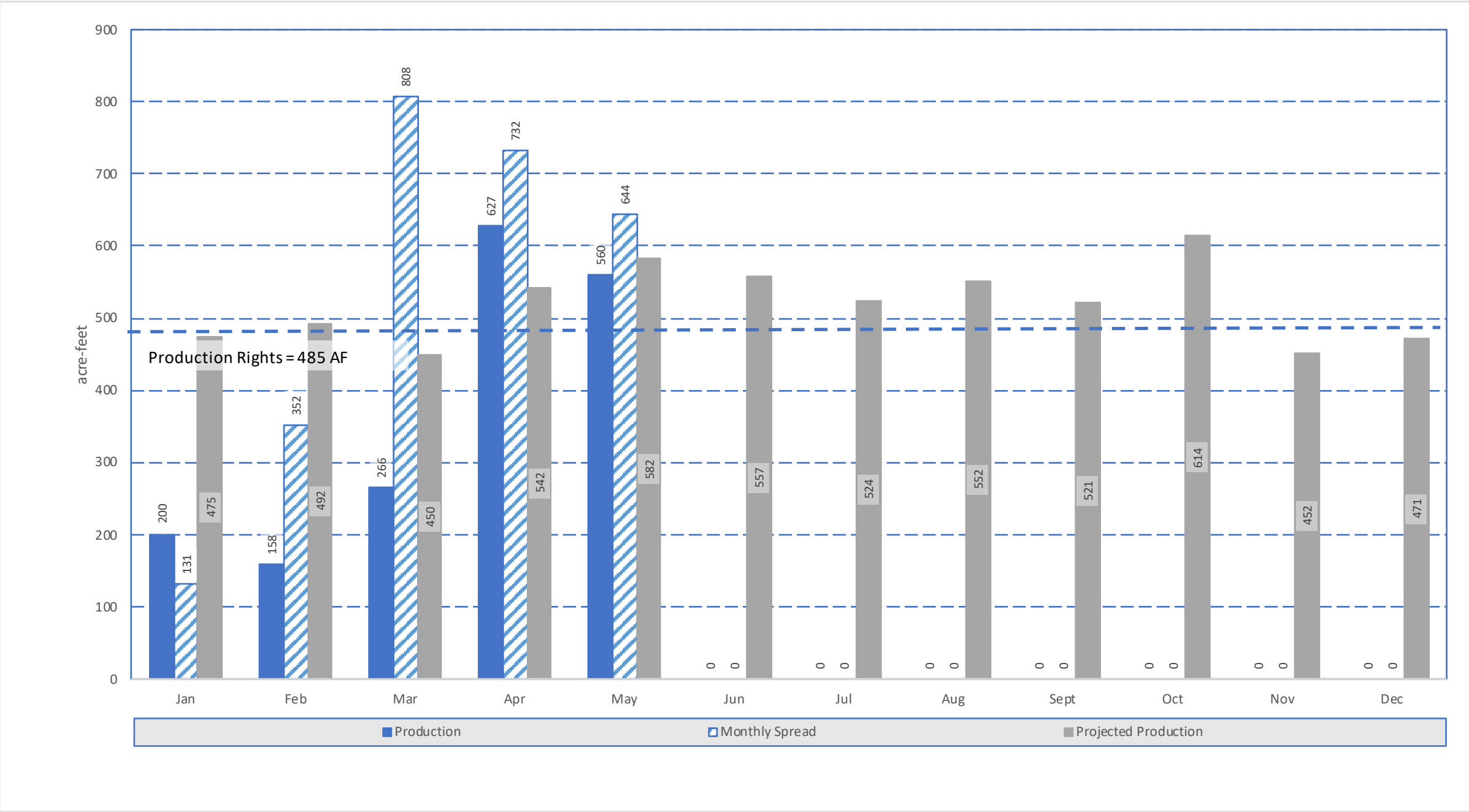


# 2019 Cucamonga Basin Cumulative

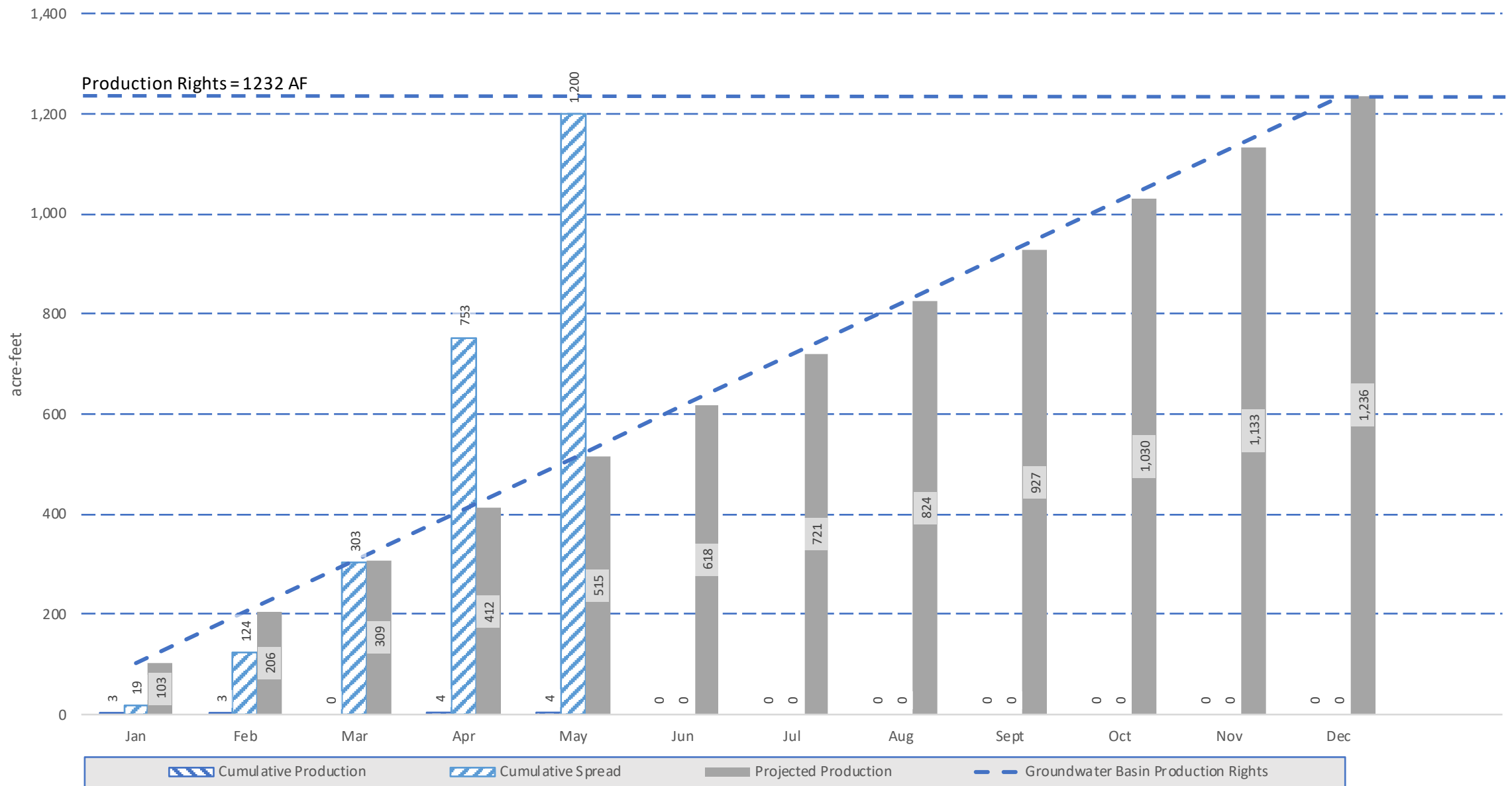




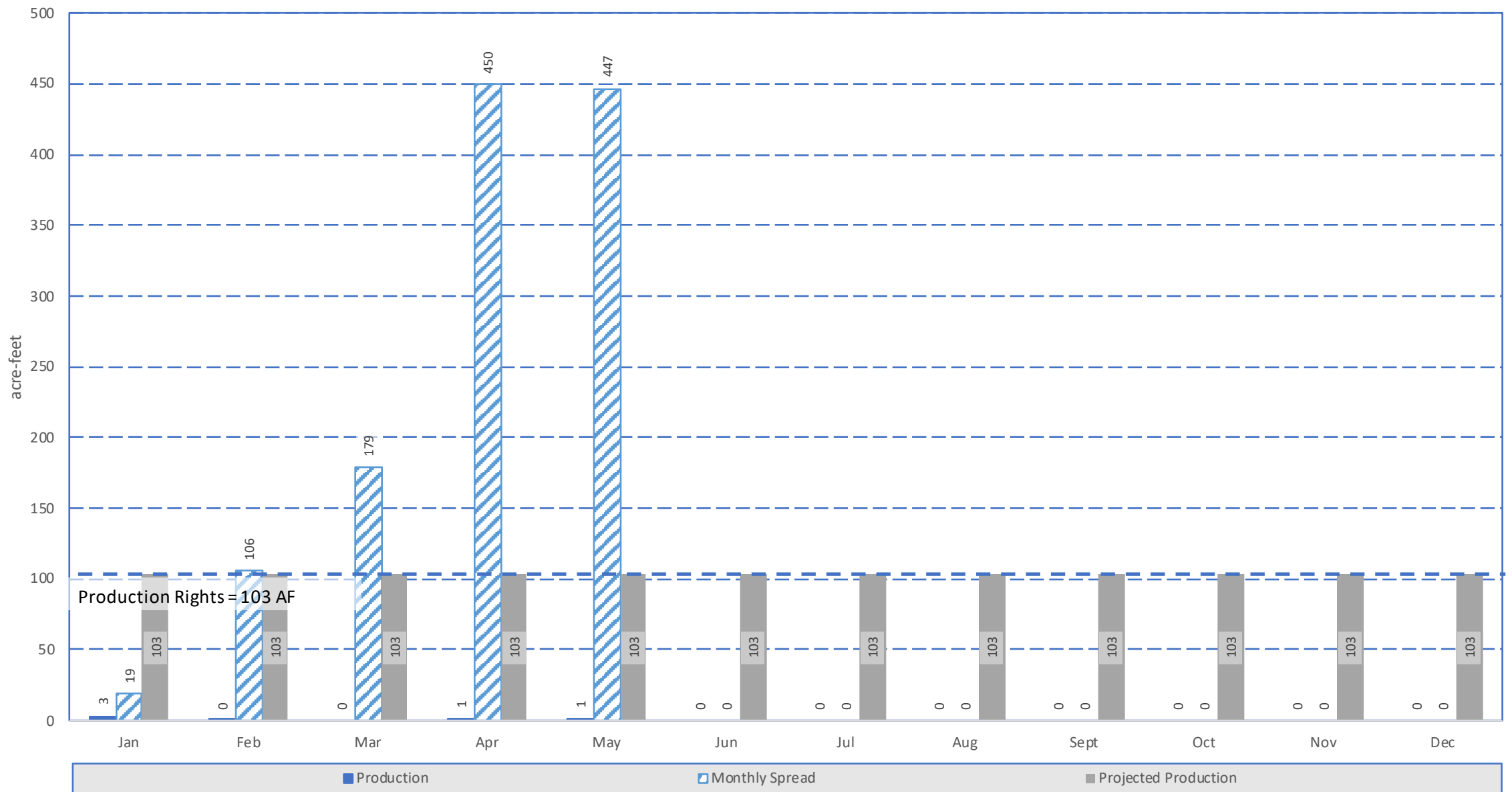
# 2019 Cucamonga Basin Monthly



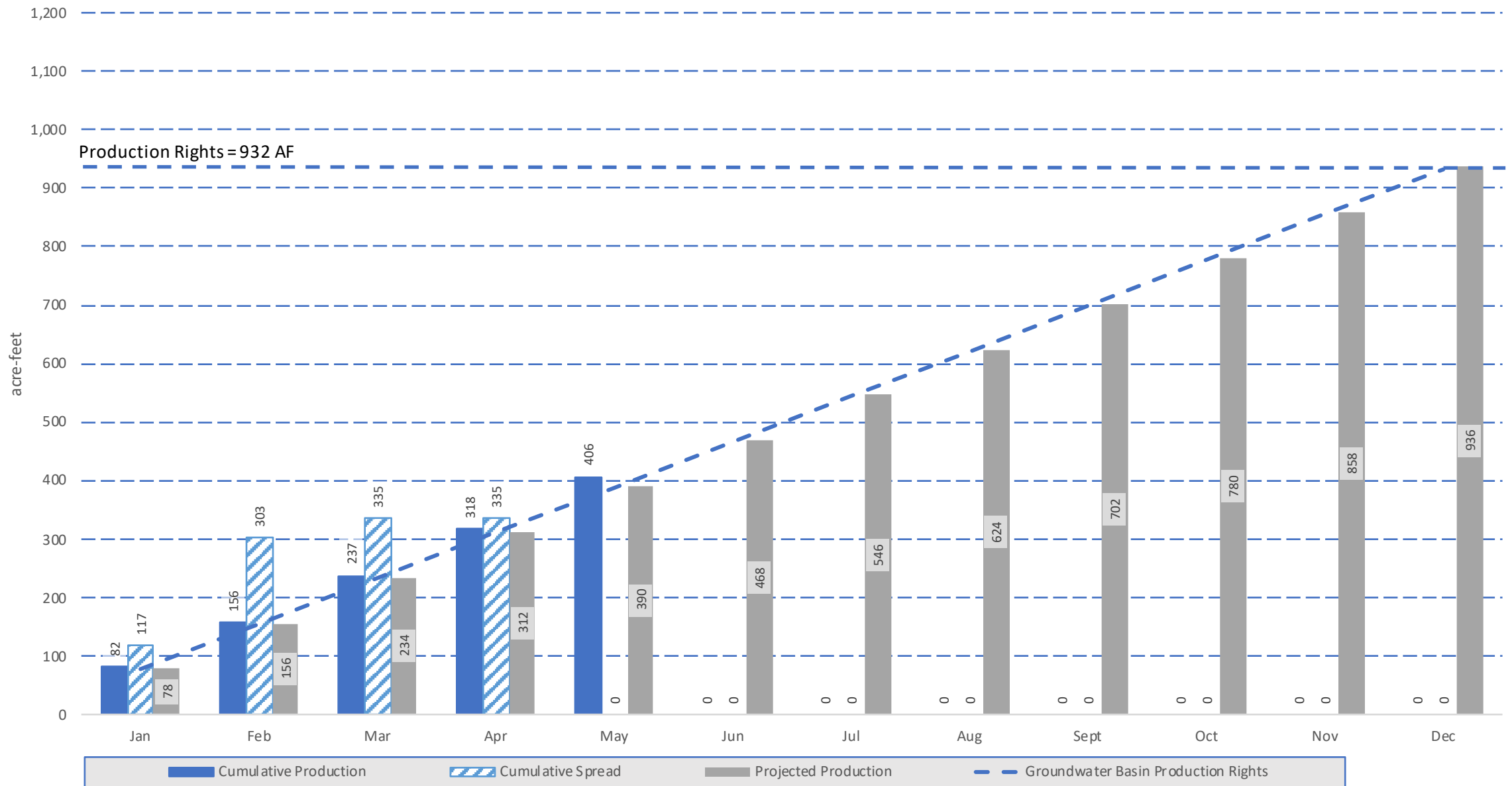
# 2019 Chino Basin Cumulative



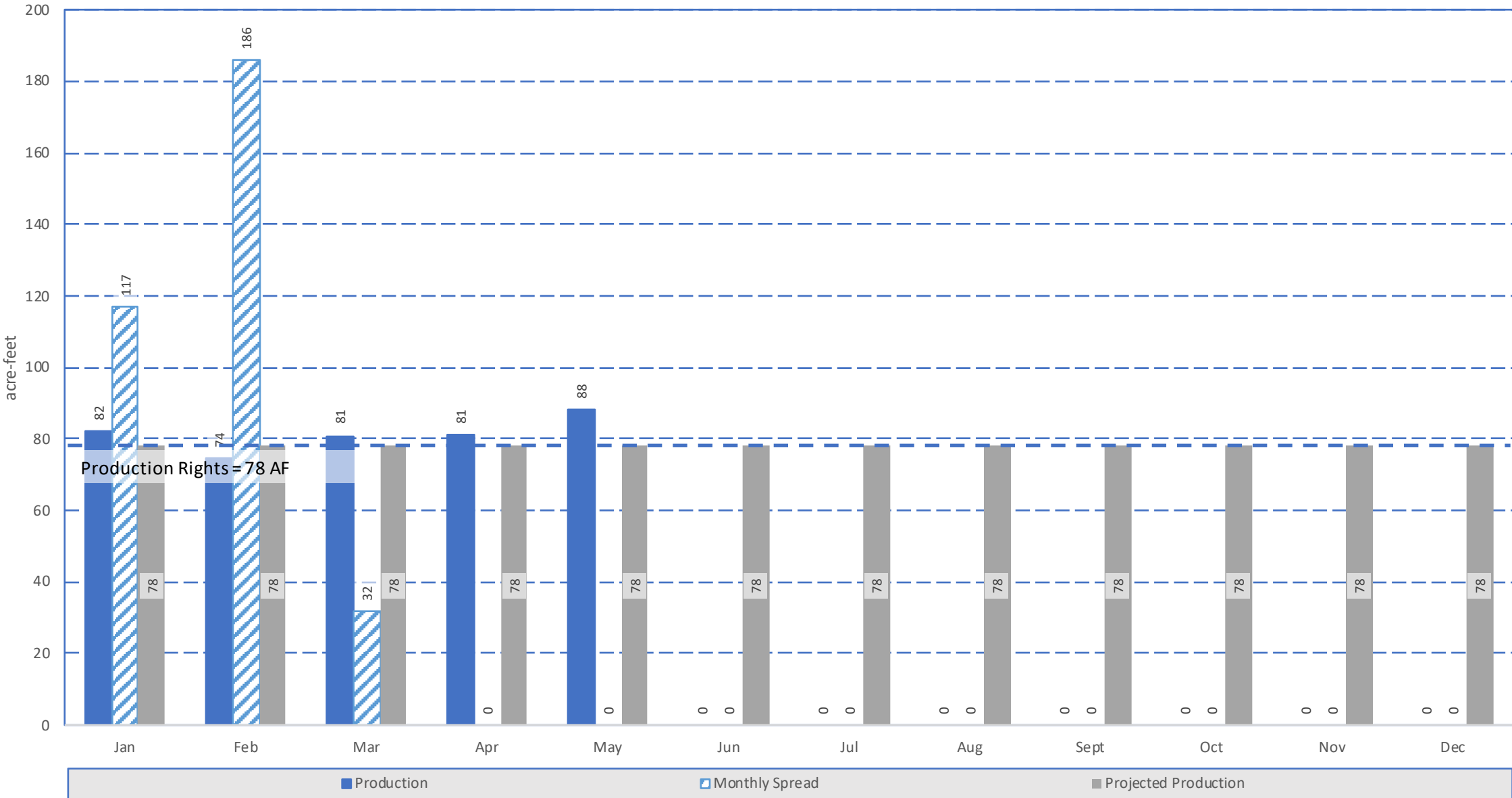
# 2019 Chino Basin Monthly



# 2019 Six Basins Cumulative



# 2019 Six Basins Monthly





**Agenda Item No. 6A**

Item Title: Nitrate Reduction

Purpose:

Discussion and Possible Action regarding results of MIH/WRT pilot nitrate reduction test system installed at Well 31 in the Cucamonga Groundwater Basin.

Issue:

Should the Company consider installation of a nitrate reduction treatment plant at a well with high nitrate levels?

Manager's Recommendation:

Move to next phase of project, which includes site selection, development of capital costs, reviewing financing alternatives, developing operating costs and working with municipal shareholders to secure the purchase of treated water.

Background:

The Company has been working with MIH to develop a nitrate reduction treatment process that is cost effective to use on Company wells. In the past, Well Site 31 was selected as a site to conduct pilot testing. Well 31 draws water from the Cucamonga Groundwater Basin. Water drawn from Well 31 has been shown to be high in Nitrate.

The pilot testing has concluded (resulting report included in June 18, 2019 Board packet). MIH has shown that their nitrate reduction system is effective at producing potable water.

Given the positive results of the pilot study, staff has asked the State to approve said treatment for possible full production at a well. Additionally, staff has been working with MIH/WRT to tighten the costs associated with wellhead treatment for nitrate. WRT has provided the attached letter dated June 14, 2019 with a treatment cost of \$350/acre-foot. This is the operating cost and does not include capital construction costs. Total cost (Capital and Operational) is currently estimated to be between \$500 and \$600 / acre-foot. This represents a cost per acre-foot that is about double the Company's current \$295/acre-foot for untreated well water. Given the cost associated with nitrate treatment, it makes financial sense to review a Company well within the Chino Groundwater Basin for a nitrate reduction treatment plant. Current likely candidate sites include Well 12 and 18. On the open market, Chino groundwater sells for \$655/acre-foot. Import water sells for north of \$900 acre-foot.

Staff would like to pursue a triple headed course of action at this time:

1. State: Continue working with the State of California and MIH/WRT to obtain State approval for treatment utilizing the MIH/WRT process.

2. Financing: Continue working with MIH/WRT to tighten the capital and operational costs and review available financing options. Staff intends to bring back at least three financing options for Board consideration. Options to be considered include; Design/Build/Operate by MIH/WRT with a minimum water purchase-option for the Company and/or direct financing of construction with operation by MIH/WRT or operation by Company staff. Staff will also review grant opportunities as a funding source.
3. Municipal: Begin discussions with municipal shareholders to determine interest in securing full entitlement deliveries from a Company well utilizing the MIH/WRT treatment process. Staff's assumption is that one or more municipal shareholders would be willing to pay a cost higher than the Company's current \$395 per acre-foot for security of entitlement delivery. This also assumes the acre-foot cost of Company water remains below the cost of import water.

All three courses of action must produce viable results for the Company to be successful; We will need to produce legal water (State) that is cost effective (financing) for delivery to shareholder(s) (municipal).

Previous Action:

Prior years – Board authorized MIH to install a pilot treatment system on Well 31, in the Cucamonga Groundwater Basin, to treat for high nitrate.

April 2018 – Board approved a contract extension with MIH to test alternative conventional post-treatment systems.

Impact on Budget:

Undetermined future impact directly tied to water produced from any well selected for treatment.





June 14, 2019

Mr. Brian Lee  
San Antonio Water Company  
139 N. Euclid Avenue  
Upland CA 91786

RE: Project Summary and Proposal for Nitrate Reduction at the San Antonio Water Company.

Dear Mr. Lee:

On behalf of WRT and our partners at MIH, we want to thank you for the opportunity to provide this initial proposal and project summary for nitrate reduction for the San Antonio Water Company.

### ***Experience and Capabilities***

Water Remediation Technology LLC (WRT) is a 'total solution' provider of water treatment equipment and services. Since 2003, WRT has been designing, building, operating and maintaining treatment systems under Long Term Service Agreements on a guaranteed cost per gallon treated basis.

MIH Water Treatment Inc. (MIH), has developed a biological remediation process to treat and recover contaminated water, with applications to nitrate, perchlorate, selenium and other contaminants. The Hall BioProcess is a reliable, efficient and cost-effective method for reducing nitrate in drinking water. When combined with Loprest filtration and WRT services, we offer you a cost effective and risk free water treatment system.

WRT is the only licensed company to provide treatment, operation, handling and disposition of radioactive treatment residuals for the removal of radium and uranium from drinking water, with more than 180 systems operating in 20 States. Our Loprest division has more than 1,000 municipal water filtration systems in operation in California and worldwide.

WRT has developed a strategic partnership with MIH Water to jointly develop and deliver the Hall BioProcess treatment process under a Long Term Service Agreement on a guaranteed cost per gallon treated basis.

One initial task was conducting the combined pilot study at SAWCO's Well 31 which incorporated the Hall BioProcess and Loprest filtration systems into a complete treatment process. The completed Pilot Study Report for this project has been submitted to the California Department of Drinking Water, and we are currently awaiting approval.

CLEAN WATER. CLEAN EARTH. THAT'S OUR PROMISE®





***Proposal for Nitrate Reduction with the Hall BioProcess at San Antonio Water Company***

WRT and MIH will provide a complete treatment system for nitrate reduction based on the following parameters:

- 3,000 GPM, continuous operation treatment system, producing 4.3 million gallons of treated water per day
- Equipment, operation & maintenance for 15 year term
- Provide a complete treatment system for nitrate reduction
- Provide operation of treatment system, chemicals, power, and maintenance
- Assumes filter backwash goes to sanitary sewer

Based upon the information from the pilot study conducted at well 31 and other information provided, this is a firm proposal for the equipment and operation itemized above.

Total cost for equipment and operation on a guaranteed cost and performance basis will be \$350.00/acre foot.

The following estimate of San Antonio Water Company's total costs for this project, include the following:

- Onsite operations and control, and UV treatment building
- Onsite chemical building
- Yard piping
- All site work including grading, concrete, fencing and landscaping
- Equipment installation
- Engineering for site design and all permitting
- Discharge of filter backwash (approximately 110,000 gallons per day) to sanitary sewer
- Finance costs for the 15 year term of the agreement

This is an estimate based on preliminary information and best assumptions for the project, including equipment and operation costs that are itemized above.

Estimated total cost to SAWCO for this project are \$500.00 to \$600.00/acre foot.





## Next Steps

To further refine the Scope of Work and final project costs, the following tasks need to be completed.

- Completion of State Approval of treatment process and evaluation of conditions.
- Exchange of site specific information from wellsites to determine proper site location for nitrate removal system. This information will include site specific water quality, site plans, space availability, height restrictions, site access and ability to discharge to sanitary sewer.
- Determine the party responsible for providing:
  - Site engineering
  - Construction of facility
  - Engineering for all permitting and approvals
  - Project funding
- Set a preliminary project timeline and a goal for project completion.
- Develop a Scope of Work for each party involved and a project budget.
- Evaluate the economic benefit of the production of 4.3 million gallons per day of treated water, and associated uses.

Thank you for your interest in the Hall BioProcess technology, we look forward to the opportunity to continue our discussions of this project with the San Antonio Water Company.

Please feel free to contact us with any questions or comments.

Best Regards,

A handwritten signature in black ink that reads "Ron Dollar". The signature is fluid and cursive, with the first name "Ron" and last name "Dollar" clearly distinguishable.

Ron Dollar, VP Sales & Marketing  
Water Remediation Technology LLC







# San Antonio Water Company

Incorporated October 25, 1882  
Serving the original Ontario Colony lands

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May 16, 2019

Mr. Eric Zuniga, Water Treatment Superintendent  
California Water Resources Board, Drinking Water Division  
San Bernardino, California

RE: Demonstration Pilot Study Report for Proposed MIH Biological Nitrate Removal Process at San Antonio Water Co. Well 31

Dear Mr. Zuniga:

Attached is the final report summarizing results of the nitrate reduction pilot study at our Well 31 site. This report was prepared by MIH and Loprest Division of WRT (proponents) and is intended to follow the Pilot Protocol submitted to your office back in August of 2018. We are submitting this report as part of our effort to receive process approval by the Division of Drinking Water.

As you are aware, several of our groundwater drinking wells have been placed in idle status due to high levels of nitrate. We would like to bring one or more of these wells back on-line. We believe that the nitrate treatment process as outlined in the pilot study report meets with the Division of Drinking Water requirements and are seeking approval for full-scale implementation.

The results of the pilot testing indicate that the proponent's nitrate treatment process may assist the Company in bringing those fallowed wells back into service. Additionally, the proponents have expressed their desire to move forward with project installation.

If you should have any questions regarding the MIH process or the performance results provided in the report, I ask that you please contact Mr. Peter Hall of MIH Water Treatment, Inc. or Mr. James Arnold of WRT LLC as they are most familiar with the pilot testing performed at our well site. I have enclosed their contact information for your convenience. Following your review of the report, we would like to schedule a meeting with you and your staff to directly address any comments or questions that you may have.

We appreciate your and your staff's time in reviewing this report and look forward to our next meeting.

Sincerely,

Brian Lee  
General Manager





## **Case Study Report**

on

**MIH and WRT Nitrate Reduction and Removal System**

conducted by

**MIH Water Treatment Inc. and Loprest, a division of WRT  
Westminster, Colorado**

for the

**San Antonio Water  
Upland, California**

**April 30, 2019**

## Executive Summary

California water district authorities have been working with water treatment researchers and water service/equipment providers in assessing available drinking water treatment methods for the removal of nitrate and nitrite from their groundwater supplies. The need for an alternative nitrate treatment option that eliminates chloride brine waste and selectively removes nitrate from the source waters has never been greater. MIH Water Treatment Inc. has developed a unique biological nitrate reduction technology using a proprietary treatment vessel for advanced biological reduction of nitrate contaminant from groundwater sources. Biological nitrate reduction is not new. Various methods including growth substrates and biological growth containment schemes have been created to safely and effectively allow anoxic conditions for rapid nitrate reduction at the same time limit excess growth nutrient (electron donor) and biological material carryover from the process. Nearly all previous methods generate relatively high volumes of organic waste material and fail to prevent further reduction of sulfate in the treatment process. The MIH Water Treatment biological nitrate reduction system uses simple hydraulic mixing and a proprietary growth media to eliminate these common problems. The MIH system has been extensively tested and has been granted conditional approval for use for treatment of California drinking water by the California Water Resources Board Drinking Water Division. The use limitation currently includes post membrane filtration treatment of the treated water. MIH Water Treatment has teamed with Loprest Division of Water Remediation Technology LLC (WRT) to provide a much-simplified post filtration method due to the extremely low organic carryover loading from the MIH nitrate reduction process. This pilot tested has been devised to demonstrate the effective use of packed media bed filtration for MIH biological nitrate reduction treated water. The results have been very positive. This latest on-site MIH/Loprest demonstration pilot test was conducted in cooperation with the San Antonio Water Company in California at one of their drinking water service wells currently used for non-potable water supply due to nitrate compliance. Water produced from this well regularly tests for nitrate in excess of the California drinking water MCL standard of 10 mg/L as N and at the start of pilot testing, nitrate levels averaged 14 mg/L as N. San Antonio Water supported the continued testing of the MIH pilot equipment at the Well 31 site through mid-February 2019. Unseasonably wet weather conditions prevented additional testing beyond this time.

MIH and Loprest, a division of WRT installed a 3.0 gallon per minute (gpm) pilot test system at Well 31; a San Antonio Water groundwater well. This well water source has been operated only for non-potable water demand because of higher than MCL nitrate levels. The pilot test equipment was placed into service in November of 2018, treating a sample flow from a periodically replenished raw water supply tank. The raw water supply tank is filled from a high flow rate well water pump bleed stream connected to the main well water discharge piping.

The objectives of this case study are to 1) document the effectiveness of the MIH/Loprest biological nitrate reduction system on the removal of nitrate contaminant from the Division's well water to meet regulatory compliance and post-nitrate treatment filtration



meeting general finished water quality requirements, 2) document the operational efficiency of the removal system with continuous service operation including shutdown and restart conditions, and 3) develop the water treatment residuals waste determinations for estimating waste material disposal requirements and overall operating costs. The main objective of this pilot test is to verify the operating and maintenance requirements for a full-scale system design for planned implementation at this and other San Antonio Water well sites.

The results of this study show successful removal of nitrate contaminant from the well water on a continuous basis to less than 2 mg/L as N levels; well below the CWRB drinking water division limit MCL. The post-biological system filtration units provided very low suspended solids and controlled generation of disinfection by-products in the finished water quality. Once adjusted and stabilized for the operational conditions at the well site automated filtration backwash rate requirements, the Loprest filtration system performed very efficiently providing extended service periods between backwash cleaning cycles greater than 24 hours. Single-point continual addition of chlorine disinfectant at the biological nitrate reduction system discharge was successfully used to control residual free-chlorine levels at the final effluent water discharge. Very low nitrate levels in the finished water occurred in all conditions and finished water quality parameters for suspended solids were within acceptable operational range when the filtration system automatic backwash cleaning sequence operated as designed.

The solids waste collection analysis portion of the pilot study allowed characterization and quantitative determinations of the waste residuals generated and subsequently removed in the treatment process. Wastewater generated in the post-treatment filtration process can be easily treated and clarified for full water recovery into the treatment process. Non-hazardous disposal options are available for the solid waste material based upon the RCRA metals testing performed. The waste material quantity generated is quite modest, potentially allowing for economical disposal in California standard land waste disposal.

Efficient reduction of nitrate contaminant along with low quantities of waste material generated and requiring disposal are established characteristics of the MIH/Loprest biological nitrate reduction process. We have successfully met and in some cases exceeded our objectives in developing this process through multiple site pilot testing and are at a point in process development for demonstration of full-scale well treatment.

The original pilot test protocol was submitted on August 27, 2018 and subsequently reviewed and agreed to by the CWRB Division of Drinking Water prior to the start of this pilot testing. This report provides the test data and the findings of our pilot testing at the San Antonio Water Company well site. We recommend the Drinking Water Division approve the final design based upon the findings and results of this test for full-scale treatment system implementation.

## The MIH and Loprest Nitrate Reduction and Removal System and Study Overview

MIH and Loprest, a division of WRT is testing a simplified biological nitrate reduction system using a unique MIH biological nitrate reduction system coupled with an efficient media filtration and UV sterilization post treatment system. The nitrate in the raw water is efficiently biologically reduced to inert gaseous nitrogen. Excess biological mass generated in the biological process is controlled to minimal levels and effectively immobilized using aeration and chlorine disinfection and removed from the water stream with media depth filtration as a post treatment operation. A final UV sterilization system is included to assure viable bacteria-free conditions in the final treated water. Collected biomass on the media filters is periodically backwashed from the filter beds and either directed to sanitary sewer or separately collected for disposal. Disposal material volumes are small; amounting to less than 40 grams per 1,000 gallons treated. Water treatment chemical reagents added to the water as an electron donor for the sustaining of biological processes, the proprietary biological growth substrate media, and post treatment filtration media are NSF/ANSI-44/60 and NSF/ANSI-44/61 certified for use in drinking water systems. The MIH biological removal system growth substrate media and downstream post treatment filtration media have nearly unlimited service life. Nitrate contaminant removal is simply based upon the consistent and controlled electron donor addition rate and effective biological excess mass filtration and removal. MIH and Loprest developed an on-site pilot test apparatus designed to simulate actual full-scale drinking water nitrate removal system conditions using expected chemical reagent addition rates and an automatically operated downflow media filtration unit. Raw water and treated water testing for nitrate, turbidity, and residual free chlorine content are used to monitor system performance. The settled solids from a collected filter backwash is tested for RCRA metals content for characterization and suitability of non-hazardous solid waste disposal.

### Test Equipment Overview

The pilot test treatment equipment consists of two individual unit operations in separate operation trailer units. A trailer housing MIH biological nitrate removal system equipment and electron donor reagent feed systems provide the primary treatment process for nitrate removal. A post treatment filtration system housed in a separate trailer includes media filtration, chlorination disinfection addition, solids filtration aid addition and final UV sterilization equipment. Both trailer units are parked on site at the San Antonio Well No. 31 location. A temporary approximately 5,000-gallon raw water supply tank system is filled periodically to continually supply raw water from the well system. Refer to Figure 1 for the pilot equipment general process flow diagram.

The MIH biological nitrate removal system consists of a primary deaeration equalization tank, the MIH Hall CSTR nitrate removal vessel, an aerobic post treatment receiving tank, ancillary pumps for recirculation or transfer and of the treated water to the filtration trailer and instrumentation and process control equipment. The filtration post treatment portion of the system includes downflow packed media filtration, chlorine disinfection, filtration aid addition, final UV sterilization and process automation and control equipment.

Individual equipment components are illustrated on the process flow diagram and include pump units, flow control devices, reagent injection pumps, pressure and flow indication instrumentation and filter backwash support equipment. The source water enters the pilot test unit from a connection on the from the raw water supply pump, which transfers temporarily stored raw water from the raw water storage tank to the MIH biological nitrate removal system trailer. Raw water sampling occurs at this location referred to as SP1 on the process flow diagram. The water is first directed to a deaeration vessel where electron donor and phosphate reagents are added to promote biological growth for sustained nitrate reduction. The pretreated water then enters the Hall biological reaction vessel. Here continually stirred biological substrate carriers circulate using hydraulic movement and facilitate nitrate reduction at the substrate surfaces. The treated water exits the biological reaction vessel to an aerobic post treatment tank for immediate aeration to terminate anaerobic biological reaction and growth and further oxidize residual electron donor material prior to post filtration and final disinfection. As the aerated water exits the biological nitrate reduction trailer, sodium hypochlorite is injected to further suspend biological activity and maintain residual disinfection through the final filtration process. A filtration aid is also injected at this location to provide coagulating assistance of suspended solids. The process flow then enters the Loprest filtration trailer and directed to through filtration media process columns. Three (3) columns are arranged in parallel flow for downflow packed bed filtration. Filtered water is then collected and enters a final UV sterilization unit to assure termination of biological activity. Final sampling of finished water occurs at this point referred to as SP2 on the process flow diagram.

Intermediate sampling for nitrate reduction, turbidity and periodic residual free-chlorine occurred downstream of the biological nitrate reduction system and at filtered water discharge points downstream of the media filter unit.

The media filter column is backwashed automatically using one of several backwash trigger points set at the PLC controller. Set points for filter backwash can be initiated manually, by operating time interval, by filter differential pressure loss or by filtered water discharge turbidity measurement. A filter backwash frequency of approximately once per operating day was chosen as a target set point with filter differential pressure not to exceed 7 psid. The water supply system operated in near continuous manner providing 24-hours of operation for the pilot system. Occasionally shutdown periods were necessary to replenish the raw water storage supply. Backwashing of the filter units is accomplished by directing treated and finished water from the treated water storage tank. Backwash water supply is directed automatically to each filter column sequentially upflow through the media column to expand the media bed and release the collected solids to exit the out of the top of the filter media column. The backwashed liquid and solids are sent to a water discharge sewer connection. A separate sampling of collected solids backwashed from the filter columns was conducted to quantify and characterize the solids generated in the process. These collected solids are were settled and clear liquid decanted from the solids that are retained for laboratory testing to determine solids settling rate, and for characterization.

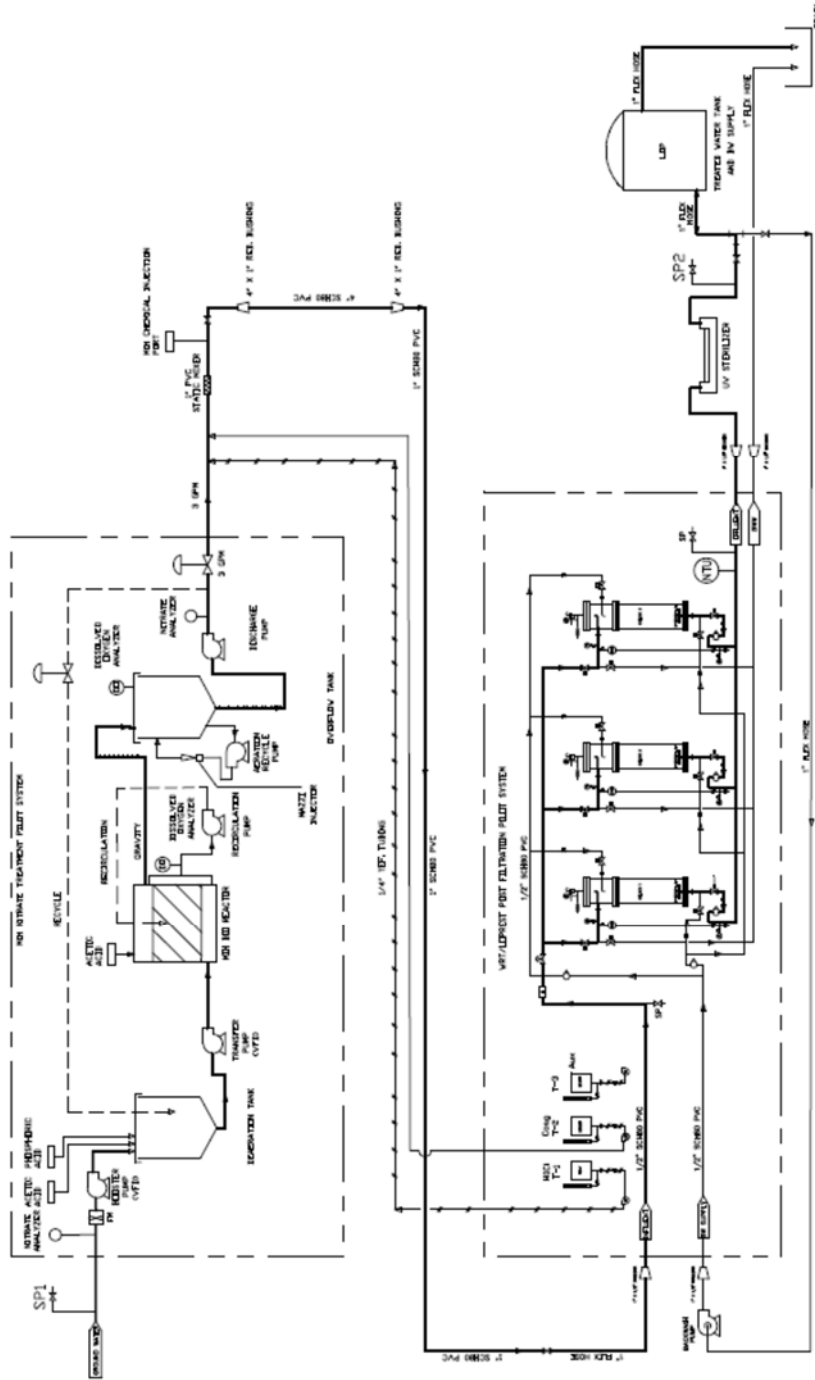
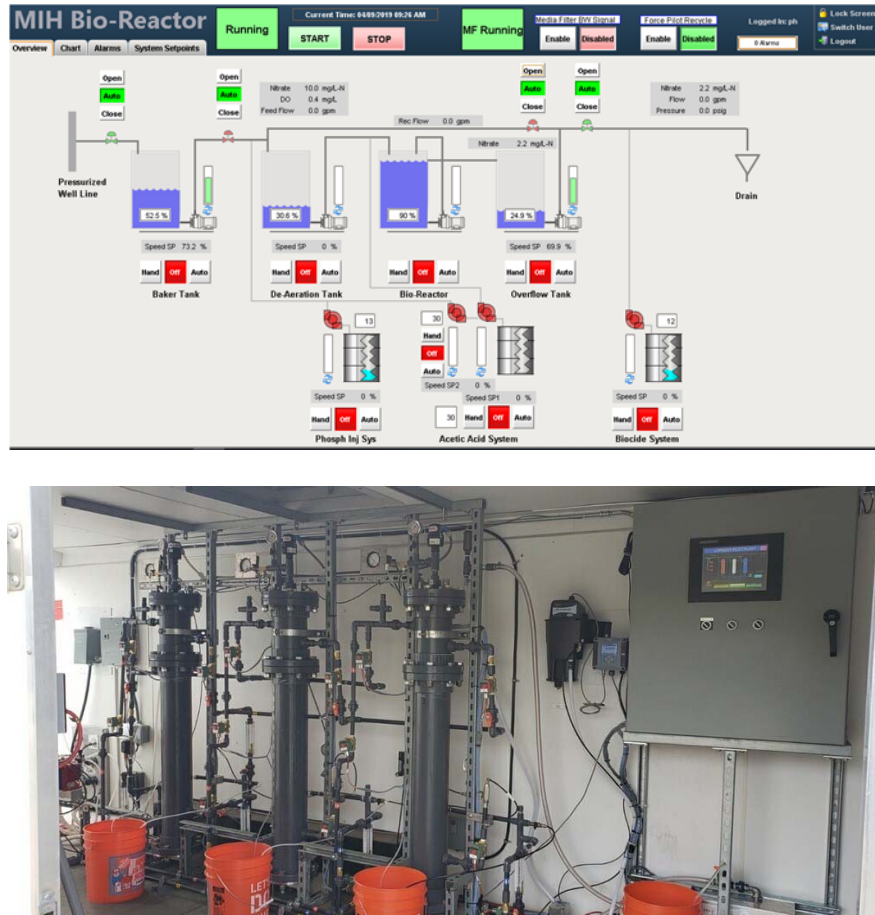


Figure 1. Pilot Study Equipment Process flow diagram



**Figure 2.** Photographs of MIH/Loprest Pilot Study Equipment and PLC Control panel.

Statement of Purpose

The nitrate levels in many San Antonio Water Company wells exceed the USEPA and State of California Drinking Water MCL standards of 10 mg/L (as N). Nitrate levels vary seasonally at the San Antonio Water well no. 31 but normally exceed the state mandated MCL testing between 13 and 20 mg/L as N.

The purposes of this study are to:

- Demonstrate the ability of the MIH/Loprest Nitrate Reduction Process to consistently and effectively reduce the nitrate levels to below MCL levels on water from the San Antonio Water Company well water supplies.
- Demonstrate consistent nitrate removal through shutdown and restart upset conditions.

- Demonstrate effective filtration and disinfection of final treated water at all times through the process.
- Demonstrate no appreciable generation of disinfection byproducts through the process.
- Comply with California SWRCB Division of Drinking Water regulatory testing requirements for the submitted pilot testing protocol.
- Provide a solution to disposal concerns over collected solids material water treatment residuals and finalize estimated overall water treatment costs.

### Analytical

All organic and bacteriological water analyses were performed by external laboratories certified by the National Environmental Laboratory Accreditation Program. Total nitrate, in the raw and treated water were sampled normally once per week and bacteriological plate count, turbidity, Organic analysis, in the treated water were sample weekly during continuous service runs between daily backwash operations. All samples were analyzed immediately. Test samples are submitted to the Babcock Laboratories, Inc. using USEPA and California Water Resources Control Board recognized testing methods for drinking water.

Methods for analysis are:

Nitrate as N	EPA 300.0
Turbidity	SM 2130B
Total Organic Carbon	SM 5310B
VOC	EPA 524.2
Trihalomethane Formation Pot.	EPA 524.2
Haloacetic Acid	SM 6251B
Heterotrophic Plate Count (HPC)	SM 9223B
MMOMUG Coliform Presence/Absence	SM 9223B

Continuous analysis for outlet turbidity was performed using an on-line turbidimeter Hach 1720E. Sampling for free chlorine at various operating point and in the treated water outlet were performed using grab samples and colorimetric analysis on a Hach 890 colorimeter.

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## Results and Discussion

### **Pilot System Operational History and Specifics**

Operation of the pilot system consists of initializing the continuous steady-state operation of the nitrate removal system for the pilot demonstration test period of 7 weeks per the submitted and agreed upon Test Protocol submitted in August of 2018. Three principle changes to the testing variables or the equipment flow path were instituted in the course of the initialization. Once consistent operation of the biological nitrate removal system was obtained through nitrate sampling with no substantial adjustments to the electron donor injection rate, the filtration system was placed in regular operation. The filtration system was initially designed for a starting filtration media flux rate of 5.0 gpm/ft<sup>2</sup> or 3.0 gpm pilot test flow rate. This media flux rate yielded backwash frequencies less than 12 hours of filter service time. In addition, turbidity recovery following the backwash sequence were longer than anticipated at more than 5 minutes of preservice rinse time. Therefore, a decision was made to reduce the filter media flux rate to 3.0 gpm/ft<sup>2</sup> or 1.8 gpm pilot test flow rate. This revised rate is selected based upon typical surface water filtration rates. The results from reduced flow rate were positive, extending backwash frequency to more than 24 hours of service run time and much better turbidity reduction recovery following a backwash event. Filter backwash trigger points were then set and programmed for either a 7 psid pressure loss across the filter units or a measured effluent turbidity of 0.3 NTU from the on-line turbidimeter signal. After this change, a 5-day steady state operation of the pilot units was selected to then start the official pilot test commencement point. The reduced flow rate from the biological nitrate reduction system proved difficult to maintain. A problem developed where the flow rate setting and control system on the biological nitrate reduction system was incompatible with expected changes in the differential pressure through the downflow packed bed media filters. As the inlet pressure increased through the filter column units the overall pilot system flow rate gradually reduced to an internal control point that automatically placed the biological nitrate reduction system recycle. This condition suspends all effluent to the filtration system. The first change to the process flow design for the system was devised.

The change included placing an effluent break tank between the biological nitrate reduction system chemical injection point and the feed to the filtration system. A separate feed pump designed to provide steady flow rate from the effluent water collection point through the filtration system is controlled from the filtration system control panel allowing independent operation of the biological nitrate reduction system and the filtration system. In theory, the concept should have provided much more consistent flow rate and operation of the pilot system. However, in practice, some complications arose in the nearly 1 month of operating the pilot system in this configuration. First it was acknowledged that a full-scale system would not include an effluent collection tank but the thought that a short 40-minute detention volume in the flow path would have little effect on the test results. After 2 weeks of steady operation of the system using the effluent break tank it was observed that a significant volume of suspended solid material was settling in the tank and was not being transferred to the filtration system. In addition, the first set of analytical results showed a

step increase in DBP Formation of THM and HAA5 materials in the effluent samples. The additional contact time and the concentrated quantity of organic materials in the effluent break tank were great enough to allow the reaction with chlorine. The pilot test group reviewed all operational and effluent analytical results to date and decided to make a final change in the flow path. This involved removing the effluent break tank and developing a coordinated control arrangement for flow rate control through the filtration columns while maintaining steady flow through the biological nitrate reduction system. An integrated signal between both systems placed the biological nitrate reduction system into a recycle flow arrangement during filtration backwash cycles. With the revised flow rate control all treated water from the biological nitrate reduction system is filtered through the filtration system. One final unit operation addition was the UV sterilization unit as the final treatment device. The UV sterilization unit was to assure that all viable biological activity was terminated at the effluent of the filter units.

The pilot test was restarted and after 2 days of control point adjustments, the pilot equipment was placed in steady operation to commence the start of the pilot testing. During the second week of pilot testing, the test site was the subject of a break-in. Some control equipment was stolen, and the on-line computer used for continuous effluent nitrate data logging was taken. The pilot system remained in operation without interruption until the site experienced 4 weeks of heavy rainfall precipitation weather events that forced the San Antonio Water Company to suspend water withdrawals from this well altogether. The final phase of pilot testing was terminated at this time.

A representative backwash volume was collected and the solids analyzed during this final test period. A hard shutdown test of the system was also performed in the second week of the latest equipment revision operation.

### Pilot Test Results and Discussion

The pilot test equipment was manned daily in daylight hours during weekdays and left to operate with limited supervision throughout the weekends. The final phase of pilot study operation commenced on January 16, 2019 and continued until March 1, 2019. Continuous monitoring of effluent nitrate concentration using an on-line nitrate analyzer recorded nitrate levels using software data logging. Continuous monitoring of filter column flow rate and effluent turbidity was also completed in 15-minute time increments and recorded using software data logging. Grab samples at various sample points including pre-filtration and individual filter column effluents were used for free-chlorine on-site colorimetric analysis. All other samples of effluent water quality were sampled and analyzed through laboratory analysis.

**Nitrate Removal Performance:** Nitrate levels in the raw water and the effluent from the biological nitrate reduction system were monitored continually. The raw water influent nitrate level is used in the control system algorithm to set electron donor injection rates during regular operation. Nitrate levels were measured by an online continuous nitrate analyzer sampling a trickle sample flow from the Hall nitrate reduction vessel effluent.



Pilot study note remarks and some written results from on-site colorimetric analysis remain from the test written log and coincide with results obtained from the effluent sample laboratory analysis. All third-party laboratory analysis for effluent nitrate content at all samplings submitted are included. These results are plotted below in Figure 1.

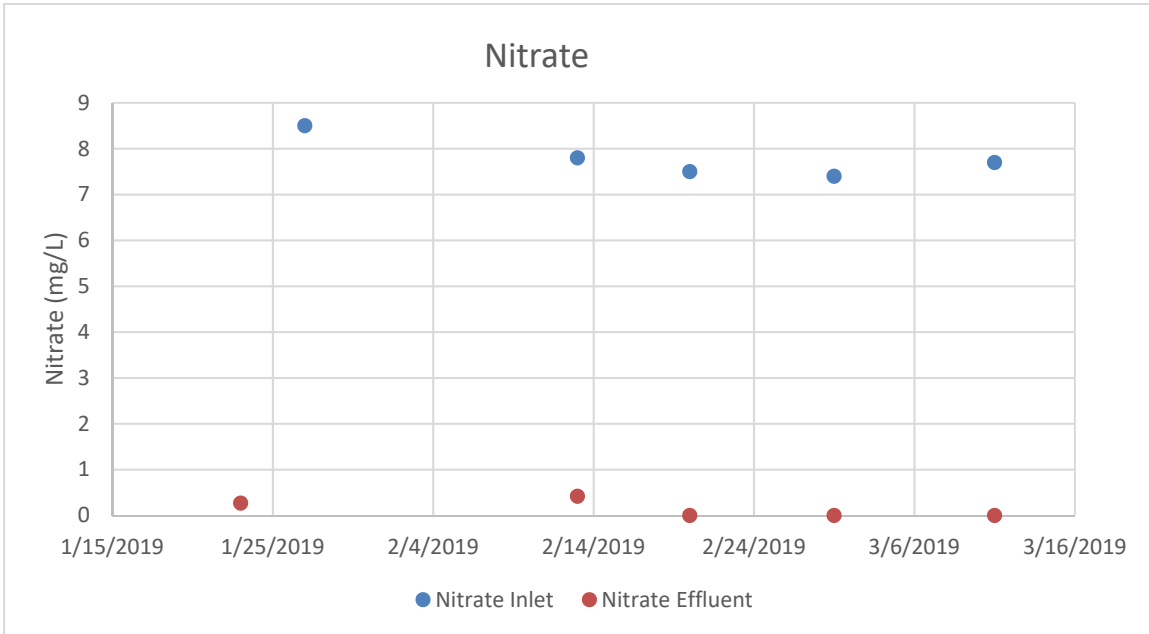


Figure 1. Nitrate inlet and effluent analysis results during demonstration pilot test period.

The nitrate effluent results show an average of 0.14 mg/L nitrate as N in the effluent finished water from an average of 7.8 mg/L nitrate as N. This represents an 98 percent reduction in nitrate levels from the influent raw water nitrate concentration.

**Total Organic Carbon (TOC) results:** TOC water quality was analyzed in the finished water effluent samples. Figure 2 provides the effluent TOC analysis. Inlet TOC levels in the raw water were measured twice during this stabilization and pilot testing period. Previous pilot test inlet TOC measurements reported between 0.5 and 1.2 mg/L TOC results. The only inlet TOC measurement during the pilot test period reported ND. And the most recent inlet TOC measurement sampled on April 2, 2019 returned a 0.32 mg/L result. These samples were analyzed by a third-party laboratory. See Table 1 for inlet raw water TOC results. Finished water TOC averaged 5.1 mg/L. An increase in TOC can be expected and has been the recognized operating experience of biological process treatment systems. The small increase in TOC from the raw water starting values are manageable.

Date	TOC Inlet (mg/L)	TOC Effluent (mg/L)
2/13/2019	N/D	4.8
2/20/2019		6.5
3/1/2019		3.9
4/3/2019	0.32	

Table 1: Raw water and treated effluent water TOC Results.

Effluent TOC from the MIH biological nitrate reduction system is controlled by careful management of electron donor injection rates. In full-scale conditions, control over TOC through electron donor addition rates to the nitrate reduction vessel is facilitated by more the mass of biological material in process. In full-scale systems, small addition rate changes do not create marked perturbations in TOC effluent values that we see in small pilot testing systems. TOC was not measured continuously in this pilot test. We do anticipate TOC effluent be measured continuously to better provide operations data and prevent overfeed of electron donor reagent to the system.

**pH measurements:** pH measurements were taken several times during the stabilization period for the biological nitrate reduction system and through the final pilot demonstration period. pH data is relevant to the biological nitrate reduction system and finished water pH is unaffected by the downstream post-filtration system. Therefore, all pH data taken from the start of the stable operation of the biological nitrate reduction system is provided. Table 2 includes effluent pH data from the nitrate reduction vessel.

Date	pH
2/20/2019	7.5
3/11/2019	7.6

Table 2: Treated water pH measurement from the Nitrate Reduction vessel effluent.

Effluent pH in the nitrate reduction system are very consistent at an average pH value of 7.7. Average raw water pH at the pilot site is 8.0. Very little change in water pH occurs through the biological nitrate reduction process and no significant changes in raw water pH were observed in the course of the pilot testing.

**Dissolved Oxygen (DO) measurements:** Dissolved oxygen in the effluent from the nitrate reduction vessel were continually measured using an on-line analysis probe. The dissolved oxygen levels in the aeration tank are considered a control parameter and are an

indication of electron donor overfeeding beyond that necessary to maintain sustainable biological activity in the nitrate reduction vessel. The measurements for dissolved oxygen were occasionally written into the field operations log. the site pilot log data book. We can present previous dissolved oxygen results for a previous pilot test run at this treatment site which shows very consistent oxidation of the effluent water to 5.5 mg/L DO average at the aeration vessel as well as a few written data points taken during the stabilization period and later pilot testing. The operational characteristics of the biological nitrate reduction system were identical in process to the earlier pilot work. During this testing, the effluent dissolved oxygen measurements showed nearly identical values throughout the pilot test period whereas the dissolved oxygen in the aeration tank was maintained between 5 and 6 mg/L continually.

**Oxidation Reduction Potential (ORP) and Sulfide measurements:** The ORP of the biological nitrate reduction vessel can be used to assess the nitrate reduction conditions within. ORP can be used to predict conditions that could allow undesirable sulfate reduction in the nitrate reduction process. Less than oxidative ORP measurements can indicate the possible formation of sulfur reduction compounds such as sulfide. Actual sulfide tests were conducted during the stabilization period and the pilot test period to test for the presence of any sulfide compounds in the water. ORP was measured several times early in the stabilization period while electron donor injection rates were determined prior to steady-state operation. Sulfide was measured twice during the final demonstration period of testing. Previous pilot tested has demonstrated no sulfate reduction and positive ORP values at all time during operation. In the course of this testing, ORP averaged 54 mV and measured positive in all measurements and presence of sulfide tested negative in all cases. Table 3 tabulates the measured results of ORP and sulfide in the biological nitrate reduction vessel.

Date	ORP	Sulfide
11/19/2018	58	
12/9/2018	90	
12/20/2018	10	
2/13/2019		N/D
2/20/2019		N/D
3/1/2019	60	

Table 3: Biological Nitrate Reduction vessel  
ORP and Sulfide .

**Turbidity Measurements:** Turbidity measurements were taken using a handheld analyzer and continually on the final filtrate effluent using a Hach 1720E turbidity analyzer. The onsite handheld turbidimeter was used to analyze suspended solids content at various points in the system. Filtrate turbidity from the filter effluent during standard operation of the filter units showed very low turbidity values of less than 0.3 NTU. See Figure 2 for graphical depiction of the filter system effluent turbidity.

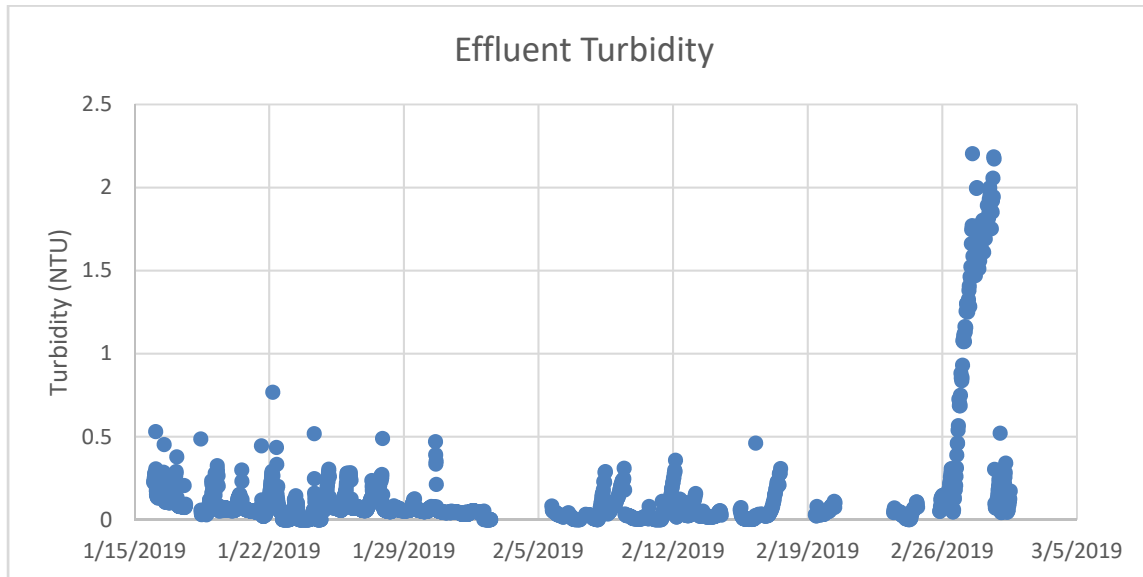


Figure 2. Filter system effluent turbidity – continuous monitoring.

Filter column control system includes a backwash cleaning sequence triggered using discharge turbidity and/or filter column differential pressure. For most of the pilot testing operating period, the filter control system cleaning sequence trigger setpoint was set at 0.3 NTU. This setpoint usually provided more than 24 hours of service run between filter cleanings. Most cleaning sequences were initiated through high pressure loss (greater than 7.0 psid) through the column and not discharge turbidity. Upon the conclusion of the cleaning sequence, the effluent turbidity quickly returned to less than 0.1 NTU within 5 minutes of pre-service rinse at the service flow rate. This can be illustrated with the continuous graph of effluent turbidity provided below. Backwash sequences were performed approximately every 24 to 28 hours of service run and generally initiated from pressure loss through the filter column. Occasionally, an effluent discharge turbidity above 0.3 NTU did trigger a backwash cleaning sequence. The typical filter performance and operating sequence is represented through the service run period from January 16, 2019 to March 1, 2019. Here several service runs and backwash sequences were performed where the effluent turbidity did not rise above 0.50 NTU and averaged well below 0.1 NTU for more than 20 hours of a typical 24 hour service cycle. The elevated turbidity depicted between February 25 and February 28 was a result of a control system setpoint omission by the pilot system operator. Had the setpoint been reset, the filter system would have immediately initiated a backwash cleaning sequence at a effluent discharge turbidity above the setpoint. This was not discovered until the extended service run created a turbidity breakthrough condition and outlet turbidity increased to more than 2 NTU. Upon discovery of the problem the filter columns were immediately placed into a backwash cleaning sequence. After the cleaning sequence concluded, normal operation resumed without further incident. To place this event in perspective, a full-scale system of this design would be equipped with monitoring of key effluent water quality parameters. Should effluent water quality drift outside control setpoint values, operational consequences ensue starting

with simple alarm notifications and in more extreme conditions or circumstances, the system prevents out-of-compliance water from entering water distribution. Our simple pilot test equipment is not equipped with automated alarm notifications or shutdown devices other than those available to site operators in the regular hours of manning the pilot system. We do not envision a similar event at a full-scale system where the control system would be purposefully prevented from a regular cleaning cycle without high-level operator notification. The effluent turbidity data is presented here without editing or redaction.

For each effluent sampling, the effluent turbidity is analyzed by the third-party laboratory. The results for this demonstration sampling period are provided in Figure 3.

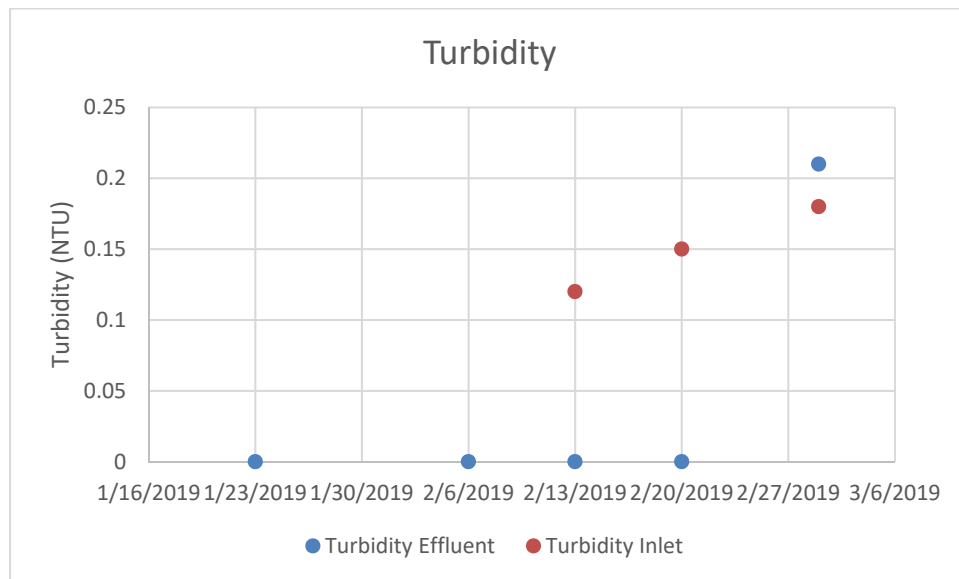


Figure 3. Filter system inlet and effluent sample turbidity.

Here the effluent samples show consistent low NTU values, which coincide with the online effluent turbidity sampling.

**Free Chlorine Measurements:** Free chlorine in the biological nitrate reduction system treated water is provided through a continuous sodium hypochlorite injection system added just downstream of the system aeration tank transfer pump. Here a calculated quantity of sodium hypochlorite solution is metered into the flow stream to maintain a free chlorine residual throughout the filter system. Free chlorine in the final treated water is controlled at a range between 1.2 to 2.0 mg/L (ppm). Some slight variation in the free chlorine level is observed throughout the filter service run as filtered solids concentration in the filter units increases. A decrease between 0.3 to 0.5 ppm of free chlorine was realized from the start of the filter service run to just before the initiation of a backwash cleaning sequence. Chlorine injection rates once adjusted for steady-state operating conditions from the biological nitrate reduction system were consistent and stable. The calculated

concentration of chlorine at the point of injection was approximately 8 to 10 ppm free chlorine to maintain a 1.5 to 2.0 ppm free chlorine residual in the final treated water. Final treated water free chlorine was analyzed and recorded prior to effluent sampling. These results are provided below in Table 4,

Date	Free Cl Inlet (mg/L)	Free Cl Effluent (mg/L)
1/24/2019	2	0.9
1/28/2019	2.1	1.9
1/28/2019	2.2	0.9
1/29/2019	2.3	0.8
1/29/2019	2	1.3
1/30/2019	2.3	1
1/30/2019	2.2	0.7
1/31/2019	2.5	1.2
1/31/2019	2.1	0.9
2/6/2019	2.4	0.8

Table 4. Free chlorine residual in the filter system effluent water samples.

As a final measure, each final treated water discharge sample was analyzed for Heterotrophic Plate Count (HPC) and e-coli and coliform bacteria. These results are tabulated for each sample during the demonstration test period below in Table 5.

Date	HPC Out	Total Coliform
1/23/2019	N/D	N/D
2/6/2019	1 <sup>1</sup>	N/D
2/13/2019	N/D	N/D
2/20/2019	N/D	N/D
3/1/2019	N/D	N/D

Table 5. HPC, e-coli and coliform testing in the filter system effluent water samples.

<sup>1</sup> Positive hit for HPC occurred from sampling performed during dynamic shutdown test. See explanation in the following section.

**Disinfection byproduct (DBPs) Testing:** Filter effluent water samples were analyzed for disinfection byproducts Total Trihalomethane (TTHM) and Haloacetic acids (HAA5). Potentially the presence of chlorine and organic materials in the biologically treated water can elevate THM and disinfection byproduct formation. During the initial operation and system stabilization period, the addition of the break tank between the biological nitrate reduction system and the filtration system noticeably increased THM in the finished water samples. This was presumably the result of additional contact time with settled organic materials in the break tank volume and the chlorinated water. The break tank was subsequently removed in favor of an active flow control system.

Disinfection byproduct formation through TTHM and HAA5 analysis was performed on the finished water samples. The summary of the analysis is shown below in Figure 4 for the demonstration period.

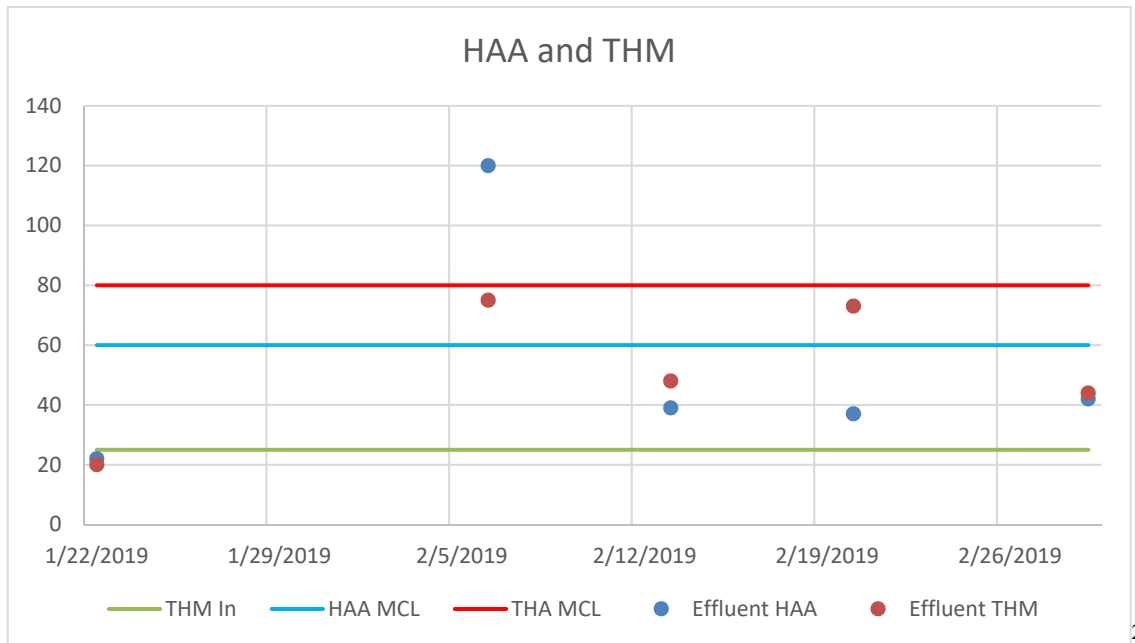


Figure 4. DBP Formation Potential Testing - TTHM and HAA during the pilot test demonstration period.<sup>2</sup>

The results show some increase in DBP formation from that measured in the raw water. TTHM and HAA5 averaged 52 mg/L and 52 mg/L respectively in the finished water samples. The average is below the MCL levels for both TTHM and HAA5 with the results from the dynamic test samples included. This does equate to a 108 percent increase in DBP formation from the 25 mg/L in the raw water. As mentioned previously and as demonstrated during the stabilization period of the testing, DPB formation is a function of organic material concentration and contact time with free chlorine in the water. The

<sup>2</sup> Data points above MCL on 2/6/19 are the result of effluent samples taken during the dynamic shutdown test. See explanation in the following section.

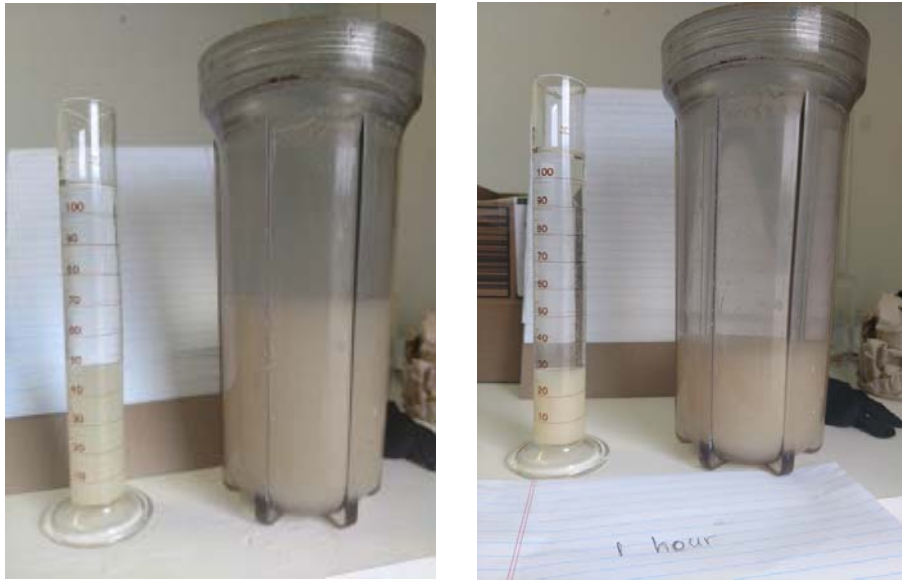
physical constraints associated with small-scale testing to provide the necessary mixing time for filtration aid mixing and the volumes of transfer piping involved exacerbate the conditions for DBP formation. This is not representative of a full-scale system where the contact times for biomass and chlorine are much shorter and the volume ratios to system surface areas are drastically different. While the DBP formation potential will not be zero, we anticipate that the increase in DBPs in a full-scale system is easily managed below MCL levels.

**Dynamic shutdown test of the MIH and Loprest, a division of WRT Nitrate Reduction and Removal System:** A dynamic shutdown test was performed on the system to simulate full flow interruptions to an operating system. A one-hour flow shutdown was initiated on the steady operating system. This test was completed on February 6, 2019. Effluent turbidity values were 0.058 NTU and discharge free-chlorine levels were 2.5 ppm. After a restart following a 1 hour and 10-minute shutdown period, the effluent turbidity values peaked at 0.221 NTU and stabilized to 0.050 in 9 minutes. A full finished water sampling was drawn at 25 minutes from the restart time calculated to coincide with the volume throughput from the biological nitrate reduction system. The results are reported in the February 6, 2019 sampling. Nitrate levels remain very low at 0.42 mg/L, THM and HAA5 values are elevated at 75 µg/L and 120 µg/L respectively. An HPC result showed 1.0 CFU/mL with absent E. coli and Total coliform. The HPC positive hit is most likely the result of a restart carryover and perhaps insufficient chlorine content in the sample volume as the shutdown interrupted all chlorine feed to the system. Residual chlorine levels were not measured continuously and actual free-chlorine content in the sample volume is not known for certain. It is also not fully known how or why viable bacteriological matter could survive UV sterilization in this case. In any event, residual chlorine in the treatment system effluent is a direct control parameter that should be measured continually in a full-scale production treatment system to provide residual disinfection in the finished water distribution. We can suspect that the elevated DBP results are a function of chlorine reaction with some of the suspended organics in the filtration system thus depleting the residual disinfection effect of the oxidant. As mentioned previously, DBP formation is function of organic material concentration and contact time. Here the suspended flow period for more than one hour can be attributed to the formation of more than usual DBP compounds in the effluent sample for the period prior to the system restart.

**Solids Filtration, Collection and Analysis:** A representative volume of backwash waste water was collected in a settling tank to assess the total mass and characterize the material for proper disposal. The collected solids contain essentially dead biological material with a coagulation aid to facilitate solids separation. Filtration and solids removal efficiency can be measured using a simple turbidity sampling of the untreated and treated water. This parameter is continually measured and used for filter run termination. A simple settling test performed onsite involved collecting a 5-gallon grab sample of the backwash wastewater and observing the solids settling rate. This test was used to assure the correct filtration aid addition rate and observe the clarity of the supernatant decant water. Photographs 1 and 2 illustrate the relative solids settling efficiency that occurred with the collected backwash waste sample. Very good clarification of the supernatant water was



demonstrated in this test, which can suggest further consideration of water recovery from the backwash water volume used in the cleaning cycles.



Photographs 3 and 4. Backwash water settling test example 20 minutes and 1 hour.

About 75 gallons of backwash water volume was generally required to complete the surface wash and backwash cleaning cycle through all three filter columns and purge the media beds of collected solids to the point where the backwash water runs essentially clear. The backwash cleaning sequence is comprised of a combination surface wash equivalent to 2  $\text{gpm}/\text{ft}^2$  and a simultaneous full filter bed backwash at 12  $\text{gpm}/\text{ft}^2$  for 4 minutes duration. This is followed by a full filter bed backwash at 12  $\text{gpm}/\text{ft}^2$  for an additional 4 minutes duration. A preservice rinse at the service flow rate normally occurs for a 4-minute time period directing the discharge water to waste. In the case of the pilot system, this exiting water is directed to the effluent collection tank. A sequential backwash cleaning cycle for the three filter columns occurs for a total time of 24 minutes for a total collected volume of 72 to 75 gallons of wastewater. This volume corresponds to a 6.8 BV of total filter backwash water. A service run of 25 hours was selected for the backwash waste collection test. The full backwash wastewater volume was allowed to settle for concentration of all solids into a settled sludge. A concentrated settled sludge volume of about 4 gallons was packaged and then transferred to the WRT laboratory in Westminster, Colorado for additional testing. Here the waste solids were further concentrated then filtered and dried to obtain a total dry solids estimate. A sample of the dry solids were separately analyzed for RCRA waste characterization for disposal purposes.

Waste solids collected can be described as small coagulated albuminous particulate material having a cream color. The backwash solids sludge sample was left to settle and concentrated again using vacuum filtration over a 1.6 micron filter paper. The solids and the filtrate were analyzed for RCRA metals and general water quality respectively. Laboratory analysis results are attached in the appendices. Notable findings show elevated

hardness levels and silica in the filtrate over that found in the raw water. The filtrate water did show slightly higher TOC content at 35.2 mg/L. The solids sludge material analyzed showed elevated levels of arsenic and barium at 37.7 mg/L and 84.3 mg/L respectively. This may or may not be a concern at the point of disposal depending upon the level of dewatering needed for disposal.

### Quantitative Waste Analysis

Based on the waste material collected in the representative filter backwash cleaning cycle, an estimated expected quantity in full-scale system operation can be extrapolated.

Collected solids quantitative analysis showed a total dried filter cake weight of 47 grams for a total dry solids generation, equivalent of 627 grams per 1,000 gallons collected backwash wastewater. Solids generated as a proportion to the treated water produced is equivalent to 36 lbs dry solids for every 1 million gallons treated.

This value is as expected subject to operational conditions originally selected and modified in the testing. Careful attention to the collection of this single filter backwash waste solids was exercised with no known loss of waste solids apart from trace suspended solids in the decanted supernatant.

### Conclusion and Summary of Testing Objectives

The results obtained for the MIH and Loprest, a division of WRT Nitrate Reduction and Removal System pilot testing have demonstrated consistent and effective removal of nitrate contaminant from the San Antonio well No. 31 water to very low levels. Some improvements to the overall biological nitrate removal process to facilitate downflow pressure filtration were accomplished through the course of the testing. A modification of the filtration rate and the addition of a final UV Sterilizer were made to provide a more robust post biological nitrate reduction treatment. The changes assure the combined system provides very consistent finished water quality results with very low suspended solids and predictably low TOC results. Finished water effluent samplings tested in a third-party laboratory confirm the water nitrate reduction performance and the discharge suspended solids turbidity analysis obtained in onsite analytical testing. The MIH biological nitrate reduction system is forgiving in terms of process upsets and flow interruptions. Internal safeguards for nitrate reduction prevent untreated water from exiting the system. The hard shutdown test confirms a fast system recovery from a flow rate loss and water flow interruption. The February 6, 2019 sampling and analysis confirm the unremarkable result of the shutdown effects on the system. The inherent efficiency of the MIH biological reduction vessel allows for nearly a stoichiometric ratio of electron donor reagent addition to greatly eliminate the effects of excess electron donor and excess biological material in the treated water. Controlling the anoxic environment in the biological reduction vessel is made much simpler as a result. TOC levels in the aeration tank are generally less than 5 or 6 ppm and the total suspended solids loading to the filtration system is manageable whereas greater than 24 hour filter service runs are possible and as demonstrated in this

pilot testing, the expected result. Apart from the operator-caused setpoint omission for the filter backwash cleaning sequence that occurred on February 28, 2019, the filter system operated reliably and predictably processing about 2,800 to 3,200 gallons between filter backwash cleaning cycles for a 24 to 28 hour service run. A failure of this type is unlikely to occur on a full-scale treatment system as alarm points would be triggered for operator notification. Such alarm notifications have not been instituted on this pilot control system.

CWRB DDW requirements for testing of the decanted supernatant filter backwash water revealed little difference from finished water quality other elevated TOC values than that in the raw water. Return of this water stream to the aeration overflow tank would provide the additional treatment necessary to reduce TOC to finished water quality levels. Therefore, all water used for filter backwash can be safely returned to the treatment process. This operational option provides a zero-liquid wastewater process where no wastewater volume collected requires disposal.

The concept of using simple biological reduction with the MIH process and a packed bed post-treatment solids filtration process using Loprest pressure filters appears to be an effective alternative to more elaborate filtration techniques and offers the least quantity of water treatment waste residuals per water volume treated. Manageable volumes of waste solids are suitable for non-hazardous waste disposal in California. The MIH/Loprest biological nitrate reduction process specifically reduces nitrate in a controlled manner without bulk dissolved solids removal or exchange removal of untargeted anion constituents. The final testing objectives for this pilot testing included full system concept verification to provide data for full-scale process development. With the data obtained through the testing conducted here in conjunction with the wastewater profiles of the waste solids generated in the process, these objectives were fulfilled.

MIH and Loprest, a division of WRT continues development of a full-service arrangement for treatment for nitrate contaminants in drinking water sources including waste residual handling and disposal methods that should reduce the operating costs and further reduce handling equipment at each treatment location. The results of the San Antonio Water Company pilot testing for MIH/Loprest biological reduction process has led us to conclude that this treatment method offers the water provider the most cost effective and simple process for reliable nitrate treatment compared to other more complex competing and other traditional water treatment technologies. MIH/Loprest is confident that the process is ready for full-scale treatment implementation of all portions of the process. We trust the results of this study should provide San Antonio Water Company the support that the MIH/Loprest biological nitrate reduction process be given proper consideration for their nitrate treatment equipment.

Appendix A

Analytical Test Results

Page 22 - 57



**BABCOCK Laboratories, Inc.**  
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Client Name: MIH Water Treatment, Inc.  
Contact: Pete Hall  
Address: 253 Belaire Court  
Danville, QCA 94526

Analytical Report: Page 1 of 4  
Project Name: San Antonio Water - Well 31  
Project Number: SA-31

Report Date: 05-Feb-2019

**Work Order Number: B9A2586**

Received on Ice (Y/N): Yes Temp: 15 °C

Attached is the analytical report for the sample(s) received for your project. Below is a list of the individual sample descriptions with the corresponding laboratory number(s). Also, enclosed is a copy of the Chain of Custody document (if received with your sample(s)). Please note any unused portion of the sample(s) may be responsibly discarded after 30 days from the above report date, unless you have requested otherwise.

Thank you for the opportunity to serve your analytical needs. If you have any questions or concerns regarding this report please contact our client service department.

**Sample Identification**

<u>Lab Sample #</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>By</u>	<u>Date Submitted</u>	<u>By</u>
B9A2586-01	SA-31 LP Outlet	Water	01/22/19 11:25	Peter Hall	01/22/19 12:19	Steve Corrington
B9A2586-02	SA-31 LP Outlet Travel Blank	Water	01/22/19 11:25	Peter Hall	01/22/19 12:19	Steve Corrington



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Client Name: MIH Water Treatment, Inc.  
 Contact: Pete Hall  
 Address: 253 Belaire Court  
 Danville, QCA 94526

Analytical Report: Page 2 of 4  
 Project Name: San Antonio Water - Well 31  
 Project Number: SA-31

Report Date: 05-Feb-2019

**Work Order Number: B9A2586**

Received on Ice (Y/N): Yes Temp: 15 °C

Laboratory Reference Number

**B9A2586-01**

<u>Sample Description</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
SA-31 LP Outlet	Water	01/22/19 11:25	01/22/19 12:19

<u>Analyte(s)</u>	<u>Result</u>	<u>RDL</u>	<u>Units</u>	<u>Method</u>	<u>Analysis Date</u>	<u>Analyst</u>	<u>Flag</u>
<b>Anions</b>							
Nitrate as N	0.27	0.20	mg/L	EPA 300.0	01/23/19 05:25	KBS	
Nitrite as N	ND	0.10	mg/L	EPA 300.0	01/23/19 05:25	KBS	
<b>General Physical</b>							
Turbidity	ND	0.10	NTU	SM 2130 B	01/23/19 19:57	JGZ	
<b>Volatile Organic Compounds by EPA 524.2</b>							
Total Trihalomethanes	20	0.50	ug/L	EPA 524.2	01/25/19 02:08	EEC	
Bromodichloromethane	2.6	0.50	ug/L	EPA 524.2	01/25/19 02:08	EEC	
Bromoform	ND	0.50	ug/L	EPA 524.2	01/25/19 02:08	EEC	
Chloroform	18	0.50	ug/L	EPA 524.2	01/25/19 02:08	EEC	
Dibromochloromethane	ND	0.50	ug/L	EPA 524.2	01/25/19 02:08	EEC	
Surrogate: 1,2-Dichloroethane-d4	97.4	% 50-150		EPA 524.2	01/25/19 02:08	EEC	
Surrogate: 4-Bromofluorobenzene	110	% 50-150		EPA 524.2	01/25/19 02:08	EEC	
Surrogate: Toluene-d8	99.2	% 50-150		EPA 524.2	01/25/19 02:08	EEC	
<b>Haloacetic Acid by Standard Methods 6251B</b>							
HAA5	22	2.0	ug/L	SM 6251B	01/31/19 15:01	DIS	
Monochloroacetic Acid	ND	2.0	ug/L	SM 6251B	01/31/19 15:01	DIS	
Dichloroacetic Acid	7.3	1.0	ug/L	SM 6251B	01/31/19 15:01	DIS	
Trichloroacetic Acid	15	1.0	ug/L	SM 6251B	01/31/19 15:01	DIS	
Monobromoacetic Acid	ND	1.0	ug/L	SM 6251B	01/31/19 15:01	DIS	
Dibromoacetic Acid	ND	1.0	ug/L	SM 6251B	01/31/19 15:01	DIS	
Surrogate: 2,3-Dibromopropionic acid	106	% 70-130		SM 6251B	01/31/19 15:01	DIS	



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Client Name: MIH Water Treatment, Inc.  
Contact: Pete Hall  
Address: 253 Belaire Court  
Danville, QCA 94526

Analytical Report: Page 3 of 4  
Project Name: San Antonio Water - Well 31  
Project Number: SA-31

Report Date: 05-Feb-2019

**Work Order Number: B9A2586**

Received on Ice (Y/N): Yes Temp: 15 °C

Laboratory Reference Number

**B9A2586-02**

<u>Sample Description</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
SA-31 LP Outlet Travel Blank	Water	01/22/19 11:25	01/22/19 12:19

<b>Analyte(s)</b>	<b>Result</b>	<b>RDL</b>	<b>Units</b>	<b>Method</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Flag</b>
Haloacetic Acid by Standard Methods 6251B							
HAA5	ND	2.0	ug/L	SM 6251B	01/31/19 15:47	DIS	
Monochloroacetic Acid	ND	2.0	ug/L	SM 6251B	01/31/19 15:47	DIS	
Dichloroacetic Acid	ND	1.0	ug/L	SM 6251B	01/31/19 15:47	DIS	
Trichloroacetic Acid	ND	1.0	ug/L	SM 6251B	01/31/19 15:47	DIS	
Monobromoacetic Acid	ND	1.0	ug/L	SM 6251B	01/31/19 15:47	DIS	
Dibromoacetic Acid	ND	1.0	ug/L	SM 6251B	01/31/19 15:47	DIS	
<i>Surrogate: 2,3-Dibromopropionic acid</i>	103	% 70-130		SM 6251B	01/31/19 15:47	DIS	



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Client Name: MIH Water Treatment, Inc.  
Contact: Pete Hall  
Address: 253 Belaire Court  
Danville, QCA 94526

Analytical Report: Page 4 of 4  
Project Name: San Antonio Water - Well 31  
Project Number: SA-31

Report Date: 05-Feb-2019

**Work Order Number: B9A2586**

Received on Ice (Y/N): Yes Temp: 15 °C

**Notes and Definitions**

- ND: Analyte NOT DETECTED at or above the Method Detection Limit (if MDL is reported), otherwise at or above the Reportable Detection Limit (RDL)
- NR: Not Reported
- RDL: Reportable Detection Limit
- MDL: Method Detection Limit
- \* / " : NELAP does not offer accreditation for this analyte/method/matrix combination

**Approval**

Enclosed are the analytical results for the submitted sample(s). Babcock Laboratories certify the data presented as part of this report meet the minimum quality standards in the referenced analytical methods. Any exceptions have been noted.

**Amanda C. Porter**

cc:

e-Short\_No Alias.rpt

This report applies only to the sample(s) analyzed. As a mutual protection to clients, the public, and Babcock Laboratories, Inc., this report is submitted and accepted for the exclusive use of the Client to whom it is addressed. Interpretation and use of the information contained within this report are the sole responsibility of the Client. Babcock Laboratories, Inc. is not responsible for any misinformation or consequences that may result from misinterpretation or improper use of this report. This report is not to be modified or abbreviated in any way. Additionally, this report is not to be used, in whole or in part, in any advertising or publicity matter without written authorization from Babcock Laboratories, Inc. The liability of Babcock Laboratories, Inc. is limited to the actual cost of the requested analyses, unless otherwise agreed upon in writing. There is no other warranty expressed or implied.

*mailing*  
P.O Box 432  
Riverside, CA 92502-0432

*location*  
6100 Quail Valley Court  
Riverside, CA 92507-0704

P 951 653 3351  
F 951 653 1662  
www.babcocklabs.com

CA ELAP No. 2698  
EPA No. CA00102  
NELAP No. OR4035  
LACSD No. 10119





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Client Name: MIH Water Treatment, Inc.  
Contact: Pete Hall  
Address: 253 Belaire Court  
Danville, QCA 94526

Analytical Report: Page 1 of 1  
Project Name: San Antonio Water - Well 31  
Project Number: SA-31

Report Date: 05-Feb-2019

Work Order Number: B9A2586

Received on Ice (Y/N): Yes Temp: 15 °C



6100 Quail Valley Court Riverside, CA 92507  
(951) 653-3351 • FAX (951) 653-1662  
www.babcocklabs.com

**Chain of Custody & Sample Information Record**

Client: <u>MIH WATER</u>		Contact: <u>P. HALL</u>		Fax No.		Additional Reporting Requests					
Phone No. <u>510-828-5073</u>		email: <u>P.HALL@MIH.COM</u>				Include QC Data Package: <input type="checkbox"/> Yes <input type="checkbox"/> No					
Project Name: <u>SA-31</u>		Turn Around Time: <u>Routine</u> <u>*72 Hour Rush</u> *48 Hour Rush *24 Hour Rush				FAX Results: <input type="checkbox"/> Yes <input type="checkbox"/> No					
Project Location: <u>SA WELL 31</u>		*Lab TAT Approval: <u>By:</u>		*Additional Charges Apply		Email Results: <input type="checkbox"/> Yes <input type="checkbox"/> No					
						State EDT: <input type="checkbox"/> Yes <input type="checkbox"/> No					
						(Include Source Number in Notes)					
Sampler Information			# of Containers & Preservatives				Sample Type	Analysis Requested	Matrix	Notes	
Name: <u>PETE HALL</u>			Unpreserved							DW = Drinking Water WW = Waste Water GW = Ground Water S = Source SG = Sludge L = Liquid M = Miscellaneous	TBrecid JG 1/22/19 All vials ok JG 1/22/19
Employer: <u>MIH WATER</u>			H <sub>2</sub> SO <sub>4</sub>	HCl	HNO <sub>3</sub>	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	NaOH	NaOH/Zn Acetate			
Signature: <u>[Signature]</u>											
Sample ID	Date	Time									
<u>SA-31-LP OUTLET</u>	<u>01-22</u>	<u>11:25</u>	<input checked="" type="checkbox"/>								
											<u># Per Bottle</u>
											<u>Sample Filled</u>
											<u>JG 1/22/19</u>
<u>SA-31-MICRO</u>											<u># Per client</u>
											<u>will resample</u>
											<u>JG 1/22/19</u>
Relinquished By (sign)		Print Name / Company		Date / Time		Received By (sign)		Print Name / Company			
<u>[Signature]</u>		<u>Steve [unclear] MIH</u>		<u>1/22/19 12:19</u>		<u>[Signature]</u>		<u>Jenny G ESB</u>			

By signing on behalf of your organization and relinquishing this chain of custody you agree to abide by the Babcock Laboratories, Inc. Terms and Conditions.

(For Lab Use Only) Sample Integrity Upon Receipt/Acceptance Criteria			
Sample(s) Submitted on Ice?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample meets laboratory acceptance criteria?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seal(s) Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <u>NA</u>	Permission to continue:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample(s) Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Deviation/Notes:	
Temperature: <u>15</u> °C <input type="checkbox"/> Cooler Blank		Signature/Date:	

**B9A2586**

1/22/2019 12:39  
JUG





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Client Name: MIH Water Treatment, Inc.  
Contact: Pete Hall  
Address: 253 Belaire Court  
Danville, QCA 94526

Analytical Report: Page 1 of 3  
Project Name: San Antonio Water - Well 31  
Project Number: SA-31

Report Date: 29-Jan-2019

**Work Order Number: B9A2784**

Received on Ice (Y/N): Yes Temp: 11 °C

Attached is the analytical report for the sample(s) received for your project. Below is a list of the individual sample descriptions with the corresponding laboratory number(s). Also, enclosed is a copy of the Chain of Custody document (if received with your sample(s)). Please note any unused portion of the sample(s) may be responsibly discarded after 30 days from the above report date, unless you have requested otherwise.

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**Sample Identification**

<u>Lab Sample #</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>By</u>	<u>Date Submitted</u>	<u>By</u>
B9A2784-01	SA-31 LP Outlet	Water	01/23/19 11:45	Steve Corrington	01/23/19 12:38	Steve Corrington



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Client Name: MIH Water Treatment, Inc.  
 Contact: Pete Hall  
 Address: 253 Belaire Court  
 Danville, QCA 94526

Analytical Report: Page 2 of 3  
 Project Name: San Antonio Water - Well 31  
 Project Number: SA-31

Report Date: 29-Jan-2019

**Work Order Number: B9A2784**

Received on Ice (Y/N): Yes Temp: 11 °C

Laboratory Reference Number

**B9A2784-01**

<u>Sample Description</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
SA-31 LP Outlet	Water	01/23/19 11:45	01/23/19 12:38

<b>Analyte(s)</b>	<b>Result</b>	<b>RDL</b>	<b>Units</b>	<b>Method</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Flag</b>
Heterotrophic Plate Count - SM 9215 B							
Heterotrophic Plate Count	ND	1.0	CFU/mL	SM 9215B	01/25/19 13:00	SAR	
MMOMUG - Presence/Absence - SM 9223 B							
Total Coliform	Absent	1.1	---	SM 9223B	01/24/19 09:45	NGU	
E. coli	Absent	1.1	---	SM 9223B	01/24/19 09:45	NGU	



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Client Name: MIH Water Treatment, Inc.  
Contact: Pete Hall  
Address: 253 Belaire Court  
Danville, QCA 94526

Analytical Report: Page 3 of 3  
Project Name: San Antonio Water - Well 31  
Project Number: SA-31

Report Date: 29-Jan-2019

**Work Order Number: B9A2784**

Received on Ice (Y/N): Yes Temp: 11 °C

**Notes and Definitions**

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- MDL: Method Detection Limit
- \* / " : NELAP does not offer accreditation for this analyte/method/matrix combination

**Approval**

Enclosed are the analytical results for the submitted sample(s). Babcock Laboratories certify the data presented as part of this report meet the minimum quality standards in the referenced analytical methods. Any exceptions have been noted.

**Amanda C. Porter**

cc:

e-Short\_No Alias.rpt

This report applies only to the sample(s) analyzed. As a mutual protection to clients, the public, and Babcock Laboratories, Inc., this report is submitted and accepted for the exclusive use of the Client to whom it is addressed. Interpretation and use of the information contained within this report are the sole responsibility of the Client. Babcock Laboratories, Inc. is not responsible for any misinformation or consequences that may result from misinterpretation or improper use of this report. This report is not to be modified or abbreviated in any way. Additionally, this report is not to be used, in whole or in part, in any advertising or publicity matter without written authorization from Babcock Laboratories, Inc. The liability of Babcock Laboratories, Inc. is limited to the actual cost of the requested analyses, unless otherwise agreed upon in writing. There is no other warranty expressed or implied.

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P.O Box 432  
Riverside, CA 92502-0432

*location*  
6100 Quail Valley Court  
Riverside, CA 92507-0704

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F 951 653 1662  
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CA ELAP No. 2698  
EPA No. CA00102  
NELAP No. OR4035  
LACSD No. 10119



**BABCOCK Laboratories, Inc.**  
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Client Name: MIH Water Treatment, Inc.  
Contact: Pete Hall  
Address: 253 Belaire Court  
Danville, QCA 94526

Analytical Report: Page 1 of 1  
Project Name: San Antonio Water - Well 31  
Project Number: SA-31

Report Date: 29-Jan-2019

Work Order Number: **B9A2784**

Received on Ice (Y/N): Yes Temp: 11 °C



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**Chain of Custody & Sample Information Record**

Client: <u>MIH WATER</u>		Contact: <u>PJ Hall</u>		Fax No.		Additional Reporting Requests										
Phone No. <u>510 828-5073</u>		email: <u>PJHSITE2@MSN.COM</u>				Include QC Data Package: <input type="checkbox"/> Yes <input type="checkbox"/> No										
Project Name: <u>SA-31</u>		Turn Around Time: Routine <u>*72 Hour Rush</u> *48 Hour Rush *24 Hour Rush				FAX Results: <input type="checkbox"/> Yes <input type="checkbox"/> No										
Project Location: <u>SA- Well 31</u>		*Lab TAT Approval: By:				Email Results: <input type="checkbox"/> Yes <input type="checkbox"/> No										
						State EDT: <input type="checkbox"/> Yes <input type="checkbox"/> No (Include Source Number in Notes)										
*Additional Charges Apply																
Sampler Information			# of Containers & Preservatives			Sample Type		Analysis Requested		Matrix		Notes				
Name: <u>STEVE CORNINGTOD</u>			Unpreserved									DW = Drinking Water WW = Waste Water GW = Ground Water S = Source SG = Sludge L = Liquid M = Miscellaneous  <u>* Rush Approved</u> <u>AS</u>				
Employer: <u>MIH WATER</u>			H <sub>2</sub> SO <sub>4</sub>	HCl	HNO <sub>3</sub>	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	NaOH	NaOH/Zn Acetate	NH <sub>4</sub> Cl	PDC	Total # of Containers			Routine	Resample	Special
Signature: <u>ASG</u>																
Sample ID	Date	Time														
<u>SA-31 LP outlet</u>	<u>1/23</u>	<u>11:45</u>														
	<u>2019</u>															
Relinquished By (sign)	Print Name / Company		Date / Time		Received By (sign)		Print Name / Company									
<u>ASG</u>	<u>Steve Corningtod MIH</u>		<u>1/23/19 12:38</u>		<u>ASG</u>		<u>Alycia/EIS</u>									

By signing on behalf of your organization and relinquishing this chain of custody you agree to abide by the Babcock Laboratories, Inc. Terms and Conditions.

(For Lab Use Only) Sample Integrity Upon Receipt/Acceptance Criteria			
Sample(s) Submitted on Ice?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Sample meets laboratory acceptance criteria?	Yes <input checked="" type="radio"/> No <input type="radio"/>
Custody Seal(s) Intact?	Yes <input checked="" type="radio"/> No <input type="radio"/> <u>NA</u>	Permission to continue:	Yes <input checked="" type="radio"/> No <input type="radio"/>
Sample(s) Intact?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Deviation/Notes:	
Temperature: <u>11</u> °C <input type="checkbox"/> Cooler Blank		Signature/Date:	

**B9A2784**  
1/23/2019 13:04  
AJG

mailing  
P.O Box 432  
Riverside, CA 92502-0432

location  
6100 Quail Valley Court  
Riverside, CA 92507-0704

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CA ELAP No. 2698  
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NELAP No. OR4035  
LACSD No. 10119



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Client Name: MIH Water Treatment, Inc.  
Contact: Pete Hall  
Address: 253 Belaire Court  
Danville, QCA 94526

Analytical Report: Page 1 of 4  
Project Name: San Antonio Water - Well 31  
Project Number: SA-31

Report Date: 21-Feb-2019

**Work Order Number: B9B0691**

Received on Ice (Y/N): Yes Temp: 14 °C

Attached is the analytical report for the sample(s) received for your project. Below is a list of the individual sample descriptions with the corresponding laboratory number(s). Also, enclosed is a copy of the Chain of Custody document (if received with your sample(s)). Please note any unused portion of the sample(s) may be responsibly discarded after 30 days from the above report date, unless you have requested otherwise.

Thank you for the opportunity to serve your analytical needs. If you have any questions or concerns regarding this report please contact our client service department.

**Sample Identification**

<u>Lab Sample #</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>By</u>	<u>Date Submitted</u>	<u>By</u>
B9B0691-01	SA-31 Outlet	Water	02/06/19 13:30	PVH	02/06/19 15:00	PJ Hall



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Client Name: MIH Water Treatment, Inc.  
 Contact: Pete Hall  
 Address: 253 Belaire Court  
 Danville, QCA 94526

Analytical Report: Page 2 of 4  
 Project Name: San Antonio Water - Well 31  
 Project Number: SA-31

Report Date: 21-Feb-2019

**Work Order Number: B9B0691**

Received on Ice (Y/N): Yes Temp: 14 °C

Laboratory Reference Number

**B9B0691-01**

<u>Sample Description</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
SA-31 Outlet	Water	02/06/19 13:30	02/06/19 15:00

<u>Analyte(s)</u>	<u>Result</u>	<u>RDL</u>	<u>Units</u>	<u>Method</u>	<u>Analysis Date</u>	<u>Analyst</u>	<u>Flag</u>
<b>Anions</b>							
Nitrate as N	0.42	0.20	mg/L	EPA 300.0	02/07/19 19:11	KBS	
Nitrite as N	ND	0.10	mg/L	EPA 300.0	02/07/19 19:11	KBS	
<b>General Physical</b>							
Turbidity	ND	0.10	NTU	SM 2130 B	02/07/19 23:15	JGZ	
<b>Volatile Organic Compounds by EPA 524.2</b>							
Total Trihalomethanes	75	0.50	ug/L	EPA 524.2	02/07/19 22:25	EEC	
Bromodichloromethane	3.1	0.50	ug/L	EPA 524.2	02/07/19 22:25	EEC	
Bromoform	ND	0.50	ug/L	EPA 524.2	02/07/19 22:25	EEC	
Chloroform	72	0.50	ug/L	EPA 524.2	02/07/19 22:25	EEC	
Dibromochloromethane	ND	0.50	ug/L	EPA 524.2	02/07/19 22:25	EEC	
Surrogate: 1,2-Dichloroethane-d4	99.3	% 50-150		EPA 524.2	02/07/19 22:25	EEC	
Surrogate: 4-Bromofluorobenzene	106	% 50-150		EPA 524.2	02/07/19 22:25	EEC	
Surrogate: Toluene-d8	98.2	% 50-150		EPA 524.2	02/07/19 22:25	EEC	
<b>Trihalomethane Formation Potential by EPA Method 524.2</b>							
Total Trihalomethanes (THMFP)	130	0.50	ug/L*	EPA 524.2	02/15/19 03:26	JES	THMfp
Bromodichloromethane (FP)	12	0.50	ug/L*	EPA 524.2	02/15/19 03:26	JES	
Bromoform (FP)	ND	0.50	ug/L*	EPA 524.2	02/15/19 03:26	JES	
Chloroform (FP)	120	5.0	ug/L*	EPA 524.2	02/15/19 02:58	JES	
Dibromochloromethane (FP)	2.6	0.50	ug/L*	EPA 524.2	02/15/19 03:26	JES	
Surrogate: 1,2-Dichloroethane-d4	99.9	% 50-150		EPA 524.2	02/15/19 03:26	JES	
Surrogate: 1,2-Dichloroethane-d4	103	% 50-150		EPA 524.2	02/15/19 02:58	JES	
Surrogate: 4-Bromofluorobenzene	99.6	% 50-150		EPA 524.2	02/15/19 03:26	JES	
Surrogate: 4-Bromofluorobenzene	97.1	% 50-150		EPA 524.2	02/15/19 02:58	JES	
Surrogate: Toluene-d8	98.8	% 50-150		EPA 524.2	02/15/19 02:58	JES	
Surrogate: Toluene-d8	99.7	% 50-150		EPA 524.2	02/15/19 03:26	JES	



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Client Name: MIH Water Treatment, Inc.  
 Contact: Pete Hall  
 Address: 253 Belaire Court  
 Danville, QCA 94526

Analytical Report: Page 3 of 4  
 Project Name: San Antonio Water - Well 31  
 Project Number: SA-31

Report Date: 21-Feb-2019

**Work Order Number: B9B0691**

Received on Ice (Y/N): Yes Temp: 14 °C

Laboratory Reference Number

**B9B0691-01**

<u>Sample Description</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
SA-31 Outlet	Water	02/06/19 13:30	02/06/19 15:00

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
Haloacetic Acid by Standard Methods 6251B							
HAA5	120	2.0	ug/L	SM 6251B	02/13/19 20:45	NAA	
Monochloroacetic Acid	3.9	2.0	ug/L	SM 6251B	02/13/19 20:45	NAA	
Dichloroacetic Acid	32	1.0	ug/L	SM 6251B	02/13/19 20:45	NAA	
Trichloroacetic Acid	87	2.0	ug/L	SM 6251B	02/13/19 20:45	NAA	
Monobromoacetic Acid	ND	1.0	ug/L	SM 6251B	02/13/19 20:45	NAA	
Dibromoacetic Acid	ND	1.0	ug/L	SM 6251B	02/13/19 20:45	NAA	
Surrogate: 2,3-Dibromopropionic acid	94.4	% 70-130		SM 6251B	02/13/19 20:45	NAA	
Heterotrophic Plate Count - SM 9215 B							
Heterotrophic Plate Count	1.0	1.0	CFU/mL	SM 9215B	02/08/19 15:55	KJB	
MMOMUG - Presence/Absence - SM 9223 B							
Total Coliform	Absent	1.1	----	SM 9223B	02/07/19 12:15	NGU	
E. coli	Absent	1.1	----	SM 9223B	02/07/19 12:15	NGU	





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Client Name: MIH Water Treatment, Inc.  
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Analytical Report: Page 4 of 4  
Project Name: San Antonio Water - Well 31  
Project Number: SA-31

Report Date: 21-Feb-2019

**Work Order Number: B9B0691**

Received on Ice (Y/N): Yes Temp: 14 °C

**Notes and Definitions**

- THMfp Sample dosed with 10 uL of a minimum 5% chlorine solution. Free Chlorine Residual present (>=1ppm) after 7 day incubation at or above 25 deg C.
- ND: Analyte NOT DETECTED at or above the Method Detection Limit (**if MDL is reported**), otherwise at or above the Reportable Detection Limit (RDL)
- NR: Not Reported
- RDL: Reportable Detection Limit
- MDL: Method Detection Limit
- \* / " : NELAP does not offer accreditation for this analyte/method/matrix combination

**Approval**

Enclosed are the analytical results for the submitted sample(s). Babcock Laboratories certify the data presented as part of this report meet the minimum quality standards in the referenced analytical methods. Any exceptions have been noted.

**Amanda C. Porter**

cc:

e-Short\_No Alias.rpt

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Riverside, CA 92502-0432

*location*  
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CA ELAP No. 2698  
EPA No. CA00102  
NELAP No. OR4035  
LACSD No. 10119



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Client Name: MIH Water Treatment, Inc.  
 Contact: Pete Hall  
 Address: 253 Belaire Court  
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Analytical Report: Page 1 of 1  
 Project Name: San Antonio Water - Well 31  
 Project Number: SA-31

Report Date: 21-Feb-2019

Work Order Number: **B9B0691**

Received on Ice (Y/N): Yes Temp: 14 °C



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 www.babcocklabs.com

**Chain of Custody & Sample Information Record**

Client: <u>MIH WATER</u>	Contact:	Fax No.	Additional Reporting Requests
Phone No. <u>510-828-6073</u>	email:		Include QC Data Package: <input type="checkbox"/> Yes <input type="checkbox"/> No FAX Results: <input type="checkbox"/> Yes <input type="checkbox"/> No Email Results: <input type="checkbox"/> Yes <input type="checkbox"/> No State EDT: <input type="checkbox"/> Yes <input type="checkbox"/> No <small>(Include Source Number in Notes)</small>
Project Name: <u>SA-31</u>	Turn Around Time: Routine *72 Hour Rush *48 Hour Rush *24 Hour Rush		
Project Location: <u>SA-WELL 31</u>	*Lab TAT Approval: By: *Additional Charges Apply		

Sampler Information			# of Containers & Preservatives							Total # of Containers	Sample Type	Analysis Requested	Matrix	Notes	
Name:	Date	Time	Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HCl	HNO <sub>3</sub>	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	NaOH	NaOH/Zn Acetate						NH <sub>4</sub> Cl
<u>P. Hall</u>	<u>2/6/2019</u>	<u>1:30</u>	<input checked="" type="checkbox"/>									1			
Employer: <u>MIH</u>												4			
Signature: <u>[Signature]</u>												2			
												8			
Sample ID: <u>SA-31-LP00767</u>															
<u>MICO</u>															

Relinquished By (sign)	Print Name / Company	Date / Time	Received By (sign)	Print Name / Company
<u>[Signature]</u>	<u>P. Hall MIH</u>	<u>2/6/2019 5:00 PM</u>	<u>[Signature]</u>	<u>Jordan G/ESB</u>

By signing on behalf of your organization and relinquishing this chain of custody you agree to abide by the Babcock Laboratories, Inc. Terms and Conditions.

(For Lab Use Only) Sample Integrity Upon Receipt/Acceptance Criteria	
Sample(s) Submitted on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample meets laboratory acceptance criteria? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seal(s) Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <u>NA</u>	Permission to continue: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample(s) Intact? <u>14</u> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Deviation/Notes:
Temperature: _____ °C <input type="checkbox"/> Cooler Blank	Signature/Date:

**B9B0691**  
 2/06/2019 16:28  
 JMG



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Client Name: MIH Water Treatment, Inc.  
 Contact: Pete Hall  
 Address: 253 Belaire Court  
 Danville, QCA 94526

Analytical Report: Page 1 of 6  
 Project Name: San Antonio Water - Well 31  
 Project Number: SA-31

Report Date: 28-Feb-2019

**Work Order Number: B9B1525**

Received on Ice (Y/N): Yes Temp: 17 °C

Attached is the analytical report for the sample(s) received for your project. Below is a list of the individual sample descriptions with the corresponding laboratory number(s). Also, enclosed is a copy of the Chain of Custody document (if received with your sample(s)). Please note any unused portion of the sample(s) may be responsibly discarded after 30 days from the above report date, unless you have requested otherwise.

Thank you for the opportunity to serve your analytical needs. If you have any questions or concerns regarding this report please contact our client service department.

**Sample Identification**

<u>Lab Sample #</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>By</u>	<u>Date Submitted</u>	<u>By</u>
B9B1525-01	Inlet Water	Water	02/13/19 10:00	PJ Hall	02/13/19 12:50	Steve Corrington
B9B1525-02	Outlet LP	Water	02/13/19 10:00	PJ Hall	02/13/19 12:50	Steve Corrington
B9B1525-03	Micro	Water	02/13/19 10:00	PJ Hall	02/13/19 12:50	Steve Corrington



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Client Name: MIH Water Treatment, Inc.  
 Contact: Pete Hall  
 Address: 253 Belaire Court  
 Danville, QCA 94526

Analytical Report: Page 2 of 6  
 Project Name: San Antonio Water - Well 31  
 Project Number: SA-31

Report Date: 28-Feb-2019

**Work Order Number: B9B1525**

Received on Ice (Y/N): Yes Temp: 17 °C

Laboratory Reference Number

**B9B1525-01**

<u>Sample Description</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
Inlet Water	Water	02/13/19 10:00	02/13/19 12:50

<b>Analyte(s)</b>	<b>Result</b>	<b>RDL</b>	<b>Units</b>	<b>Method</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Flag</b>
<b>Anions</b>							
Nitrate as N	7.8	0.20	mg/L	EPA 300.0	02/13/19 22:45	KBS	
Nitrite as N	ND	0.10	mg/L	EPA 300.0	02/13/19 22:45	KBS	
<b>Aggregate Organic Compounds</b>							
Total Organic Carbon	ND	0.30	mg/L	SM 5310B	02/23/19 23:13	KCS	
<b>General Physical</b>							
Turbidity	0.12	0.10	NTU	SM 2130 B	02/14/19 01:30	MCM	



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Client Name: MIH Water Treatment, Inc.  
 Contact: Pete Hall  
 Address: 253 Belaire Court  
 Danville, QCA 94526

Analytical Report: Page 3 of 6  
 Project Name: San Antonio Water - Well 31  
 Project Number: SA-31

Report Date: 28-Feb-2019

**Work Order Number: B9B1525**

Received on Ice (Y/N): Yes Temp: 17 °C

Laboratory Reference Number

**B9B1525-02**

<u>Sample Description</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
Outlet LP	Water	02/13/19 10:00	02/13/19 12:50

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
<b>Anions</b>							
Nitrate as N	ND	0.20	mg/L	EPA 300.0	02/13/19 22:56	KBS	
Nitrite as N	ND	0.10	mg/L	EPA 300.0	02/13/19 22:56	KBS	
<b>Aggregate Organic Compounds</b>							
Total Organic Carbon	4.8	0.30	mg/L	SM 5310B	02/23/19 23:41	KCS	
<b>General Physical</b>							
Turbidity	ND	0.10	NTU	SM 2130 B	02/14/19 01:30	MCM	
<b>Volatile Organic Compounds by EPA 524.2</b>							
Total Trihalomethanes	48	0.50	ug/L	EPA 524.2	02/15/19 19:43	EEC	
Bromodichloromethane	4.9	0.50	ug/L	EPA 524.2	02/15/19 19:43	EEC	
Bromoform	ND	0.50	ug/L	EPA 524.2	02/15/19 19:43	EEC	
Chloroform	44	0.50	ug/L	EPA 524.2	02/15/19 19:43	EEC	
Dibromochloromethane	ND	0.50	ug/L	EPA 524.2	02/15/19 19:43	EEC	
Surrogate: 1,2-Dichloroethane-d4	97.1	% 50-150		EPA 524.2	02/15/19 19:43	EEC	
Surrogate: 4-Bromofluorobenzene	106	% 50-150		EPA 524.2	02/15/19 19:43	EEC	
Surrogate: Toluene-d8	97.3	% 50-150		EPA 524.2	02/15/19 19:43	EEC	
<b>Trihalomethane Formation Potential by EPA Method 524.2</b>							
Total Trihalomethanes (THMFP)	140	0.50	ug/L*	EPA 524.2	02/22/19 00:44	JES	THMfp
Bromodichloromethane (FP)	16	0.50	ug/L*	EPA 524.2	02/22/19 00:44	JES	
Bromoform (FP)	ND	0.50	ug/L*	EPA 524.2	02/22/19 00:44	JES	
Chloroform (FP)	120	5.0	ug/L*	EPA 524.2	02/22/19 18:37	EEC	
Dibromochloromethane (FP)	2.8	0.50	ug/L*	EPA 524.2	02/22/19 00:44	JES	
Surrogate: 1,2-Dichloroethane-d4	102	% 50-150		EPA 524.2	02/22/19 00:44	JES	
Surrogate: 1,2-Dichloroethane-d4	99.9	% 50-150		EPA 524.2	02/22/19 18:37	EEC	
Surrogate: 4-Bromofluorobenzene	97.5	% 50-150		EPA 524.2	02/22/19 00:44	JES	
Surrogate: 4-Bromofluorobenzene	103	% 50-150		EPA 524.2	02/22/19 18:37	EEC	
Surrogate: Toluene-d8	98.4	% 50-150		EPA 524.2	02/22/19 00:44	JES	
Surrogate: Toluene-d8	96.0	% 50-150		EPA 524.2	02/22/19 18:37	EEC	



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Client Name: MIH Water Treatment, Inc.  
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Analytical Report: Page 4 of 6  
 Project Name: San Antonio Water - Well 31  
 Project Number: SA-31

Report Date: 28-Feb-2019

**Work Order Number: B9B1525**

Received on Ice (Y/N): Yes Temp: 17 °C

Laboratory Reference Number

**B9B1525-02**

<u>Sample Description</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
Outlet LP	Water	02/13/19 10:00	02/13/19 12:50

<u>Analyte(s)</u>	<u>Result</u>	<u>RDL</u>	<u>Units</u>	<u>Method</u>	<u>Analysis Date</u>	<u>Analyst</u>	<u>Flag</u>
<b>Haloacetic Acid by Standard Methods 6251B</b>							
HAA5	39	2.0	ug/L	SM 6251B	02/21/19 00:27	NAA	
Monochloroacetic Acid	ND	2.0	ug/L	SM 6251B	02/21/19 00:27	NAA	
Dichloroacetic Acid	12	1.0	ug/L	SM 6251B	02/21/19 00:27	NAA	
Trichloroacetic Acid	26	1.0	ug/L	SM 6251B	02/21/19 00:27	NAA	
Monobromoacetic Acid	ND	1.0	ug/L	SM 6251B	02/21/19 00:27	NAA	
Dibromoacetic Acid	ND	1.0	ug/L	SM 6251B	02/21/19 00:27	NAA	
<i>Surrogate: 2,3-Dibromopropionic acid</i>	99.3	% 70-130		SM 6251B	02/21/19 00:27	NAA	
<b>Haloacetic Acid Formation Potential by Standard Methods 6251B</b>							
HAA5FP	130	2.0	ug/L*	SM 6251B	02/21/19 07:18	NAA	
Monochloroacetic Acid (FP)	6.7	2.0	ug/L*	SM 6251B	02/21/19 07:18	NAA	
Dichloroacetic Acid (FP)	75	2.0	ug/L*	SM 6251B	02/21/19 07:18	NAA	
Trichloroacetic Acid (FP)	47	2.0	ug/L*	SM 6251B	02/21/19 07:18	NAA	
Monobromoacetic Acid (FP)	2.1	1.0	ug/L*	SM 6251B	02/21/19 07:18	NAA	
Dibromoacetic Acid (FP)	1.2	1.0	ug/L*	SM 6251B	02/21/19 07:18	NAA	
<i>Surrogate: 2,3-Dibromopropionic acid</i>	124	% 70-130		SM 6251B	02/21/19 07:18	NAA	



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Client Name: MIH Water Treatment, Inc.  
Contact: Pete Hall  
Address: 253 Belaire Court  
Danville, QCA 94526

Analytical Report: Page 5 of 6  
Project Name: San Antonio Water - Well 31  
Project Number: SA-31

Report Date: 28-Feb-2019

**Work Order Number: B9B1525**

Received on Ice (Y/N): Yes Temp: 17 °C

Laboratory Reference Number

**B9B1525-03**

<u>Sample Description</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
Micro	Water	02/13/19 10:00	02/13/19 12:50

<b>Analyte(s)</b>	<b>Result</b>	<b>RDL</b>	<b>Units</b>	<b>Method</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Flag</b>
Heterotrophic Plate Count - SM 9215 B Heterotrophic Plate Count	ND	1.0	CFU/mL	SM 9215B	02/15/19 15:05	NGU	
MMOMUG - Presence/Absence - SM 9223 B Total Coliform	Absent	1.1	---	SM 9223B	02/14/19 11:50	NGU	
E. coli	Absent	1.1	---	SM 9223B	02/14/19 11:50	NGU	



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Client Name: MIH Water Treatment, Inc.  
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Address: 253 Belaire Court  
Danville, QCA 94526

Analytical Report: Page 6 of 6  
Project Name: San Antonio Water - Well 31  
Project Number: SA-31

Report Date: 28-Feb-2019

**Work Order Number: B9B1525**

Received on Ice (Y/N): Yes Temp: 17 °C

**Notes and Definitions**

- THMfp Sample dosed with 10 uL of a minimum 5% chlorine solution. Free Chlorine Residual present (>=1ppm) after 7 day incubation at or above 25 deg C.
- ND: Analyte NOT DETECTED at or above the Method Detection Limit (if MDL is reported), otherwise at or above the Reportable Detection Limit (RDL)
- NR: Not Reported
- RDL: Reportable Detection Limit
- MDL: Method Detection Limit
- \* / " : NELAP does not offer accreditation for this analyte/method/matrix combination

**Approval**

Enclosed are the analytical results for the submitted sample(s). Babcock Laboratories certify the data presented as part of this report meet the minimum quality standards in the referenced analytical methods. Any exceptions have been noted.

**Amanda C. Porter**

cc:

e-Short\_No Alias.rpt

This report applies only to the sample(s) analyzed. As a mutual protection to clients, the public, and Babcock Laboratories, Inc., this report is submitted and accepted for the exclusive use of the Client to whom it is addressed. Interpretation and use of the information contained within this report are the sole responsibility of the Client. Babcock Laboratories, Inc. is not responsible for any misinformation or consequences that may result from misinterpretation or improper use of this report. This report is not to be modified or abbreviated in any way. Additionally, this report is not to be used, in whole or in part, in any advertising or publicity matter without written authorization from Babcock Laboratories, Inc. The liability of Babcock Laboratories, Inc. is limited to the actual cost of the requested analyses, unless otherwise agreed upon in writing. There is no other warranty expressed or implied.

*mailing*  
P.O Box 432  
Riverside, CA 92502-0432

*location*  
6100 Quail Valley Court  
Riverside, CA 92507-0704

P 951 653 3351  
F 951 653 1662  
www.babcocklabs.com

CA ELAP No. 2698  
EPA No. CA00102  
NELAP No. OR4035  
LACSD No. 10119





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Client Name: MIH Water Treatment, Inc.  
Contact: Pete Hall  
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Danville, QCA 94526

Analytical Report: Page 1 of 1  
Project Name: San Antonio Water - Well 31  
Project Number: SA-31

Report Date: 28-Feb-2019

Work Order Number: B9B1525

Received on Ice (Y/N): Yes Temp: 17 °C



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(951) 653-3351 • FAX (951) 653-1662  
www.babcocklabs.com

**Chain of Custody & Sample Information Record**

Client: <u>MIH WATER</u>		Contact: <u>PJ HALL</u>		Fax No.		Additional Reporting Requests																		
Phone No. <u>510-828-5073</u>		email: <u>PEH@SITE2GO.MIWA.COM</u>				Include QC Data Package: <input type="checkbox"/> Yes <input type="checkbox"/> No																		
Project Name: <u>SA-31</u>		Turn Around Time: Routine *72 Hour Rush *48 Hour Rush *24 Hour Rush				FAX Results: <input type="checkbox"/> Yes <input type="checkbox"/> No																		
Project Location: <u>SA WELL 31</u>		*Lab TAT Approval: By:		*Additional Charges Apply		Email Results: <input type="checkbox"/> Yes <input type="checkbox"/> No																		
						State EDT: <input type="checkbox"/> Yes <input type="checkbox"/> No																		
						(Include Source Number in Notes)																		
Sampler Information			# of Containers & Preservatives						Sample Type		Analysis Requested		Matrix		Notes									
Name: <u>PJ HALL</u>			Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HCl	HNO <sub>3</sub>	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	NaOH	NaOH/Zn Acetate	NH <sub>4</sub> Cl	PDC	Total # of Containers	Routine	Resample	Special	DW	WW	GW	S	SG	L	M	Notes	
Employer: <u>MIH WATER</u>																								
Signature: <u>[Signature]</u>																								
Sample ID	Date	Time																						
<u>INLET WATER</u>	<u>2/13/19</u>	<u>10:00</u>	<input checked="" type="checkbox"/>								1													
<u>OUTLET LP</u>		<u>PER</u>	<input checked="" type="checkbox"/>								1													
		<u>batter</u>	<input checked="" type="checkbox"/>								5													
		<u>AG</u>									4													
		<u>2/13/19</u>									2													
			<input checked="" type="checkbox"/>								2													
<u>MI 200</u>																								
<u>INLET WATER</u>	<u>2/13/19</u>	<u>12:01</u>	<input checked="" type="checkbox"/>								2													
Relinquished By (sign)		Print Name / Company		Date / Time		Received By (sign)		Print Name / Company																
<u>[Signature]</u>		<u>Steve Loringford MIWA</u>		<u>2-13-19 12:50</u>		<u>[Signature]</u>		<u>Jordan G / ESB</u>																

By signing on behalf of your organization and relinquishing this chain of custody you agree to abide by the Babcock Laboratories, Inc. Terms and Conditions.

(For Lab Use Only) Sample Integrity Upon Receipt/Acceptance Criteria

Sample(s) Submitted on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample meets laboratory acceptance criteria? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Custody Seal(s) Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Permission to continue: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample(s) Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Deviation/Notes: _____
Temperature: <u>17</u> °C <input type="checkbox"/> Cooler Blank	Signature/Date: _____

**B9B1525**  
2/13/2019 13:19  
AJG



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Client Name: MIH Water Treatment, Inc.  
 Contact: Pete Hall  
 Address: 253 Belaire Court  
 Danville, QCA 94526

Analytical Report: Page 1 of 6  
 Project Name: San Antonio Water - Well 31  
 Project Number: SA-31

Report Date: 07-Mar-2019

**Work Order Number: B9B2320**

Received on Ice (Y/N): Yes Temp: 11 °C

Attached is the analytical report for the sample(s) received for your project. Below is a list of the individual sample descriptions with the corresponding laboratory number(s). Also, enclosed is a copy of the Chain of Custody document (if received with your sample(s)). Please note any unused portion of the sample(s) may be responsibly discarded after 30 days from the above report date, unless you have requested otherwise.

Thank you for the opportunity to serve your analytical needs. If you have any questions or concerns regarding this report please contact our client service department.

**Sample Identification**

<u>Lab Sample #</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>By</u>	<u>Date Submitted</u>	<u>By</u>
B9B2320-01	SA-31-Inlet	Water	02/20/19 10:00	PJ Hall	02/20/19 11:30	PJ Hall
B9B2320-02	SA-31-Outlet	Water	02/20/19 10:00	PJ Hall	02/20/19 11:30	PJ Hall
B9B2320-03	Micro	Water	02/20/19 10:00	PJ Hall	02/20/19 11:30	PJ Hall



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Client Name: MIH Water Treatment, Inc.  
Contact: Pete Hall  
Address: 253 Belaire Court  
Danville, QCA 94526

Analytical Report: Page 2 of 6  
Project Name: San Antonio Water - Well 31  
Project Number: SA-31

Report Date: 07-Mar-2019

**Work Order Number: B9B2320**

Received on Ice (Y/N): Yes Temp: 11 °C

Laboratory Reference Number

**B9B2320-01**

<u>Sample Description</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
SA-31-Inlet	Water	02/20/19 10:00	02/20/19 11:30

<b>Analyte(s)</b>	<b>Result</b>	<b>RDL</b>	<b>Units</b>	<b>Method</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Flag</b>
<b>Anions</b>							
Nitrate as N	7.5	0.20	mg/L	EPA 300.0	02/20/19 15:33	KBS	
Nitrite as N	ND	0.10	mg/L	EPA 300.0	02/20/19 15:33	KBS	
<b>General Physical</b>							
Turbidity	0.15	0.10	NTU	SM 2130 B	02/20/19 21:28	JGZ	



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Client Name: MIH Water Treatment, Inc.  
 Contact: Pete Hall  
 Address: 253 Belaire Court  
 Danville, QCA 94526

Analytical Report: Page 3 of 6  
 Project Name: San Antonio Water - Well 31  
 Project Number: SA-31

Report Date: 07-Mar-2019

**Work Order Number: B9B2320**

Received on Ice (Y/N): Yes Temp: 11 °C

Laboratory Reference Number

**B9B2320-02**

<u>Sample Description</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
SA-31-Outlet	Water	02/20/19 10:00	02/20/19 11:30

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
<b>Anions</b>							
Nitrate as N	ND	0.20	mg/L	EPA 300.0	02/20/19 15:48	KBS	
Nitrite as N	ND	0.10	mg/L	EPA 300.0	02/20/19 15:48	KBS	
<b>Aggregate Organic Compounds</b>							
Total Organic Carbon	6.5	0.30	mg/L	SM 5310B	02/24/19 04:32	KCS	
<b>General Physical</b>							
Turbidity	ND	0.10	NTU	SM 2130 B	02/20/19 21:28	JGZ	
<b>Volatile Organic Compounds by EPA 524.2</b>							
Total Trihalomethanes	73	0.50	ug/L	EPA 524.2	02/22/19 19:05	EEC	
Bromodichloromethane	6.0	0.50	ug/L	EPA 524.2	02/22/19 19:05	EEC	
Bromoform	ND	0.50	ug/L	EPA 524.2	02/22/19 19:05	EEC	
Chloroform	67	0.50	ug/L	EPA 524.2	02/22/19 19:05	EEC	
Dibromochloromethane	ND	0.50	ug/L	EPA 524.2	02/22/19 19:05	EEC	
Surrogate: 1,2-Dichloroethane-d4	97.3	% 50-150		EPA 524.2	02/22/19 19:05	EEC	
Surrogate: 4-Bromofluorobenzene	97.2	% 50-150		EPA 524.2	02/22/19 19:05	EEC	
Surrogate: Toluene-d8	93.2	% 50-150		EPA 524.2	02/22/19 19:05	EEC	
<b>Trihalomethane Formation Potential by EPA Method 524.2</b>							
Total Trihalomethanes (THMFP)	96	0.50	ug/L*	EPA 524.2	02/28/19 00:08	EEC	THMfp
Bromodichloromethane (FP)	9.8	0.50	ug/L*	EPA 524.2	02/28/19 00:08	EEC	
Bromoform (FP)	ND	0.50	ug/L*	EPA 524.2	02/28/19 00:08	EEC	
Chloroform (FP)	85	0.50	ug/L*	EPA 524.2	02/28/19 00:08	EEC	
Dibromochloromethane (FP)	1.2	0.50	ug/L*	EPA 524.2	02/28/19 00:08	EEC	
Surrogate: 1,2-Dichloroethane-d4	94.4	% 50-150		EPA 524.2	02/28/19 00:08	EEC	
Surrogate: 4-Bromofluorobenzene	108	% 50-150		EPA 524.2	02/28/19 00:08	EEC	
Surrogate: Toluene-d8	93.2	% 50-150		EPA 524.2	02/28/19 00:08	EEC	



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Client Name: MIH Water Treatment, Inc.  
 Contact: Pete Hall  
 Address: 253 Belaire Court  
 Danville, QCA 94526

Analytical Report: Page 4 of 6  
 Project Name: San Antonio Water - Well 31  
 Project Number: SA-31

Report Date: 07-Mar-2019

**Work Order Number: B9B2320**

Received on Ice (Y/N): Yes Temp: 11 °C

Laboratory Reference Number

**B9B2320-02**

<u>Sample Description</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
SA-31-Outlet	Water	02/20/19 10:00	02/20/19 11:30

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
<b>Haloacetic Acid by Standard Methods 6251B</b>							
HAA5	37	2.0	ug/L	SM 6251B	02/23/19 02:32	NAA	
Monochloroacetic Acid	ND	2.0	ug/L	SM 6251B	02/23/19 02:32	NAA	
Dichloroacetic Acid	12	1.0	ug/L	SM 6251B	02/23/19 02:32	NAA	
Trichloroacetic Acid	25	1.0	ug/L	SM 6251B	02/23/19 02:32	NAA	
Monobromoacetic Acid	ND	1.0	ug/L	SM 6251B	02/23/19 02:32	NAA	
Dibromoacetic Acid	ND	1.0	ug/L	SM 6251B	02/23/19 02:32	NAA	
<i>Surrogate: 2,3-Dibromopropionic acid</i>	101	% 70-130		SM 6251B	02/23/19 02:32	NAA	
<b>Haloacetic Acid Formation Potential by Standard Methods 6251B</b>							
HAA5FP	160	2.0	ug/L*	SM 6251B	03/06/19 01:18	NAA	
Monochloroacetic Acid (FP)	14	2.0	ug/L*	SM 6251B	03/06/19 01:18	NAA	
Dichloroacetic Acid (FP)	95	2.0	ug/L*	SM 6251B	03/06/19 01:18	NAA	
Trichloroacetic Acid (FP)	47	1.0	ug/L*	SM 6251B	03/06/19 01:18	NAA	
Monobromoacetic Acid (FP)	1.6	1.0	ug/L*	SM 6251B	03/06/19 01:18	NAA	
Dibromoacetic Acid (FP)	ND	1.0	ug/L*	SM 6251B	03/06/19 01:18	NAA	
<i>Surrogate: 2,3-Dibromopropionic acid</i>	97.0	% 70-130		SM 6251B	03/06/19 01:18	NAA	



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Client Name: MIH Water Treatment, Inc.  
 Contact: Pete Hall  
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Analytical Report: Page 5 of 6  
 Project Name: San Antonio Water - Well 31  
 Project Number: SA-31

Report Date: 07-Mar-2019

**Work Order Number: B9B2320**

Received on Ice (Y/N): Yes Temp: 11 °C

Laboratory Reference Number

**B9B2320-03**

<u>Sample Description</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
Micro	Water	02/20/19 10:00	02/20/19 11:30

<b>Analyte(s)</b>	<b>Result</b>	<b>RDL</b>	<b>Units</b>	<b>Method</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Flag</b>
Heterotrophic Plate Count - SM 9215 B Heterotrophic Plate Count	ND	1.0	CFU/mL	SM 9215B	02/22/19 14:00	NGU	
MMOMUG - Presence/Absence - SM 9223 B Total Coliform	Absent	1.1	---	SM 9223B	02/21/19 09:25	NGU	
E. coli	Absent	1.1	---	SM 9223B	02/21/19 09:25	NGU	



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Client Name: MIH Water Treatment, Inc.  
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Analytical Report: Page 6 of 6  
Project Name: San Antonio Water - Well 31  
Project Number: SA-31

Report Date: 07-Mar-2019

**Work Order Number: B9B2320**

Received on Ice (Y/N): Yes Temp: 11 °C

**Notes and Definitions**

- THMfp Sample dosed with 10 uL of a minimum 5% chlorine solution. Free Chlorine Residual present (>=1ppm) after 7 day incubation at or above 25 deg C.
- ND: Analyte NOT DETECTED at or above the Method Detection Limit (if MDL is reported), otherwise at or above the Reportable Detection Limit (RDL)
- NR: Not Reported
- RDL: Reportable Detection Limit
- MDL: Method Detection Limit
- \* / " : NELAP does not offer accreditation for this analyte/method/matrix combination

**Approval**

Enclosed are the analytical results for the submitted sample(s). Babcock Laboratories certify the data presented as part of this report meet the minimum quality standards in the referenced analytical methods. Any exceptions have been noted.

**Amanda C. Porter**

cc:

e-Short\_No Alias.rpt

This report applies only to the sample(s) analyzed. As a mutual protection to clients, the public, and Babcock Laboratories, Inc., this report is submitted and accepted for the exclusive use of the Client to whom it is addressed. Interpretation and use of the information contained within this report are the sole responsibility of the Client. Babcock Laboratories, Inc. is not responsible for any misinformation or consequences that may result from misinterpretation or improper use of this report. This report is not to be modified or abbreviated in any way. Additionally, this report is not to be used, in whole or in part, in any advertising or publicity matter without written authorization from Babcock Laboratories, Inc. The liability of Babcock Laboratories, Inc. is limited to the actual cost of the requested analyses, unless otherwise agreed upon in writing. There is no other warranty expressed or implied.

*mailing*  
P.O Box 432  
Riverside, CA 92502-0432

*location*  
6100 Quail Valley Court  
Riverside, CA 92507-0704

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CA ELAP No. 2698  
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LACSD No. 10119



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Client Name: MIH Water Treatment, Inc.  
Contact: Pete Hall  
Address: 253 Belaire Court  
Danville, QCA 94526

Analytical Report: Page 1 of 1  
Project Name: San Antonio Water - Well 31  
Project Number: SA-31

Report Date: 07-Mar-2019

Work Order Number: B9B2320

Received on Ice (Y/N): Yes Temp: 11 °C



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**Chain of Custody & Sample Information Record**

Client: <u>MIH WATER</u>		Contact: <u>PJ HALL</u>		Fax No.		Additional Reporting Requests																			
Phone No. <u>510-828-5073</u>		email: <u>PJHSITE2@MSX.COM</u>				Include QC Data Package: <input type="checkbox"/> Yes <input type="checkbox"/> No																			
Project Name: <u>SA-31</u>		Turn Around Time: <u>Routine</u> *72 Hour Rush *48 Hour Rush *24 Hour Rush				FAX Results: <input type="checkbox"/> Yes <input type="checkbox"/> No																			
Project Location: <u>SA WELL 31</u>		*Lab TAT Approval: By:		*Additional Charges Apply		Email Results: <input type="checkbox"/> Yes <input type="checkbox"/> No																			
						State EDT: <input type="checkbox"/> Yes <input type="checkbox"/> No																			
						(Include Source Number in Notes)																			
Sampler Information			# of Containers & Preservatives				Sample Type		Analysis Requested		Matrix		Notes												
Name: <u>PJ HALL</u>			Unpreserved H <sub>2</sub> SO <sub>4</sub>	HCl	HNO <sub>3</sub>	Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub>	NaOH	NaOH/Zn Acetate	NH <sub>4</sub> Cl	PDC	Total # of Containers	Routine	Resample	Special	DW	WW	GW	S	SG	L	M	Notes			
Employer: <u>MIH WATER</u>																									
Signature: <u>[Signature]</u>																									
Sample ID	Date	Time																							
<u>SA-31-INLET</u>	<u>2/20/19</u>	<u>10:05 AM</u>	✓								1														
<u>SA-31-OUTLET</u>			✓								1														
			✓								6														
											2														
											4														
											2														
<u>5 MILRO</u>											1														
Relinquished By (sign)			Print Name / Company			Date / Time			Received By (sign)			Print Name / Company													
<u>[Signature]</u>			<u>PJH MIH</u>			<u>2/20/19 11:15</u>			<u>[Signature]</u>			<u>JB ESB</u>													

By signing on behalf of your organization and relinquishing this chain of custody you agree to abide by the Babcock Laboratories, Inc. Terms and Conditions.

(For Lab Use Only) Sample Integrity Upon Receipt/Acceptance Criteria

Sample(s) Submitted on Ice?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Sample meets laboratory acceptance criteria?	Yes <input checked="" type="checkbox"/>
Custody Seal(s) Intact?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	Permission to continue:	Yes <input type="checkbox"/>
Sample(s) Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Deviation/Notes:	
Temperature: <u>11</u> °C <input type="checkbox"/> Cooler Blank		Signature/Date:	

**B9B2320**  
2/20/2019 12:38  
AJG





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Client Name: MIH Water Treatment, Inc.  
Contact: Pete Hall  
Address: 253 Belaire Court  
Danville, QCA 94526

Analytical Report: Page 1 of 6  
Project Name: San Antonio Water - Well 31  
Project Number: SA - Well 31

Report Date: 14-Mar-2019

**Work Order Number: B9C0073**

Received on Ice (Y/N): Yes Temp: 17 °C

Attached is the analytical report for the sample(s) received for your project. Below is a list of the individual sample descriptions with the corresponding laboratory number(s). Also, enclosed is a copy of the Chain of Custody document (if received with your sample(s)). Please note any unused portion of the sample(s) may be responsibly discarded after 30 days from the above report date, unless you have requested otherwise.

Thank you for the opportunity to serve your analytical needs. If you have any questions or concerns regarding this report please contact our client service department.

**Sample Identification**

<u>Lab Sample #</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>By</u>	<u>Date Submitted</u>	<u>By</u>
B9C0073-01	Raw Water IN	Water	03/01/19 13:05	Steve Corrington	03/01/19 14:45	Steve Corrington
B9C0073-02	MIH-Outlet	Water	03/01/19 13:05	Steve Corrington	03/01/19 14:45	Steve Corrington
B9C0073-03	SA-31 Outlet	Water	03/01/19 13:05	Steve Corrington	03/01/19 14:45	Steve Corrington



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Client Name: MIH Water Treatment, Inc.  
 Contact: Pete Hall  
 Address: 253 Belaire Court  
 Danville, QCA 94526

Analytical Report: Page 2 of 6  
 Project Name: San Antonio Water - Well 31  
 Project Number: SA - Well 31

Report Date: 14-Mar-2019

**Work Order Number: B9C0073**

Received on Ice (Y/N): Yes Temp: 17 °C

Laboratory Reference Number

**B9C0073-01**

<u>Sample Description</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
Raw Water IN	Water	03/01/19 13:05	03/01/19 14:45

<b>Analyte(s)</b>	<b>Result</b>	<b>RDL</b>	<b>Units</b>	<b>Method</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Flag</b>
<b>Anions</b>							
Nitrate as N	7.4	0.20	mg/L	EPA 300.0	03/01/19 20:34	KBS	
Nitrite as N	0.12	0.10	mg/L	EPA 300.0	03/01/19 20:34	KBS	
<b>General Physical</b>							
Turbidity	0.18	0.10	NTU	SM 2130 B	03/01/19 18:15	KL	



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Client Name: MIH Water Treatment, Inc.  
 Contact: Pete Hall  
 Address: 253 Belaire Court  
 Danville, QCA 94526

Analytical Report: Page 3 of 6  
 Project Name: San Antonio Water - Well 31  
 Project Number: SA - Well 31

Report Date: 14-Mar-2019

**Work Order Number: B9C0073**

Received on Ice (Y/N): Yes Temp: 17 °C

Laboratory Reference Number

**B9C0073-02**

<u>Sample Description</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
MIH-Outlet	Water	03/01/19 13:05	03/01/19 14:45

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
<b>Anions</b>							
Nitrate as N	ND	0.20	mg/L	EPA 300.0	03/01/19 20:46	KBS	
Nitrite as N	ND	0.10	mg/L	EPA 300.0	03/01/19 20:46	KBS	
<b>General Physical</b>							
Turbidity	6.6	0.10	NTU	SM 2130 B	03/01/19 18:15	KL	



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Client Name: MIH Water Treatment, Inc.  
 Contact: Pete Hall  
 Address: 253 Belaire Court  
 Danville, QCA 94526

Analytical Report: Page 4 of 6  
 Project Name: San Antonio Water - Well 31  
 Project Number: SA - Well 31

Report Date: 14-Mar-2019

**Work Order Number: B9C0073**

Received on Ice (Y/N): Yes Temp: 17 °C

Laboratory Reference Number

**B9C0073-03**

<u>Sample Description</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
SA-31 Outlet	Water	03/01/19 13:05	03/01/19 14:45

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
<b>Anions</b>							
Nitrate as N	ND	0.20	mg/L	EPA 300.0	03/01/19 20:58	KBS	
Nitrite as N	ND	0.10	mg/L	EPA 300.0	03/01/19 20:58	KBS	
<b>Aggregate Organic Compounds</b>							
Total Organic Carbon	3.9	0.30	mg/L	SM 5310B	03/09/19 04:22	KSL	
<b>General Physical</b>							
Turbidity	0.21	0.10	NTU	SM 2130 B	03/01/19 18:15	KL	
<b>Volatile Organic Compounds by EPA 524.2</b>							
Total Trihalomethanes	44	0.50	ug/L	EPA 524.2	03/01/19 23:59	EEC	
Bromodichloromethane	4.5	0.50	ug/L	EPA 524.2	03/01/19 23:59	EEC	
Bromoform	ND	0.50	ug/L	EPA 524.2	03/01/19 23:59	EEC	
Chloroform	39	0.50	ug/L	EPA 524.2	03/01/19 23:59	EEC	
Dibromochloromethane	ND	0.50	ug/L	EPA 524.2	03/01/19 23:59	EEC	
Surrogate: 1,2-Dichloroethane-d4	90.1	% 50-150		EPA 524.2	03/01/19 23:59	EEC	
Surrogate: 4-Bromofluorobenzene	107	% 50-150		EPA 524.2	03/01/19 23:59	EEC	
Surrogate: Toluene-d8	92.7	% 50-150		EPA 524.2	03/01/19 23:59	EEC	
<b>Trihalomethane Formation Potential by EPA Method 524.2</b>							
Total Trihalomethanes (THMFP)	120	0.50	ug/L*	EPA 524.2	03/09/19 01:37	EEC	THMfp
Bromodichloromethane (FP)	13	0.50	ug/L*	EPA 524.2	03/09/19 01:37	EEC	
Bromoform (FP)	ND	0.50	ug/L*	EPA 524.2	03/09/19 01:37	EEC	
Chloroform (FP)	100	5.0	ug/L*	EPA 524.2	03/11/19 12:30	EEC	
Dibromochloromethane (FP)	1.9	0.50	ug/L*	EPA 524.2	03/09/19 01:37	EEC	
Surrogate: 1,2-Dichloroethane-d4	87.5	% 50-150		EPA 524.2	03/11/19 12:30	EEC	
Surrogate: 1,2-Dichloroethane-d4	89.5	% 50-150		EPA 524.2	03/09/19 01:37	EEC	
Surrogate: 4-Bromofluorobenzene	107	% 50-150		EPA 524.2	03/11/19 12:30	EEC	
Surrogate: 4-Bromofluorobenzene	108	% 50-150		EPA 524.2	03/09/19 01:37	EEC	
Surrogate: Toluene-d8	90.7	% 50-150		EPA 524.2	03/09/19 01:37	EEC	
Surrogate: Toluene-d8	89.4	% 50-150		EPA 524.2	03/11/19 12:30	EEC	



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Client Name: MIH Water Treatment, Inc.  
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 Danville, QCA 94526

Analytical Report: Page 5 of 6  
 Project Name: San Antonio Water - Well 31  
 Project Number: SA - Well 31

Report Date: 14-Mar-2019

**Work Order Number: B9C0073**

Received on Ice (Y/N): Yes Temp: 17 °C

Laboratory Reference Number

**B9C0073-03**

<u>Sample Description</u>	<u>Matrix</u>	<u>Sampled Date/Time</u>	<u>Received Date/Time</u>
SA-31 Outlet	Water	03/01/19 13:05	03/01/19 14:45

<u>Analyte(s)</u>	<u>Result</u>	<u>RDL</u>	<u>Units</u>	<u>Method</u>	<u>Analysis Date</u>	<u>Analyst</u>	<u>Flag</u>
Haloacetic Acid by Standard Methods 6251B							
HAA5	42	2.0	ug/L	SM 6251B	03/06/19 06:52	NAA	
Monochloroacetic Acid	2.8	2.0	ug/L	SM 6251B	03/06/19 06:52	NAA	
Dichloroacetic Acid	14	1.0	ug/L	SM 6251B	03/06/19 06:52	NAA	
Trichloroacetic Acid	25	1.0	ug/L	SM 6251B	03/06/19 06:52	NAA	
Monobromoacetic Acid	ND	1.0	ug/L	SM 6251B	03/06/19 06:52	NAA	
Dibromoacetic Acid	ND	1.0	ug/L	SM 6251B	03/06/19 06:52	NAA	
<i>Surrogate: 2,3-Dibromopropionic acid</i>	108	% 70-130		SM 6251B	03/06/19 06:52	NAA	
Heterotrophic Plate Count - SM 9215 B							
Heterotrophic Plate Count	ND	1.0	CFU/mL	SM 9215B	03/03/19 16:30	GSR	
MMOMUG - Presence/Absence - SM 9223 B							
Total Coliform	Absent	1.1	----	SM 9223B	03/01/19 16:45	TSA	
E. coli	Absent	1.1	----	SM 9223B	03/01/19 16:45	TSA	



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Client Name: MIH Water Treatment, Inc.  
Contact: Pete Hall  
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Analytical Report: Page 6 of 6  
Project Name: San Antonio Water - Well 31  
Project Number: SA - Well 31

Report Date: 14-Mar-2019

**Work Order Number: B9C0073**

Received on Ice (Y/N): Yes Temp: 17 °C

**Notes and Definitions**

- THMfp Sample dosed with 10 uL of a minimum 5% chlorine solution. Free Chlorine Residual present ( $\geq 1$ ppm) after 7 day incubation at or above 25 deg C.
- ND: Analyte NOT DETECTED at or above the Method Detection Limit (**if MDL is reported**), otherwise at or above the Reportable Detection Limit (RDL)
- NR: Not Reported
- RDL: Reportable Detection Limit
- MDL: Method Detection Limit
- \* / " : NELAP does not offer accreditation for this analyte/method/matrix combination

**Approval**

Enclosed are the analytical results for the submitted sample(s). Babcock Laboratories certify the data presented as part of this report meet the minimum quality standards in the referenced analytical methods. Any exceptions have been noted.

**Amanda C. Porter**

cc:

e-Short\_No Alias.rpt

This report applies only to the sample(s) analyzed. As a mutual protection to clients, the public, and Babcock Laboratories, Inc., this report is submitted and accepted for the exclusive use of the Client to whom it is addressed. Interpretation and use of the information contained within this report are the sole responsibility of the Client. Babcock Laboratories, Inc. is not responsible for any misinformation or consequences that may result from misinterpretation or improper use of this report. This report is not to be modified or abbreviated in any way. Additionally, this report is not to be used, in whole or in part, in any advertising or publicity matter without written authorization from Babcock Laboratories, Inc. The liability of Babcock Laboratories, Inc. is limited to the actual cost of the requested analyses, unless otherwise agreed upon in writing. There is no other warranty expressed or implied.

*mailing*  
P.O Box 432  
Riverside, CA 92502-0432

*location*  
6100 Quail Valley Court  
Riverside, CA 92507-0704

P 951 653 3351  
F 951 653 1662  
www.babcocklabs.com

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EPA No. CA00102  
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LACSD No. 10119



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Client Name: MIH Water Treatment, Inc.  
Contact: Pete Hall  
Address: 253 Belaire Court  
Danville, QCA 94526

Analytical Report: Page 1 of 1  
Project Name: San Antonio Water - Well 31  
Project Number: SA - Well 31

Report Date: 14-Mar-2019

Work Order Number: B9C0073

Received on Ice (Y/N): Yes Temp: 17 °C



6100 Quail Valley Court Riverside, CA 92507  
(951) 653-3351 • FAX (951) 653-1662  
www.babcocklabs.com

**Chain of Custody & Sample Information Record**

Client: <u>MIH WATER TREATMENT</u>		Contact: <u>PJHALL</u>		Fax No.		Additional Reporting Requests	
Phone No. <u>510-828-5073</u>		email: <u>PJHSI@MIH.COM</u>		<u>NOTE</u>		Include QC Data Package: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Project Name: <u>SA-31</u>		Turn Around Time: <u>Routine</u> *72 Hour Rush *48 Hour Rush *24 Hour Rush				FAX Results: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Project Location: <u>SA-31 WELL</u>		*Lab TAT Approval: By: _____		*Additional Charges Apply		Email Results: <input type="checkbox"/> Yes <input type="checkbox"/> No	
						State EDT: <input type="checkbox"/> Yes <input type="checkbox"/> No	
						(Include Source Number in Notes)	

Sampler Information			# of Containers & Preservatives							Sample Type			Analysis Requested			Matrix			Notes										
Name:	Employer:	Signature:	Unpreserved	H2SO4	HCl	HNO3	Na2S2O3	NaOH	NaOH/Zn Acetate	NH4Cl	PDC	Total # of Containers	Routine	Resample	Special				DW = Drinking Water	WW = Waste Water	GW = Ground Water	S = Source	SG = Sludge	L = Liquid	M = Miscellaneous				
<u>Steve Conroy</u>	<u>MIH Water</u>	<u>SA</u>																											
RAW WATER IN	3/1/19	1:05	✓									1																	
MIH WATER OUT			✓									1																	
SA-31-OUTLET LP			✓									1																	
}	}	}										4																	
														2															
														2															
}	}	}										8																	
														1															
MICRO												1																	

Relinquished By (sign)	Print Name / Company	Date / Time	Received By (sign)	Print Name / Company
<u>SA</u>	<u>Steve Conroy MIH</u>	<u>3/1/19 2:45</u>	<u>Alex</u>	<u>Alex GRIFFIN'S ESB</u>

By signing on behalf of your organization and relinquishing this chain of custody you agree to abide by the Babcock Laboratories, Inc. Terms and Conditions.

(For Lab Use Only) Sample Integrity Upon Receipt/Acceptance Criteria

Sample(s) Submitted on Ice?	<input checked="" type="radio"/> Yes <input type="radio"/> No	Sample meets laboratory acceptance criteria?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Custody Seal(s) Intact?	<input checked="" type="radio"/> Yes <input type="radio"/> No <u>NA</u>	Permission to continue:	<input checked="" type="radio"/> Yes <input type="radio"/> No
Sample(s) Intact?	<input checked="" type="radio"/> Yes <input type="radio"/> No	Deviation/Notes:	
Temperature: <u>17</u> °C <input type="checkbox"/> Cooler Blank		Signature/Date:	

**B9C0073**  
3/01/2019 15:10  
JUG

Appendix B

Backwash Waste Analytical Test Results

Page 58 – 71



The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

**Technical Report for**

**Water Remediation Technology**

**Loprest San Antonio Pilot**

**PO# 014926**

**SGS Job Number: DA13581**

**Sampling Date: 02/13/19**



**Report to:**

**Water Remediation Technology  
901 West 116th Avenue  
Westminster, CO 80234  
djones@wrt.net.com**

**ATTN: David Jones**

**Total number of pages in report: 13**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

**Scott Heideman  
Laboratory Director**

**Client Service contact: Elizabeth Sutcliffe 303-425-6021**

Certifications: CO (CO00049), ID (CO00049), NE (NE-OS-06-04), ND (R-027), NJ (CO007), OK (D9942)  
UT (NELAP CO00049), LA (LA150028), TX (T104704511), WY (8TMS-L)

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Test results relate only to samples analyzed.

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1

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## Sample Summary

Water Remediation Technology

Job No: DA13581

Loprest San Antonio Pilot  
Project No: PO# 014926

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
DA13581-1	02/13/19	00:00 DJ	02/14/19	AQ	Water	PILOT SLUDGE FILTRATE
DA13581-1F	02/13/19	00:00 DJ	02/14/19	AQ	Water Filtered	PILOT SLUDGE FILTRATE
DA13581-2	02/13/19	00:00 DJ	02/14/19	SO	Sludge	PILOT SLUDGE

---

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

## Summary of Hits

**Job Number:** DA13581  
**Account:** Water Remediation Technology  
**Project:** Loprest San Antonio Pilot  
**Collected:** 02/13/19

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

**DA13581-1 PILOT SLUDGE FILTRATE**

Calcium		55300	800		ug/l	EPA 200.8
Iron		445	20		ug/l	EPA 200.8
Magnesium		8180	200		ug/l	EPA 200.8
Manganese		11.7	2.0		ug/l	EPA 200.8
Silicon		11400	50		ug/l	EPA 200.7
Sodium		27600	1000		ug/l	EPA 200.8
Strontium		317	40		ug/l	EPA 200.8
Alkalinity, Total as CaCO3		131	5.0		mg/l	SM 2320B-2011
Chloride		57.7	5.0		mg/l	EPA300.0/SW846 9056A
Hardness, Total as CaCO3 <sup>a</sup>		172	2.8		mg/l	SM 2340B-2011
Nitrogen, Nitrate		0.34	0.010		mg/l	EPA300.0/SW846 9056A
Phosphate, Ortho <sup>b</sup>		0.13	0.050		mg/l	EPA300.0/SW846 9056A
Sulfate		36.7	5.0		mg/l	EPA300.0/SW846 9056A
Total Organic Carbon		35.2	5.0		mg/l	SM 5310B-2011/9060A

**DA13581-1F PILOT SLUDGE FILTRATE**

Silicon		10500	50		ug/l	EPA 200.7
Silica, Dissolved <sup>c</sup>		22.5	0.11		mg/l	SW846 6010C\200.7

**DA13581-2 PILOT SLUDGE**

Arsenic		37.7	2.5		mg/kg	SW846 6010C
Barium		84.3	1.0		mg/kg	SW846 6010C

(a) Calculated as: (Calcium \* 2.497) + (Magnesium \* 4.118)

(b) Sample originally analyzed in hold, however associated QC failed. Sample re-analyzed out of hold.

(c) Calculated as: (Silicon \* 2.139)

Sample Results

---

Report of Analysis

---

## Report of Analysis

<b>Client Sample ID:</b>	PILOT SLUDGE FILTRATE	<b>Date Sampled:</b>	02/13/19
<b>Lab Sample ID:</b>	DA13581-1	<b>Date Received:</b>	02/14/19
<b>Matrix:</b>	AQ - Water	<b>Percent Solids:</b>	n/a
<b>Project:</b>	Loprest San Antonio Pilot		

### Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	55300	800	ug/l	2	02/15/19	02/18/19 EP	EPA 200.8 <sup>1</sup>	EPA 200.8 <sup>3</sup>
Iron	445	20	ug/l	2	02/15/19	02/18/19 EP	EPA 200.8 <sup>1</sup>	EPA 200.8 <sup>3</sup>
Magnesium	8180	200	ug/l	2	02/15/19	02/18/19 EP	EPA 200.8 <sup>1</sup>	EPA 200.8 <sup>3</sup>
Manganese	11.7	2.0	ug/l	2	02/15/19	02/18/19 EP	EPA 200.8 <sup>1</sup>	EPA 200.8 <sup>3</sup>
Silicon	11400	50	ug/l	1	02/21/19	02/21/19 JR	EPA 200.7 <sup>2</sup>	EPA 200.7 <sup>4</sup>
Sodium	27600	1000	ug/l	2	02/15/19	02/18/19 EP	EPA 200.8 <sup>1</sup>	EPA 200.8 <sup>3</sup>
Strontium	317	40	ug/l	2	02/15/19	02/18/19 EP	EPA 200.8 <sup>1</sup>	EPA 200.8 <sup>3</sup>

(1) Instrument QC Batch: MA11051

(2) Instrument QC Batch: MA11056

(3) Prep QC Batch: MP27359

(4) Prep QC Batch: MP27368

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> PILOT SLUDGE FILTRATE	<b>Date Sampled:</b> 02/13/19
<b>Lab Sample ID:</b> DA13581-1	<b>Date Received:</b> 02/14/19
<b>Matrix:</b> AQ - Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Loprest San Antonio Pilot	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub>	131	5.0	mg/l	1	02/15/19	PV	SM 2320B-2011
Chloride	57.7	5.0	mg/l	10	02/14/19 19:21	MA	EPA300.0/SW846 9056A
Fluoride <sup>a</sup>	< 1.0	1.0	mg/l	10	02/14/19 19:21	MA	EPA300.0/SW846 9056A
Hardness, Total as CaCO <sub>3</sub> <sup>b</sup>	172	2.8	mg/l	1	02/18/19 23:04	EP	SM 2340B-2011
Nitrogen, Nitrate	0.34	0.010	mg/l	1	02/14/19 19:08	MA	EPA300.0/SW846 9056A
Nitrogen, Nitrite <sup>a</sup>	< 0.040	0.040	mg/l	10	02/14/19 19:21	MA	EPA300.0/SW846 9056A
Phosphate, Ortho <sup>c</sup>	0.13	0.050	mg/l	1	03/14/19 11:13	MA	EPA300.0/SW846 9056A
Sulfate	36.7	5.0	mg/l	10	02/14/19 19:21	MA	EPA300.0/SW846 9056A
Total Organic Carbon	35.2	5.0	mg/l	5	02/22/19 12:14	JB	SM 5310B-2011/9060A

(a) Elevated detection limit due to matrix interference.

(b) Calculated as: (Calcium \* 2.497) + (Magnesium \* 4.118)

(c) Sample originally analyzed in hold, however associated QC failed. Sample re-analyzed out of hold.

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b>	PILOT SLUDGE FILTRATE	<b>Date Sampled:</b>	02/13/19
<b>Lab Sample ID:</b>	DA13581-1F	<b>Date Received:</b>	02/14/19
<b>Matrix:</b>	AQ - Water Filtered	<b>Percent Solids:</b>	n/a
<b>Project:</b>	Loprest San Antonio Pilot		

### Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Silicon	10500	50	ug/l	1	03/01/19	03/01/19 JR	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>2</sup>

(1) Instrument QC Batch: MA11089

(2) Prep QC Batch: MP27444

---

RL = Reporting Limit



## Report of Analysis

<b>Client Sample ID:</b>	PILOT SLUDGE FILTRATE	<b>Date Sampled:</b>	02/13/19
<b>Lab Sample ID:</b>	DA13581-1F	<b>Date Received:</b>	02/14/19
<b>Matrix:</b>	AQ - Water Filtered	<b>Percent Solids:</b>	n/a
<b>Project:</b>	Loprest San Antonio Pilot		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Silica, Dissolved <sup>a</sup>	22.5	0.11	mg/l	1	03/01/19 15:51	JR	SW846 6010C\200.7

(a) Calculated as: (Silicon \* 2.139)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> PILOT SLUDGE	<b>Date Sampled:</b> 02/13/19
<b>Lab Sample ID:</b> DA13581-2	<b>Date Received:</b> 02/14/19
<b>Matrix:</b> SO - Sludge	<b>Percent Solids:</b> 96.1
<b>Project:</b> Loprest San Antonio Pilot	

### Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	37.7	2.5	mg/kg	1	02/18/19	02/19/19 JR	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Barium	84.3	1.0	mg/kg	1	02/18/19	02/19/19 JR	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Cadmium	< 1.0	1.0	mg/kg	1	02/18/19	02/18/19 JR	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Chromium	< 1.0	1.0	mg/kg	1	02/18/19	02/18/19 JR	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Lead	< 5.1	5.1	mg/kg	1	02/18/19	02/18/19 JR	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Mercury <sup>a</sup>	< 0.85	0.85	mg/kg	10	02/21/19	02/21/19 JM	SW846 7471B <sup>3</sup>	SW846 7471B <sup>4</sup>
Selenium	< 5.1	5.1	mg/kg	1	02/18/19	02/18/19 JR	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Silver	< 3.0	3.0	mg/kg	1	02/18/19	02/18/19 JR	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>

(1) Instrument QC Batch: MA11048

(2) Instrument QC Batch: MA11052

(3) Instrument QC Batch: MA11054

(4) Prep QC Batch: MP27366

(5) Prep QC Batch: MP27369

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Misc. Forms

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Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody



# SGS Accutest Sample Receipt Summary

Job Number: DA13581

Client: WRT

Project: LOPREST

Date / Time Received: 2/14/2019 3:00:00 PM

Delivery Method: \_\_\_\_\_

Airbill #'s: HD

Cooler Temps (Initial/Adjusted): #1: (5.9/5.9):

**Cooler Security**

Y or N

Y or N

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Cooler Temperature**

Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | <u>Bar Therm;</u>                   |                          |
| 3. Cooler media:             | <u>Ice (Bag)</u>                    |                          |
| 4. No. Coolers:              | <u>1</u>                            |                          |

**Quality Control Preservation**

Y or N

N/A

- |                                 |                                     |                          |                                     |
|---------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

**Sample Integrity - Documentation**

Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Sample Integrity - Condition**

Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | <u>Intact</u>                       |                          |

**Sample Integrity - Instructions**

Y or N

N/A

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Comments

4.1  
4

Appendix C

MIH and Loprest Pilot Test Daily Operations Log  
Page 72 - 75

LOPREST DIVISION OF WRT

Pilot Test Data Log

Job Name:

Job Number:

MEDIA TYPE: To H<sub>2</sub>O / FLT  
 MEDIA DEPTHS: To H<sub>2</sub>O

SHEET No.

COLUMN # To H<sub>2</sub>O To H<sub>2</sub>O

Run #	Date	Time	ACID PUMP ml/min	ACID STOCK SOL/N	CI PUMP ml/min	CI STOCK SOL/N	Poly PUMP ml/min	Poly STOCK SOL/N	CI Free IN mg/l	CI Free OUT mg/l	Turb In NTU	Turb Out NTU	Nitrate N In mg/l	Nitrate N Out mg/l	Diff. Press. psid	pH In/Out	Sample yes/no	B.wash freq per day	B.wash Vol gal	Temp °F	LOAD RATE gpm/sf	FLOW RATE GPM	CUMM. FLOW GAL	Notes
29	12/10/18	9:20			12.5	11825 10gal	11.5	380ml 10gal	3.57	.40	7.61	.048	10-11	1.3	7	7.3 7.2		1/26 HRS		67.1		1.2-2		
32	12/13/18	11:15			12.5	1825 10gal	11.5	380ml 10gal	2.88	0.25	8.41	.049	12.3	.9	5.5	7.2 7.2		1/26 HRS		66		1.2-1.8		
36	12/17/18	11:15			12.5	1825 10gal	✓	✓	4.32	2.15	9.8	.109	10-11	1.9	1	7.1 7.1		1/36 HRS		65		1.8-2.2		25 mins after BW.
40	12/21/18	9:00			16	✓	12.5	✓	4.56	1.32	7.26	.069	10-12	1.7	8	7.1 7.2		1/24 HRS		64.7		1-1.3		
44	12/21/18	13:45			13.5	✓	12.5	✓	4.28	1.27	6.62	.038		1.5	1	7.1 7.2		1/30 HRS		65.5		1.6-1.8		@10:30, Cl <sub>2</sub> = 3.92. PL TO → 600CM to get Cl rapidly to range for resample. Pump set to 16SCPM @ 3pm after weekly samples of water.
44	12/28	12:30			14	✓	13	✓	5.88	1.25	5.78	.069		1.4	7	7.2 7.2		1/30 HRS		59.0		1.4-1.6		@11:34, Cl <sub>2</sub> = 1.75, 630CM.
45	1/14/19	10:50				✓		✓																
47	1/16/19					1216 10gal		✓																END

Note: All samples taken from effluent except as noted by "in"

$4.00 \times 185 = 740$   
 $740 \div 6 = 123.33$   
 $123.33 \times 10 = 1233.33$   
 $1233.33 - 100 = 1133.33$   
 $1133.33 \div 9.3 = 121.86$   
 $121.86 \times 10 = 1218.6$   
 $1218.6 - 2.6 = 1216$   
 1216 ml Cl<sub>2</sub>

10 gal H<sub>2</sub>O  
 1825 ml → 10 gal  
 15 gal  
 1825 ml 15 gal

4.  
 $1825 \times 1.5 = 2737.5$   
 $2737.5 \div 2.5 = 1095$   
 $1095 \div 9 = 121.66$   
 $121.66 \times 10 = 1216.6$   
 $1216.6 - 0.6 = 1216$   
 1216 ml

LOPREST DIVISION OF WRT

Job Name:  
Job Number:

Pilot Test Data Log  
COLUMN #

MEDIA TYPE:  
MEDIA DEPTHS:

SHEET No.

Run #	Date	Time	ACID PUMP ml/min	ACID STOCK SOL'N	CI PUMP ml/min	CI STOCK SOL'N	Poly PUMP ml/min	Poly STOCK SOL'N	CI Free IN mg/l	CI Free OUT mg/l	Turb In NTU	Turb Out NTU	Turb Out Meter NTU	Nitrate N In mg/l	Nitrate N Out mg/l	Diff. Press. psid	pH In/Out	Sample yes/no	B.wash freq per day	B.wash Vol gal	Temp °F	LOAD RATE gpm/sf	FLOW RATE GPM	CUMM. FLOW GAL	Notes
	1/18/19																								System shutdown no chemicals for ~ 3 hrs after restart
	1/21/19	12pm			60 strokes				1.4	0															
	1/21/19	4pm			15.5 ml 64 strokes				1.5	1-1.1															Flow 1.6 - 2.05
	1/22/19	7am							2	1.7															Flow 2.2 - 2.6 CI pump 64 strokes Adjusted Flow 1.7 - 2.15 CI pump - 63
	1/24	11:30			75 strokes 30 gal	40 30 gal			2	.9			.085										1.7-2.2		
	1/28	12 PM			77 strokes	40 strokes			2.1	1.9			0.068										1.8-2.2		Flow 1.3-1.7, adjusted to 1.8-2.2
	1/28	3:30 PM			77	40			2.2	0.9			0.061										1.6-2.0		
	1/29	9:30 AM			77	40			2.3	0.8			0.089										1.5-2.1		Flow was around 4gpm - adjusted, but super touchy BW ~ 12:30 PM
	1/29	3 PM			77	~25 gal	40	~25 gal	2.0	1.3			0.070										1.9-2.2		END

Note: All samples taken from effluent except as noted by "in".



LOPREST DIVISION OF WRT

Job Name: San Antonio Water Systems  
Job Number: 33622

Pilot Test Data Log  
COLUMN # 1, 2 and 3

MEDIA TYPE: Filter Sand  
MEDIA DEPTHS: 30"

SHEET No.  
1 of 5

Run #	Date	Time	ACID PUMP ml/min	ACID STOCK SOL'N	CI PUMP ml/min	CI STOCK SOL'N	Poly PUMP ml/min	Poly STOCK SOL'N	Cl Free IN mg/l	Cl Free OUT mg/l	Turb In NTU	Turb Out NTU	Turb Out Meter NTU	Nitrate N In mg/l	Nitrate N Out mg/l	Diff. Press. psid	pH In/Out	Sample yes/no	Current Run Volume	Last Run Volume	Temp °F	LOAD RATE gpm/sf	FLOW RATE GPM	Total Treated Volume	Notes (from treat charts on NTU and Flow)
1	1/30	8 AM			77 strokes		40 strokes		2.3	1.0			0.071									5	1.8-2.1		Flow was a little high. Closed valve a little.
2	1/30	4:30			77		40		2.2	0.7			0.276 (dropping) 0.075 @ 5 min										1.9-2.2		Pumps stopped around 1 PM - called Tim, program error, started backup around 3 PM. Ran BW & collected Solids.
3	1/31	8 AM			77		40		2.5	1.2			0.044										1.7-1.9		
4	1/31	11:30 AM			77		40		2.1	0.9			0.083										1.8-2.2		Filled chemicals
5	2/3	4:15 PM											0.093										1.9		STOPPED RUN
6	2																								
7	2/6	11:35			79				2.4	0.8													1.9		
8																									
9																									
10																									

Note: All samples taken from effluent except as noted by "in".

2/6 2019  
7. Set up active flow control. Gain 4.0 Reset 1.0  
Backwash sequence at 11:15 AM.  
turbidity reduced to < 0.3 in 7 min after full-flow restart.

Dynamic shutdown test. - 12:10 PM  
turbidity 0.058  
outlet Cl<sub>2</sub> - 2.5 ppm.  
Inlet Cl<sub>2</sub> - 3.4 ppm.  
Cl<sub>2</sub> pump 72 strokes/min

2/11 1045 - REFILL 10 GAL Poly  
20 GAL Cl<sub>2</sub>

restart at 13:20  
flow rate stabilized in 3 minutes  
turbidity maximum 0.221 NTU  
0.050 in 9 minutes

1 hr. duration.

PJW @ 3:15 PM  
2/1 Cl<sub>2</sub> 3.0 - 5.0  
over limit 3:30  
resets to 6.2  
@ 4:00 3.6 IN  
@ 9:20 2/20  
resets to 11.

Tim - 925-330-6615

HC Coliform  
DBP 13045