STAFF REPORT
FIELD OPERATIONS
JANUARY 2018

TRANSMISSION & DISTRIBUTION

MAINTENANCE WORK.

- Crews have been taking care of leaks/maintenance issues.
- 4 Mainline leaks were repaired this month.
- We replaced 261 Firefly's this month.
- 1 service line was repaired this month.

PFD/PID JOINT PIPELINE PROJECTS

- Use hydrant surcharge funds to upgrade substandard mains.
- The Country Club project is now complete.
- Crestview/Crestwood project is in beginning stages.

DEVELOPMENT PROJECTS

- None at this time.

CUSTOMER REIMBURSEMENT JOBS (by work order)

- New mod 35 install upgrade @ 5532 Delmonte Dr.
- New mod 35 install upgrade @ 116 Valley View Dr.

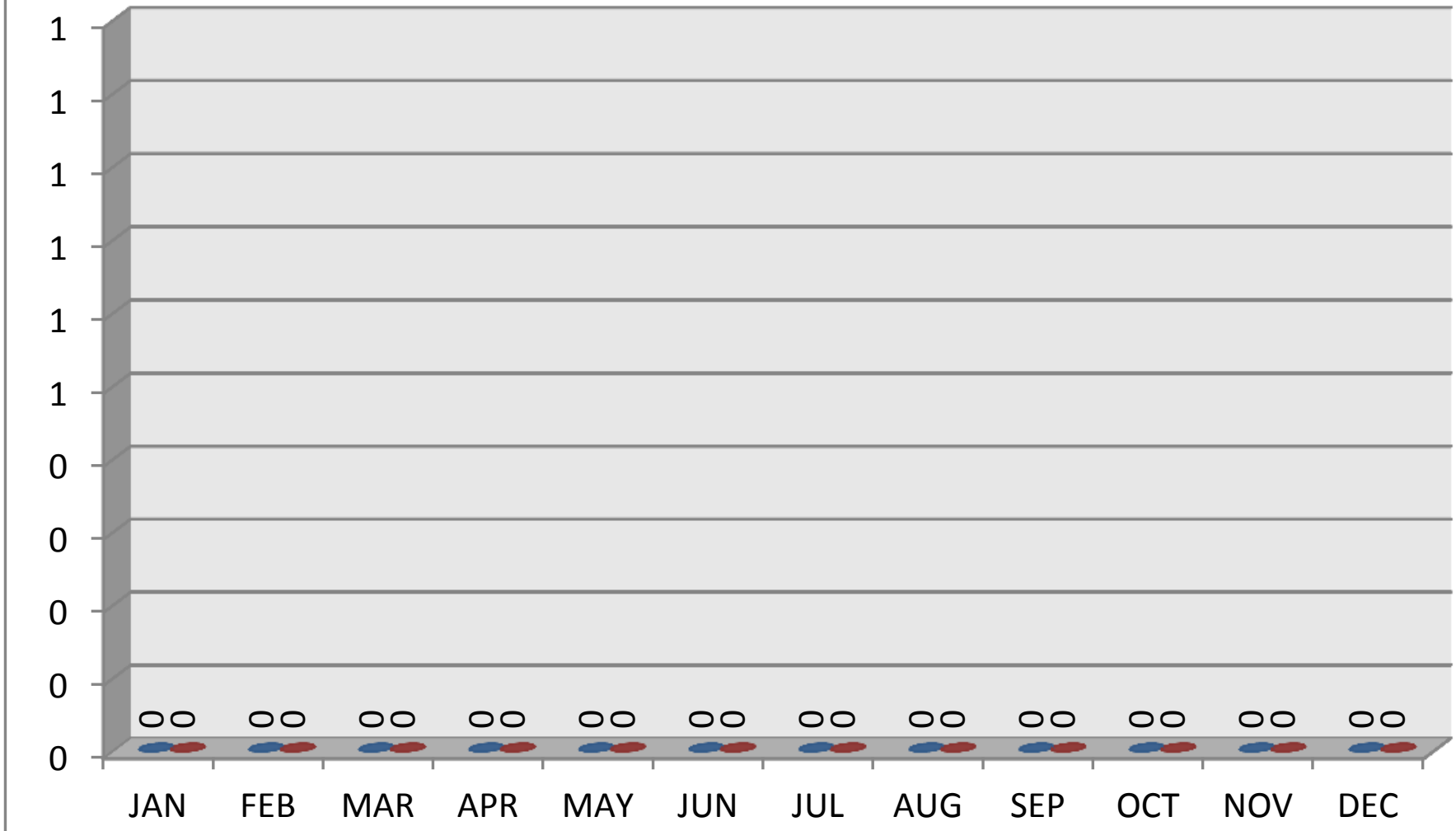
PEARSON ROAD PIPELINE PROJECT

- Project now complete.

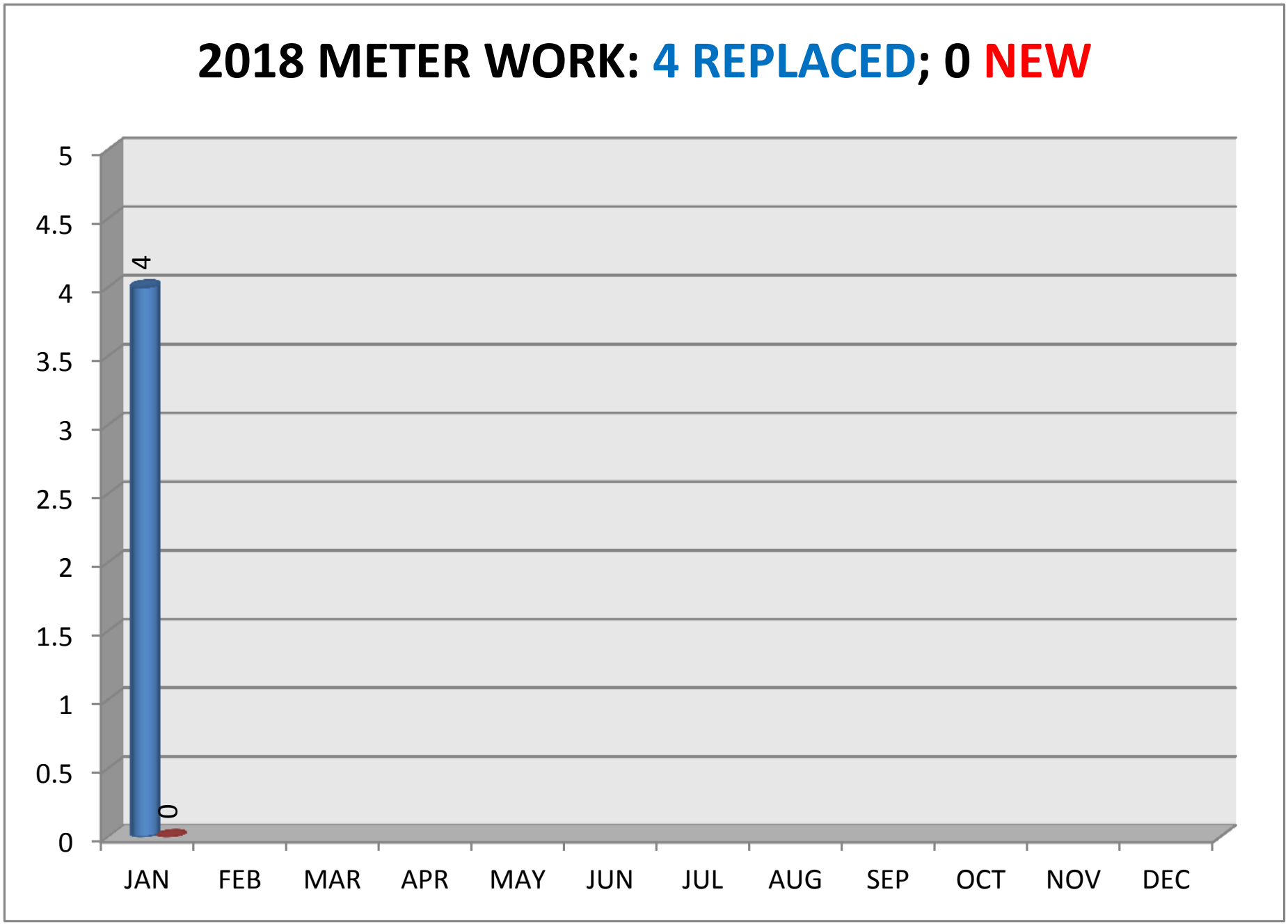
SUMMARY

- We are in the beginning stages of plans/lay out for the Crestview/Crestwood pipeline project. Letters were delivered by hand this month to all the customers that will be affected. Old 4" and 2" steel pipe currently feed this entire neighborhood. The majority of these mains are in the backyards of several of these houses with minimal fire protection/flow. Approximately 3,000 feet of 8" C-900 will be installed. 6 residential hydrants will be placed throughout, along with new service lines. 12 customers currently have meters in their back yards, which will be relocated in front of their homes. This project will be beneficial to all for a multitude of reasons.
- Our 3 new Utility Workers started this month. They have passed their CDL written tests, which grants them with a temporary permit and are currently drive training with a couple of our seasoned employees. Pete Grout, who is one of our Crew Leaders, has been instructing/training our new employees for many years to prepare them for taking the drive/skills test in Redding. Our drivers need a minimum of 40 hours behind the wheel in a Class A vehicle towing a flatbed trailer and fine tuning the skills required to pass with a DMV instructor in the cab. Pete has done a great job preparing drivers. All three should have their permanent licenses before construction season starts.
- We are assisting the meter shop with the firefly replacements. 2-4 of our utility workers are teaming up with the change outs to insure our system is operating properly on a daily basis.
- We have been working on our valve program, locating missing and or covered valve cans. Exposing them, exercising, and taking R.P's (reference points for mapping) when necessary.
- We continue to take care of the daily needs of the District and maintenance issues providing excellent customer service.

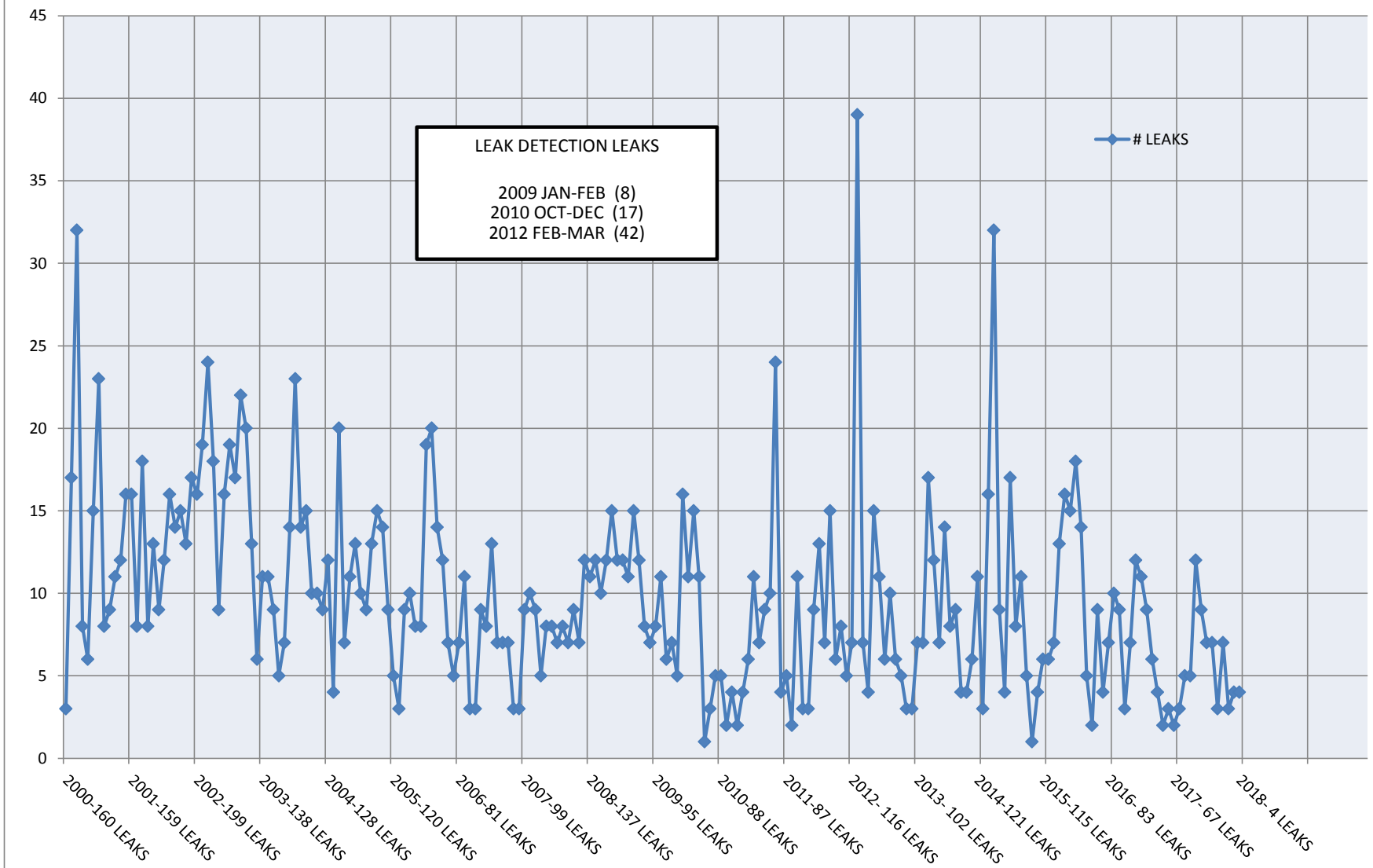
MONTHLY PIPE INSTALLATION 2018, TOTAL INSTALLED FT.



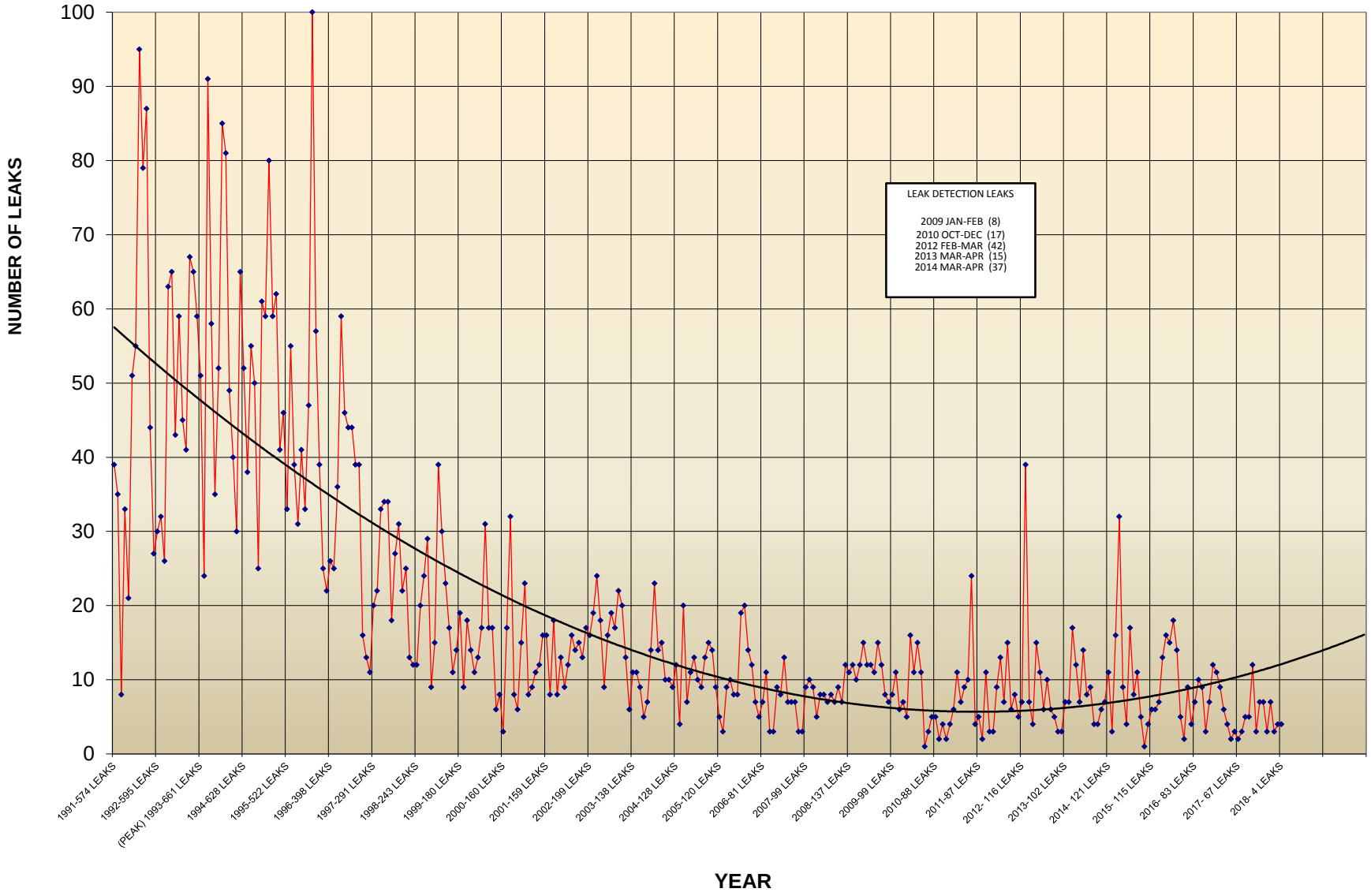
2018 METER WORK: 4 REPLACED; 0 NEW

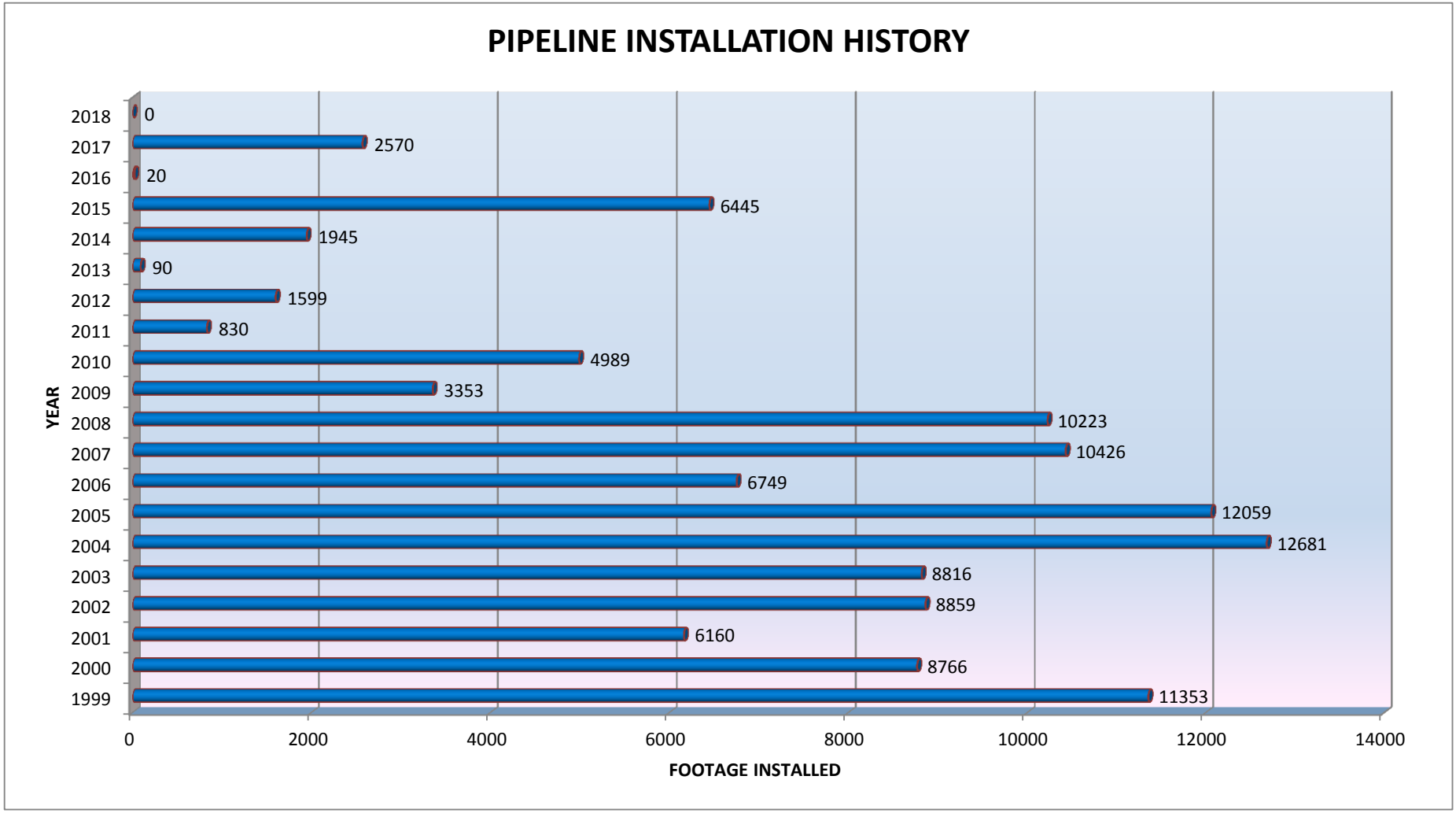


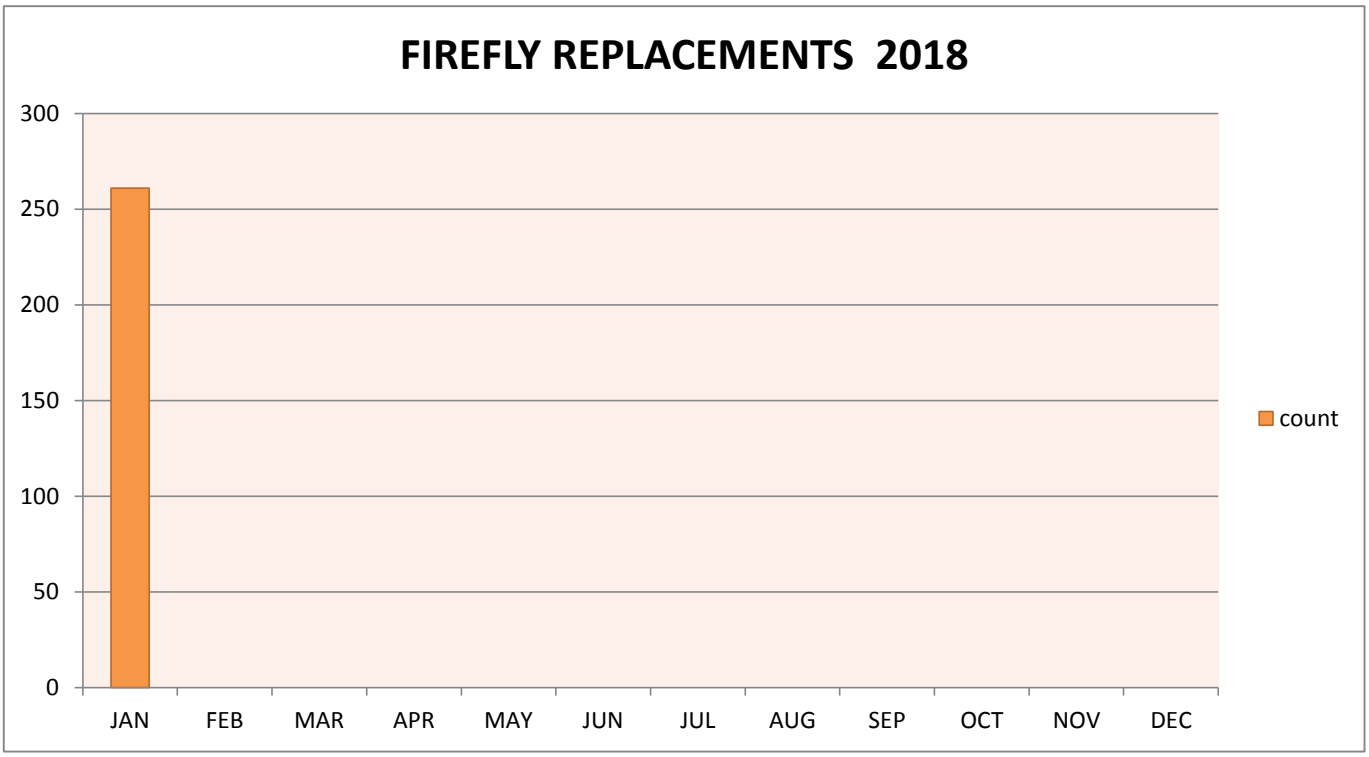
MAINLINE LEAKS



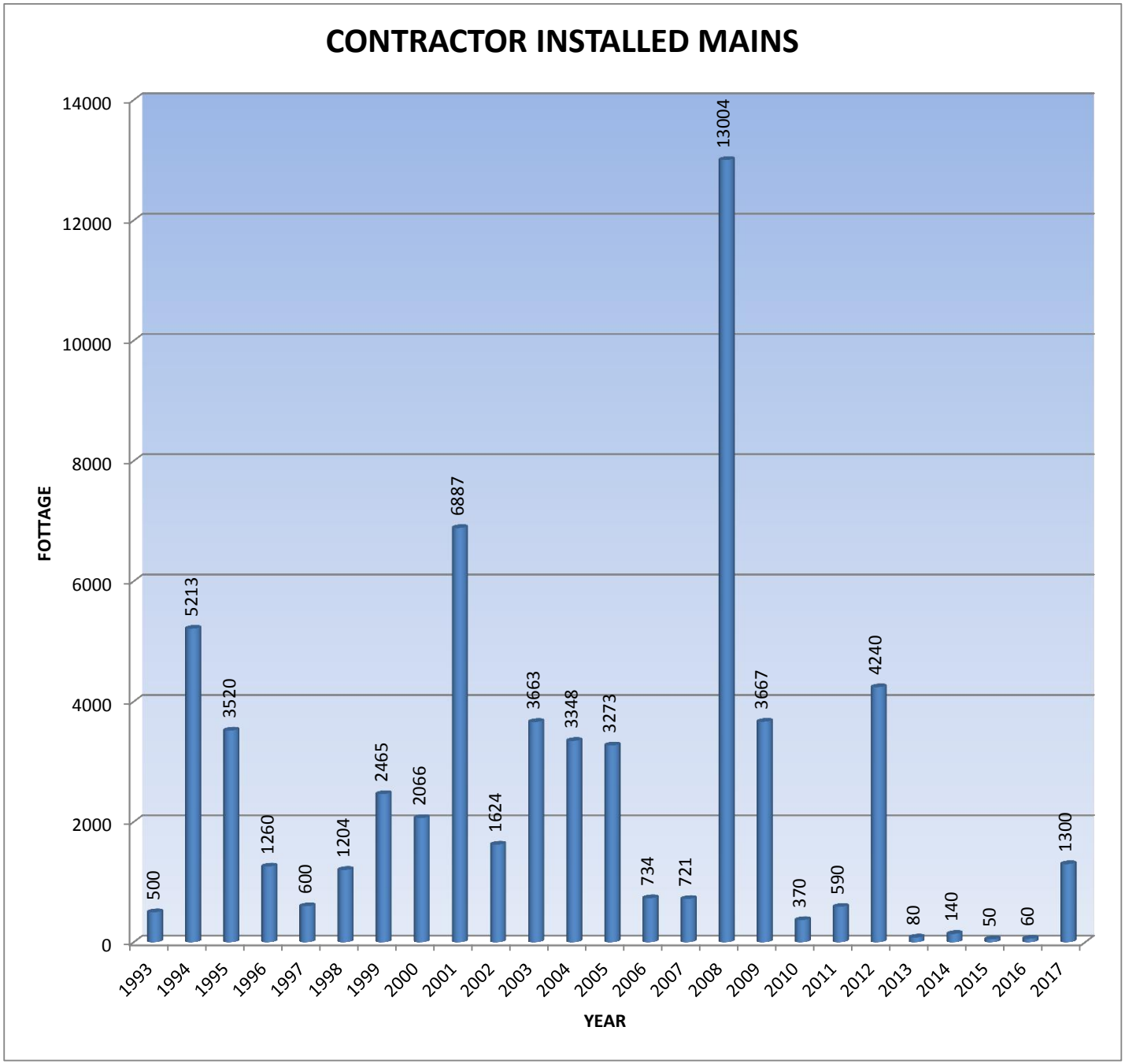
MONTHLY LEAK HISTORY 1991 TO PRESENT

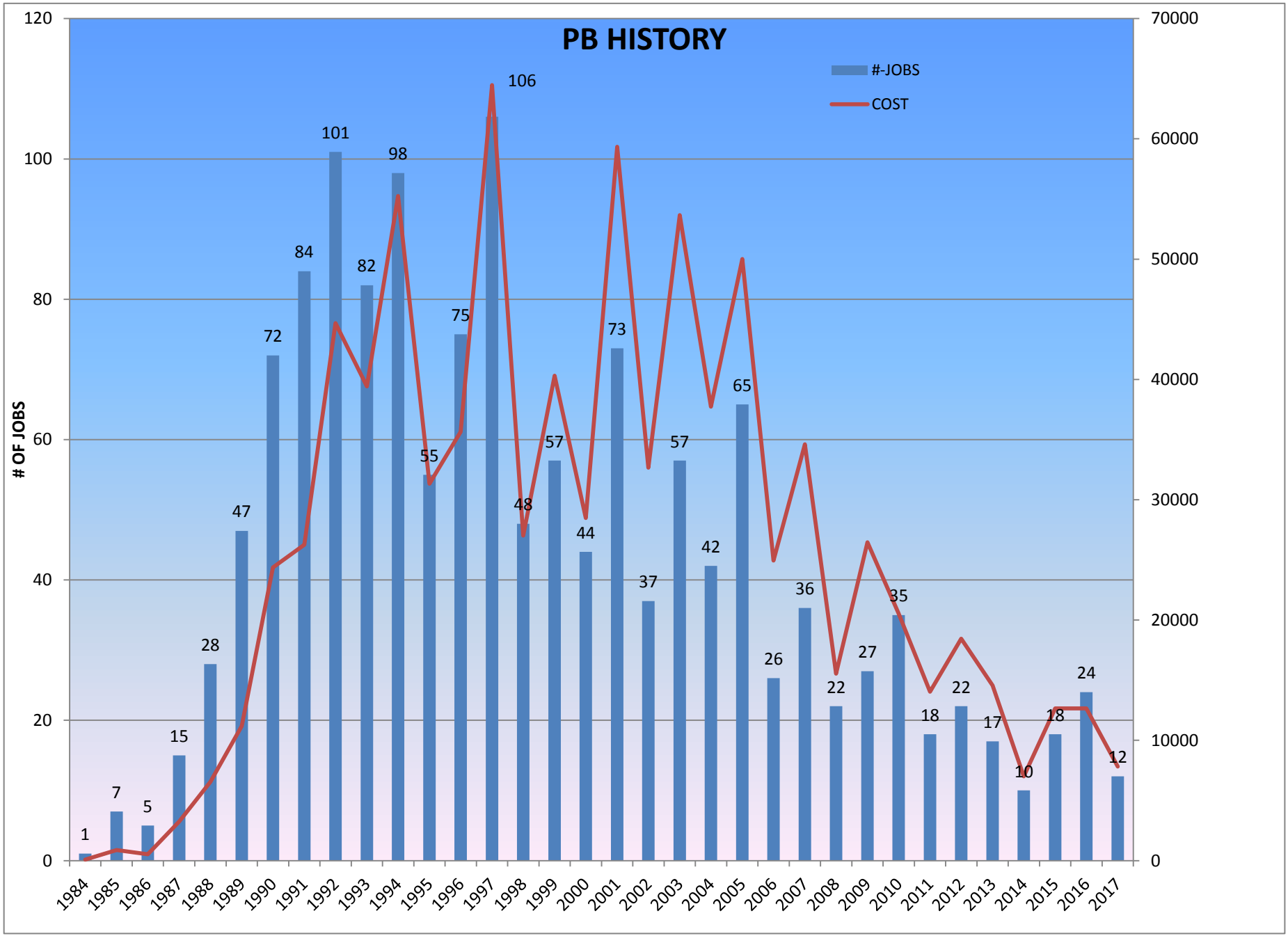



PIPELINE INSTALLATION HISTORY
YEAR
2018
2017
2016
2015
2014
2013
2012
2011
2010
2009
2008
2007
2006
2005
2004
2003
2002
2001
2000
1999
0
2570
20
6445
1945
90
1599
830
4989
3353
10223
10426
6749
12059
12681
8816
8859
6160
8766
11353
0
2000
4000
6000
8000
10000
12000
14000
FOOTAGE INSTALLED


FIREFLY REPLACEMENTS 2018
300
250
200
150
100
50
0
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
count

TYPE PIPE	FEET	MILES	%
Asbestos Cement	91375	17.31	10.0%
Ductile Iron	2191	0.41	0.2%
C-900 PVC 4" to 12"	281308	53.28	30.9%
Cast Iron	1780	0.34	0.2%
Cement Mortar Lined	175060	33.16	19.2%
Galvanized 1.5"- 2"	13568	2.57	1.5%
PVC 1"-2"	38482	7.29	4.2%
Steel 4"-12"	300665	56.94	33.0%
C-905 14" & greater	6288	1.19	0.7%
TOTAL PIPE	910717	172.48	100.0%
Adjustments are made in January of each year			


CONTRACTOR INSTALLED MAINS
FOTTAGE
YEAR
0
2000
4000
6000
8000
10000
12000
14000
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
500
5213
3520
1260
600
1204
2465
2066
6887
1624
3663
3348
3273
734
721
13004
3667
370
590
4240
80
140
50
60
1300


PB HISTORY
#-JOBS
COST
OF JOBS
120
100
80
60
40
20
0
70000
60000
50000
40000
30000
20000
10000
0
1
7
5
15
28
47
72
84
101
82
98
55
75
106
48
57
44
73
37
57
42
65
26
36
22
27
35
18
22
17
10
18
24
12
1984
1985
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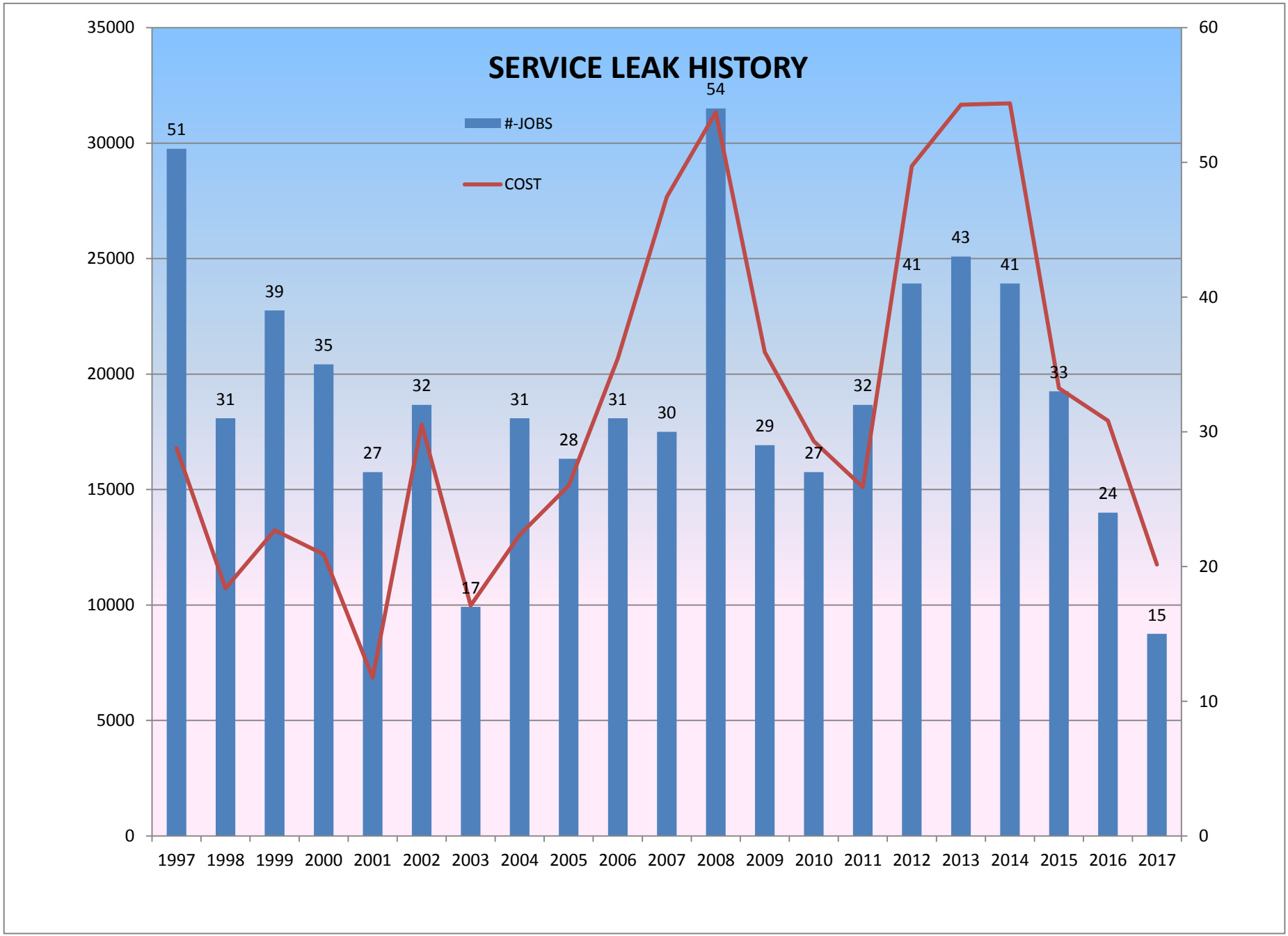
2017


SERVICE LEAK HISTORY
#-JOBS
COST
35000
30000
25000
20000
15000
10000
5000
0
60
50
40
30
20
10
0
51
31
39
35
27
32
17
31
28
31
30
54
29
27
32
41
43
41
33
24
15
1997
1998
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2012
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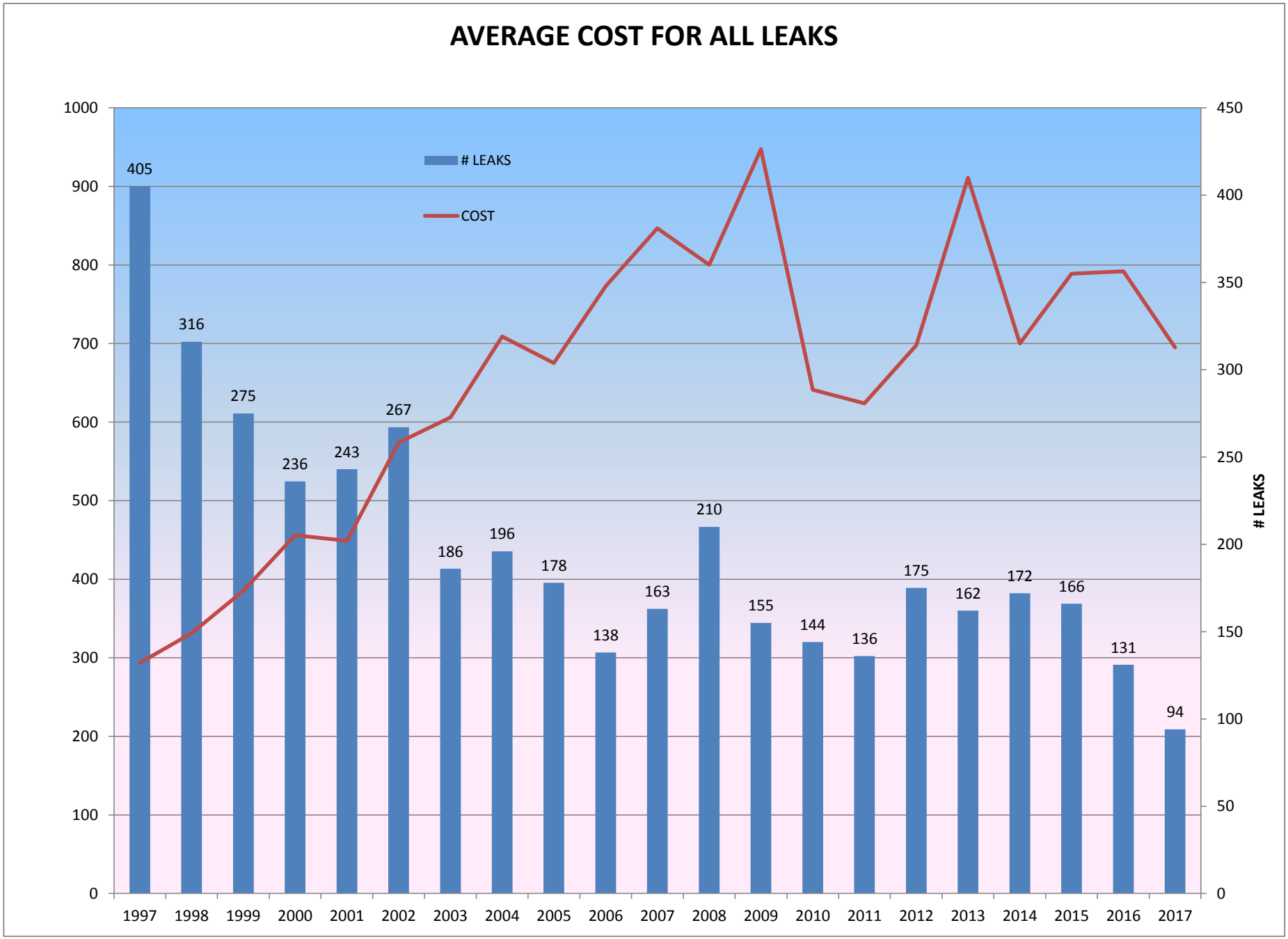
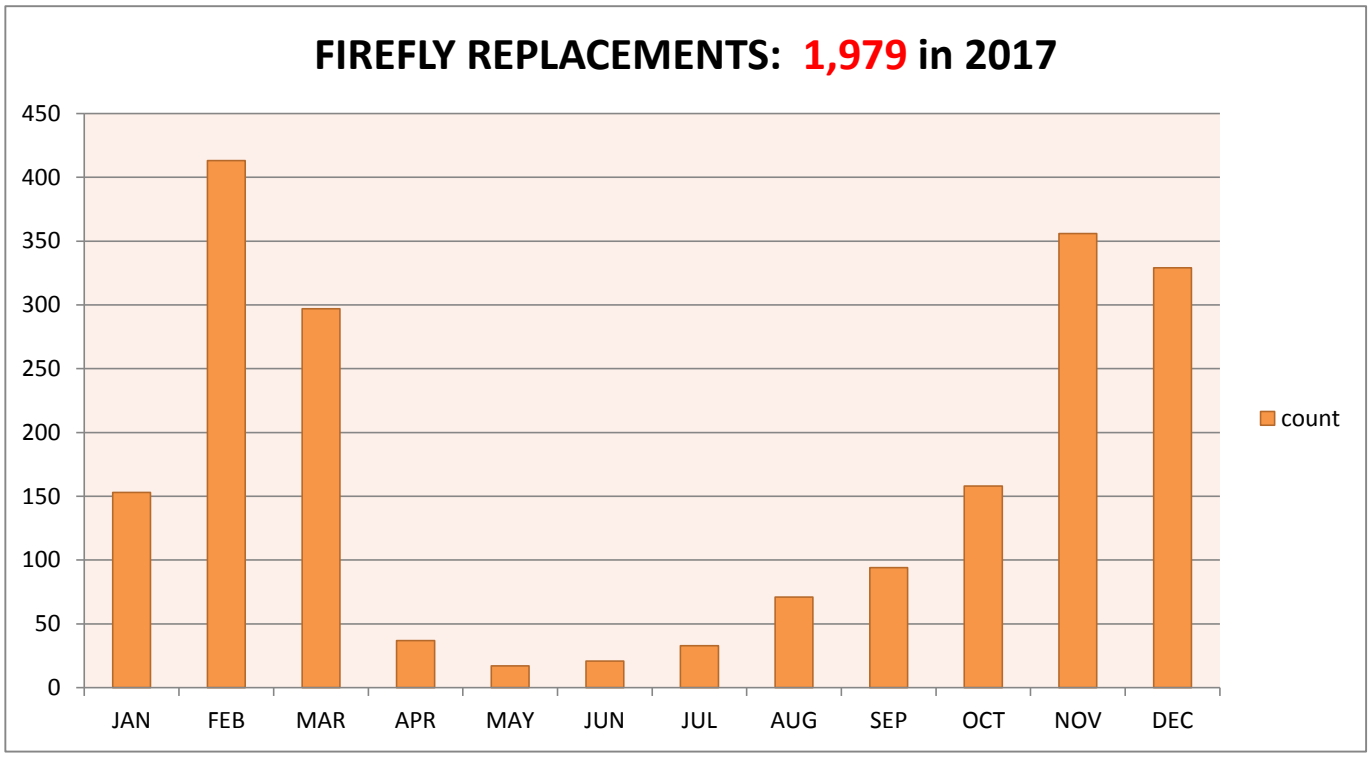
2014
2015
2016
2017


AVERAGE COST FOR ALL LEAKS
LEAKS
COST
405
316
275
236
243
267
186
196
178
138
163
210
155
144
136
175
162
172
166
131
94
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
1000
900
800
700
600
500
400
300
200
100
0
450
400
350
300
250
200
150
100
50
0
LEAKS


FIREFLY REPLACEMENTS: 1,979 in 2017
450
400
350
300
250
200
150
100
50
0
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
count

TREATMENT - STAFF REPORT
January 2018

SUPPLY & QUALITY:

(See Attached Graphs)	Jan. 2018	Jan. 2017	Jan. 6 yr. Avg.
Monthly Production (Million Gallons - MG)	67.4	68.7	80.5

	Range	Average
Plant Production (MGD)	1.3 – 2.8	2.2
Raw Water Turbidity (NTU)	0.51 – 1.06	0.66
Treated Water Turbidity (NTU)	0.04 – 0.05	0.04
Treated Water Chlorine (ppm)	0.85 – 1.24	0.99

WATER TREATMENT:

- **Plant Production and Water Quality**: Average production decreased to **2.2 MGD** from **3.1 MGD** last month. Magalia Reservoir is raw water source for treatment to conserve water in Paradise Lake.
- **Monthly Residential Water Conservation**: **18%** reduction comparing production in January 2018 – **67.4 MG** to January 2013 – **82.5 MG**.
- **Plant & Distribution Operations**: Attended emergency response and planning workshop. Started to prepare a SEMS/ICS orientation and table top exercise. Provided five gallons of hard to treat 5 NTU rain impacted raw water to SANCO Chemical Solutions for polymer coagulation testing. Attended 1,2,3 - TCP MCL webinar Jan. 31st.
- **New State Law AB 746**: Requires lead testing in all California public schools by July 1, 2019; this state law overlaps with the State Board's water supply permit requirement to test at all schools upon request. See attachment. The District plans to test ALL schools in the fall 2018. Attended Webinar Jan 9th.
- **New State Law SB 1398**: Requires water systems to conduct a lead service line inventory survey and report to DDW by June 1, 2018. See attachment. Attended Webinar Jan 9th.
- **New State Law SB 92**: Requires dam owners to submit an emergency action plan and a DSOD approved inundation map to CalOES by Jan.1, 2018 for Paradise Dam (extremely high hazard classification) and Jan. 1, 2019 for Magalia Dam (high hazard classification) based on downstream impacts, not the condition of the dam. Attended webinar Jan. 30th. See attachment.
- **Reservoir "B" Replacement:** 60% design progresses and presented to staff on January 23rd for discussion; revisions to the 60% to be completed by mid-February.
- **Rehabilitation of Tanks C D & E**: Harper completed evaluation of condition assessment and ranking from worst to best (see attached Prioritization Report). Kevin issued the Notice to Proceed for C Tank rehab and cathodic protection systems for A Tank and Raw Water Tank. See attachment.
- **NPDES Permit Renewal Assistance**: Work is underway by Waterworks and Larry Walker. Meeting is scheduled for Feb 6th to discuss progress with Mixing Zone and Dilution Credit Evaluation.
- **NPDES Permit for Discharge to Magalia Reservoir:** No violations in 2017. Received Administrative Civil Liability Complaint January 11 regarding three exceedances of DCBM in 2016; replied with letter dated 1-23-18 including the waiver and payment with professional services invoices for the NPDES permit renewal project.
- **Process Water Recycle Project**:
  RFP Pond Alternative Design: Consideration of solicitation depending on outcome of NPDES permit renewal.
  Engineering: Work Suspended.
  CEQA: Work suspended.
  SRF Loan Construction Application: Pending completion of design and CEQA for construction, and full design cost recovery during construction of a project.
  SRF Loan Planning and Design Application: SRF indicated District may receive $500,000 for "Green Project Reserve" principal forgiveness for planning & design cost recovery, and requested additional information to complete the management approval checklist.
- **CalOES/FEMA Grant:** All information requests provided to CalOES/FEMA. Waiting for further favorable communication.
- **Drinking Water and NPDES Reports:** Completed monthly sampling and reports.
- Miscellaneous repairs to aging equipment and routine instrument calibrations.

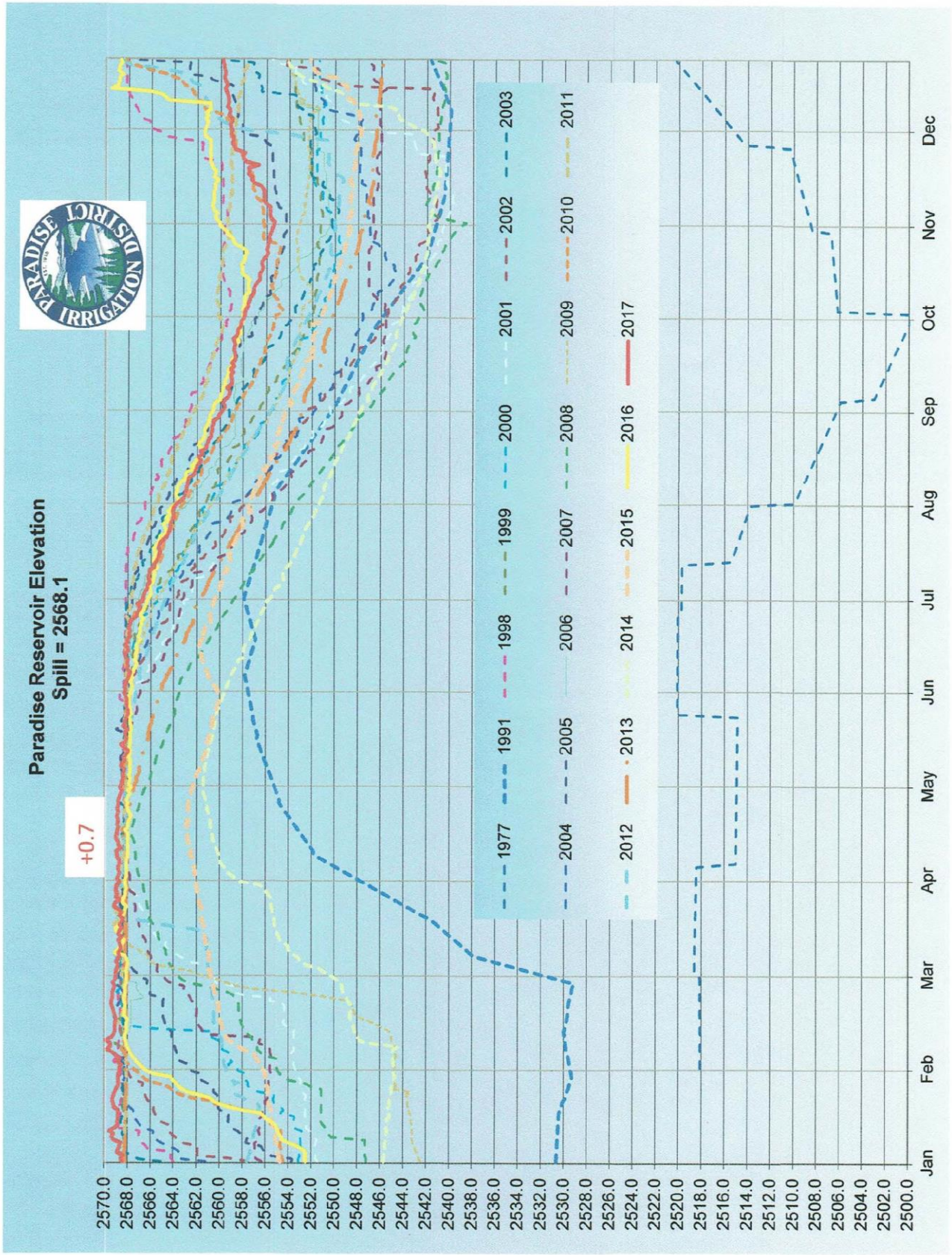
RECREATION:

- **Lake Activities:** See attached Parking & Boating Permit Sales Chart & Table.
- **DBW North Lake Boat Launch Grant Project:** Waiting for DBW's response to District's concerns
- **BC Fish & Game Commission Grant**: Staff presentation on Jan. 9th; award February 6th regarding the grant application request for $3,000 to purchase catchable trout for stocking lake prior to Kids Fishing Day in April.
- **Kids Fishing Day Planning:** Kick-off meeting held Jan 25th. Started bidding for annual trout purchase.

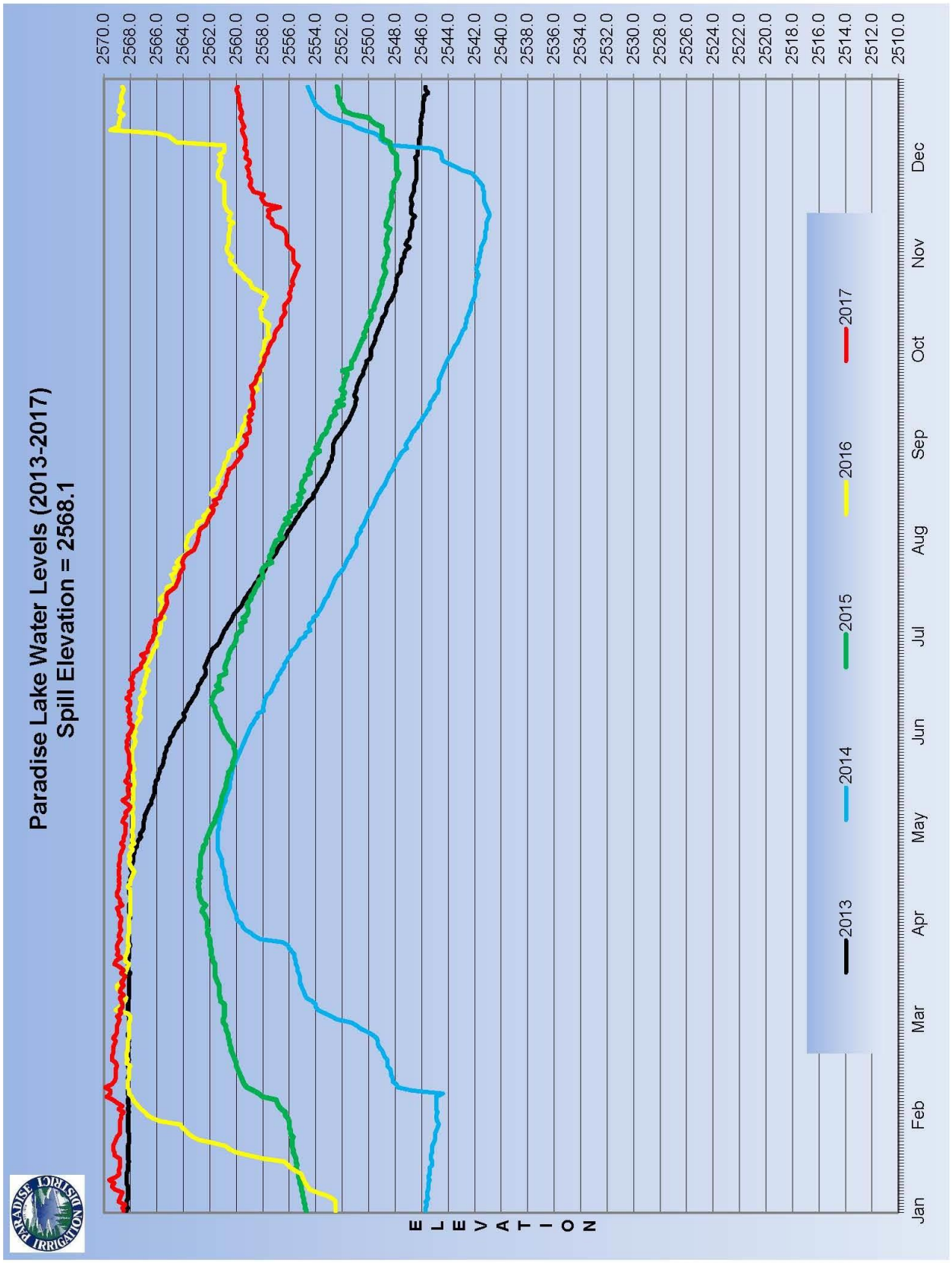
WATERSHED - SOURCE of SUPPLY: Monthly Rainfall = 11.63 inches; Greatest Rain Day = 3.90 inches

Paradise Lake Levels (feet)	2018 Jan. 31 @ - 0.1	2017 Dec. 31 @ - 8.2'	2017 Jan. 31 @ + 0.6'

- **Paradise Lake - 30-Year and 5-Year Graphs of Monthly Water Levels**: See attachments
- **CalFire Service Crews:** Continue vegetation removal around treatment plant and along Little Butte Creek.
- **Paradise Ridge Fire Safe Council:** Reported ongoing motorcycle activity in east Magalia and attempts to curtail the activity.
- **Little Butte Creek Phase II Shaded Fuel Project:** Project underway.


Paradise Reservoir Elevation
Spill = 2568.1
+0.7
PARADISE IRRIGATION DISTRICT
1977
1991
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2570.0
2568.0
2566.0
2564.0
2562.0
2560.0
2558.0
2556.0
2554.0
2552.0
2550.0
2548.0
2546.0
2544.0
2542.0
2540.0
2538.0
2536.0
2534.0
2532.0
2530.0
2528.0
2526.0
2524.0
2522.0
2520.0
2518.0
2516.0
2514.0
2512.0
2510.0
2508.0
2506.0
2504.0
2502.0
2500.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

Paradise Lake – 5 year Graph of Monthly Water Levels (2013-2017)



AB-746 Public health: potable water systems: lead testing: schoolsites. (2017-2018)

SHARE THIS:

Date Published: 10/13/2017 09:00 PM

Assembly Bill No. 746

CHAPTER 746

An act to add and repeal Section 116277 of the Health and Safety Code, relating to public health.

[Approved by Governor October 13, 2017. Filed with Secretary of State October 13, 2017.]

LEGISLATIVE COUNSEL'S DIGEST

AB 746, Gonzalez Fletcher. Public health: potable water systems: lead testing: schoolsites.

Existing law, the California Safe Drinking Water Act, requires the State Water Resources Control Board to administer provisions relating to the regulation of drinking water to protect public health, including, but not limited to, conducting research, studies, and demonstration programs relating to the provision of a dependable, safe supply of drinking water, enforcing the federal Safe Drinking Water Act, adopting implementing regulations, and conducting studies and investigations to assess the quality of water in private domestic water supplies. The act requires the state board to establish a grant program, in consultation with the State Department of Education, to award grants to local educational agencies for the purposes of improving access to, and the quality of, drinking water in public schools serving kindergarten or any of grades 1 to 12, inclusive, and preschools and child day care facilities located on public school property.

This bill would require a community water system that serves a schoolsite of a local educational agency with a building constructed before January 1, 2010, to test for lead in the potable water system of the schoolsite before ~~January~~ July 1, 2019. The bill would require the community water system to report its findings to the schoolsite, as specified, and, if the schoolsite's lead level exceeds a certain level, to test a water sample from the point at which the schoolsite connects to the community water system's supply network. The bill would require the local educational agency, if the lead level exceeds the specified level at a schoolsite, to notify the parents and guardians of the pupils who attend the schoolsite or preschool. The bill would require the local educational agency to take immediate steps to make inoperable and shut down from use all fountains and faucets where the excess lead levels may exist and would require the local educational agency to work with the school site to ensure that a potable source of drinking water is provided for students. The bill would require a community water system to prepare a sampling plan for each schoolsite where lead sampling is required under these provisions. By imposing additional duties on local educational agencies, this bill would impose a state-mandated local program.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that, if the Commission on State Mandates determines that the bill contains costs mandated by the state, reimbursement for those costs shall be made pursuant to the statutory provisions noted above.

Vote: majority Appropriation: no Fiscal Committee: yes Local Program: yes

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. Section 116277 is added to the Health and Safety Code, to read:

116277. (a) (1) A community water system that serves a schoolsite of a local educational agency with a building constructed before January 1, 2010, on that schoolsite shall test for lead in the potable water system of the schoolsite on or before July 1, 2019.

(2) The community water system shall report its findings to the schoolsite within 10 business days after the community water system receives the results from the testing laboratory or within two business days if it is found that the schoolsite's lead level exceeds 15 parts per billion.

(3) If the lead level exceeds 15 parts per billion, the community water system shall also test a water sample from the point in which the schoolsite connects to the community water system's supply network to determine the lead level of the water entering the schoolsite from the community water system's water supply network.

(b) (1) A local educational agency shall allow the community water system access to each of the local educational agency's schoolsites that are subject to subdivision (a) to conduct testing.

(2) If the lead level exceeds 15 parts per billion, the local educational agency shall notify the parents and guardians of the pupils who attend the schoolsite or preschool where the elevated lead levels are found.

(c) (1) If lead levels exceed 15 parts per billion, the local educational agency shall take immediate steps to make inoperable and shut down from use all fountains and faucets where the excess lead levels may exist. Additional testing may be required to determine if all or just some of the school's fountains and faucets are required to be shut down.

(2) Each local educational agency shall work with the schoolsites within its service area to ensure that a potable source of drinking water is provided for students at each schoolsite where fountains or faucets have been shut down due to elevated lead levels. Providing a potable source of drinking water may include, but is not limited to, replacing any pipes or fixtures that are contributing to the elevated lead levels, providing onsite water filtration, or providing bottled water as a short-term remedy.

(d) Each community water system, in cooperation with the appropriate corresponding local educational agency, shall prepare a sampling plan for each schoolsite where lead sampling is required under subdivision (a). The community water system and the local educational agency may request assistance from the state board or any local health agency responsible for regulating community water systems in developing the plan.

(e) This section shall not apply to a schoolsite that is subject to any of the following:

(1) The schoolsite was constructed or modernized after January 1, 2010.

(2) The local educational agency of the schoolsite is currently permitted as a public water system and is currently required to test for lead in the potable water system.

(3) The local educational agency completed lead testing of the potable water system after January 1, 2009, and posts information about the lead testing on the local educational agency's public Internet Web site, including, at a minimum, identifying any schoolsite where the level of lead in drinking water exceeds 15 parts per billion.

(4) The local educational agency has requested testing from its community water system consistent with the requirements of this section.

(f) For purposes of this section, the following definitions apply:

(1) "Local educational agency" means a school district, county office of education, or charter school located in a public facility.

(2) "Potable water system" means water fountains and faucets used for drinking or preparing food.

(g) This section shall become inoperative on July 1, 2019, and, as of January 1, 2020, is repealed.

SEC. 2. If the Commission on State Mandates determines that this act contains costs mandated by the state, reimbursement to local agencies and school districts for those costs shall be made pursuant to Part 7 (commencing with Section 17500) of Division 4 of Title 2 of the Government Code.

New State Law SB 1398 - Lead Service Line Inventory

SB-1398 Public water systems: lead user service lines. (2015-2016)

Senate Bill No. 1398

CHAPTER 731

An act to add Section 116885 to the Health and Safety Code, relating to drinking water.

[Approved by Governor September 27, 2016. Filed with Secretary of State September 27, 2016.]

LEGISLATIVE COUNSEL'S DIGEST

SB 1398, Leyva. Public water systems: lead user service lines.

Existing law requires public water systems to take specified actions to test for and remediate certain contaminants in drinking water, including lead and copper. Existing law prohibits the use of any pipe, pipe or plumbing fitting or fixture, solder, or flux that is not lead free in the installation or repair of any public water system or any plumbing in a facility providing water for human consumption, except as specified.

This bill would require a public water system to compile an inventory of known lead user service lines in use in its distribution system and identify areas that may have lead user service lines in use in its distribution system by July 1, 2018. This bill would require a public water system, after completing the inventory, to provide a timeline for replacement of known lead user service lines in the distribution system to the State Water Resources Control Board. This bill would require, by July 1, 2020, a public water system with areas that may have lead user service lines in use in its distribution system to either determine the existence or absence of lead user service lines in these areas and provide that information to the board or provide a timeline for replacement of the user service lines whose content cannot be determined. This bill would require the board to approve a replacement timeline, as specified.

Vote: majority Appropriation: no Fiscal Committee: yes Local Program: no

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. (a) The Legislature finds and declares all of the following:

(1) Lead in public water systems represents a threat to public health, and any related risks should be assessed and mitigated by public water systems.

(2) Public water systems in California may not have complete knowledge and data concerning the existence of lead in their water distribution systems due to the age of the system, inadequate recordkeeping, or the addition of service areas for which recordkeeping was not properly maintained.

(3) Public water systems in the state are required to comply with a drinking water permit issued by the State Water Resources Control Board, the United States Environmental Protection Agency's lead and copper rule, and other state and federal requirements intended to protect public health. Public water systems are required to regularly test their water supplies both at the source and within their distribution systems to ensure that water users are not exposed to lead.

(b) All of the following is the intent of the Legislature:

(1) To ensure that lead water pipes are identified and replaced as promptly as practicable.

(2) That public water systems evaluate water service lines of unidentified composition and take appropriate actions to ascertain whether they contain lead.

(3) That public water systems manage the replacement of service lines on a schedule that is commensurate with the risks and costs involved.

SEC. 2. Section 116885 is added to the Health and Safety Code, to read:

116885. (a) By July 1, 2018, a public water system shall compile an inventory of known lead user service lines in use in its distribution system and identify areas that may have lead user service lines in use in its distribution system.

(b) (1) After completing the inventory required pursuant to subdivision (a), a public water system shall provide a timeline for replacement of known lead user service lines in use in its distribution system to the board.

(2) By July 1, 2020, a public water system with areas that may have lead user service lines in use in its distribution system shall do either of the following:

(A) Determine the existence or absence of lead user service lines in use in its distribution system and provide that information to the board.

(B) Provide a timeline to the board for replacement of user service lines whose content cannot be determined.

(c) The board shall approve a timeline established pursuant to subdivision (b) as follows:

(1) The board shall review a public water system's proposed timeline for lead user service line replacement and, within 30 days of submission of the timeline to the board, do either of the following:

(A) Approve the proposed timeline.

(B) Deny the proposed timeline and propose a revised timeline to the public water system. The board shall explain to the public water system, in writing, why the public water system's timeline was not approved, the factors that the board used to propose a revised timeline, and why the board used those factors.

(2) If the board fails to act within 30 days of the submission of the timeline, the timeline shall be deemed approved.

(3) If the public water system rejects the board's proposed revised timeline, the public water system and the board shall develop a compromise timeline within 30 days.

(4) An approved timeline or a compromise timeline shall be a public record and available on the board's Internet Web site.

(5) In cases where a portion of a public water system's distribution system is located within a Superfund site, as designated under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (42 U.S.C. Sec. 9601 et seq.), under an active cleanup order, the board shall not propose a timeline for lead user service line replacement that does not conform to any applicable federal regulatory requirements or timelines.

(d) For the purposes of this section:

(1) "Board" means the State Water Resources Control Board.

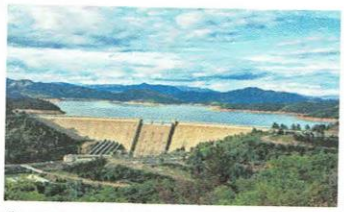
(2) "Public water system" has the same meaning as in Section 116275.

(3) "User service line" has the same meaning as in Section 64551.60 of Title 22 of the California Code of Regulations.

Dam safety regulations in California: What's new?

July 24, 2017
Posted in: Energy, Infrastructure, Water

In the aftermath of the near-disaster at Oroville Dam in California in February 2017, there have been numerous discussions in dam safety and policy circles about regulations to make dams safer. At Mead & Hunt, we have been keenly following policy developments related to dam safety, and this post provides an update from California.



Shasta Dam in California (Photo credit: User 'Apaliwal' on Wikimedia Commons)

On June 27, 2017, significant legislative changes related to dam safety were adopted by California through the passing of Senate Bill 92 (SB 92, part of the 2017-18 budget package). The bill requires the following changes which will affect dam owners:

Inundation Maps

Under prior law, inundation maps were to be submitted by dam owners to California Office of Emergency Services for review and approval. SB 92 brings inundation maps under jurisdiction of the Department of Water Resources. Further, all inundation maps are now required to be publicly available.

Emergency Action Plans

Dam owners are now required, after approval of inundation maps, to prepare an emergency action plan, with an exception for low-hazard dams. Before SB 92, the state did not have the power to compel dam owners to create EAPs. SB 92 requires EAPs and inundation maps to be updated no less frequently than 10 years or when significant changes occur at the dam or downstream.

Once the EAP is approved, dam owners must conduct an emergency action plan notification exercise at least once annually with a local public safety agency. While SB 92 requires inundation maps to be publicly available, EAPs will be protected from public disclosure.

Fees and enforcement

Finally, SB 92 will allow DWR to change the fees that are currently charged to dam owners for state supervision related to dam safety. The new law also provides enforcement authority to the state through imposition of monetary penalties for non-compliance with dam safety laws.

Mead & Hunt will continue to support dam owners in California to operate their dams safely and maintain compliance with the post-Oroville laws. If you have any questions about the safety of your dam, please do not hesitate to contact me.

ABOUT THE AUTHOR

Rahul Ranade addresses water infrastructure challenges today with a keen eye on the future. This helps water agencies stay a step ahead of ever-evolving demands on their systems. "The sense of urgency and public importance attached to water projects makes working on them a rewarding experience," says Rahul.

Read more posts by Rahul Ranade

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PRIORITIZATION REPORT

PROJECT:	Corrosion Engineering Evaluation of Three Welded Steel Water Storage Tanks (Tanks C, D, and E)
OWNER:	Paradise Irrigation District
LOCATION:	Paradise, California
PREPARED BY:	Krista Harper, P.E.
DATE:	January 2018

I. GENERAL INFORMATION

This report is filed in response to a request by Paradise Irrigation District for a prioritization of the three water storage tanks (C, D, E) evaluated by Harper & Associates Engineering, Inc. (HAE). A field investigation of all three tanks was accomplished by HAE to observe interior and exterior tank surfaces and conditions and Cal/OSHA safety compliance, with photographs taken to record conditions. A comprehensive report was prepared for each tank and forwarded to the District with remedial recoating, repainting, repair recommendations and cost estimates for the recommended work.

Included in this Prioritization Report is a table which prioritizes the tanks from worst to best condition. The prioritization is based on the interior roof and structural members coating conditions, as these surfaces are the most critical, since they cannot be protected by cathodic protection. In addition to providing a prioritization of the tanks, the table summarizes the tank's information including size, year built, cost by category, and recommended recoat year. Also included is a cost comparison to replace each tank with a new tank verses rehabilitating the tank.

II. PRIORITIZATION

The coating and paint systems for all three tanks are between 14 and 15 years old and these systems typically have a 20 to 25 year life expectancy. As noted in the Corrosion Reports for each tank, the cracked and delaminating paint on the exterior roofs appears to be due to the underlying alkyd paint system failing as a result of years of moisture penetrating the alkyd system in areas where ponding and debris have accelerated the deterioration. As noted in the Corrosion Report for Tank C, the amount of general corrosion on the roof plates in this tank is greater than should be expected for a coating system that is only 15 years old. The cause may be, in part, due to the vapor zone in the tank having higher concentrations of chlorine vapor present. It has been HAE's experience that, where the mils are low, it is more likely that the chlorine vapor can permeate the coating, causing the general corrosion to develop. Therefore, it is recommended to

coat Tank C this year. Although the coating on the interior of Tank D is not as severe as Tank C, there is moderate to severe corrosion at the center support and structural connections, which may also be due, in part, to chlorine vapor. Therefore, it is recommended to coat Tank D in 2019, before corrosion-related structural damage worsens and replacement of structural members is required. Tank E is in the best condition of the three tanks and is listed for recoating in two years but, if needed, the District may be able to postpone this tank for three to five years.

III. CONCLUSION

As noted above, the corrosion on the interior roofs and structural members may be accelerated due to excessive chlorine vapor. Based on HAE's research in various tanks with much worse chlorine vapor issues, HAE recommends interior roof surfaces and the upper shell course in all three tanks be coated with a zinc primer and three coats of epoxy, with a minimum system thickness of 18 mils, to help extend the life of the coating system.

Also, due to the moisture and debris on the exterior roof surfaces accelerating the deterioration of the paint system, HAE recommends applying an epoxy/urethane paint system to the exterior surfaces. The typical epoxy/urethane system consists of two coats of epoxy, for a total of 6 mils, and a coat of urethane at 3 mils. Due to the more severe condition on the exterior of these tanks, HAE recommends increasing the thickness of the epoxy coats from 6 to 14 mils on the exterior roofs.

All the tanks currently have cathodic protection systems. Unfortunately, cathodic protection systems do not protect the surfaces above the water, so the cathodic protection system will not slow the corrosion rate in the areas above the water level. HAE agrees that cathodic protection systems are important to the long-term maintenance of steel tanks. The cathodic protection systems can significantly slow the corrosion process below the water level in the tanks. Based on communications with the District, HAE will include installation of new cathodic protection systems purchased by the District in the bid documents for each tank when they are rehabilitated.

With the detailed individual reports for each tank and this Prioritization Report, the District can now make long-term decisions regarding the rehabilitation for each of the tanks. Once each tank has been rehabilitated, HAE recommends the District continue to be diligent in maintaining a long-term maintenance plan. This plan would include accomplishing warranty inspection and requiring the contractor to accomplish any repairs determined necessary. HAE also recommends tank inspection every three to five years to monitor the condition of the coating. Spot repair of the interior coating should be accomplished, as needed, to facilitate obtaining the full life expectancy of the coating system.

Respectfully submitted,

HARPER & ASSOCIATES ENGINEERING, INC.

Krista Harper

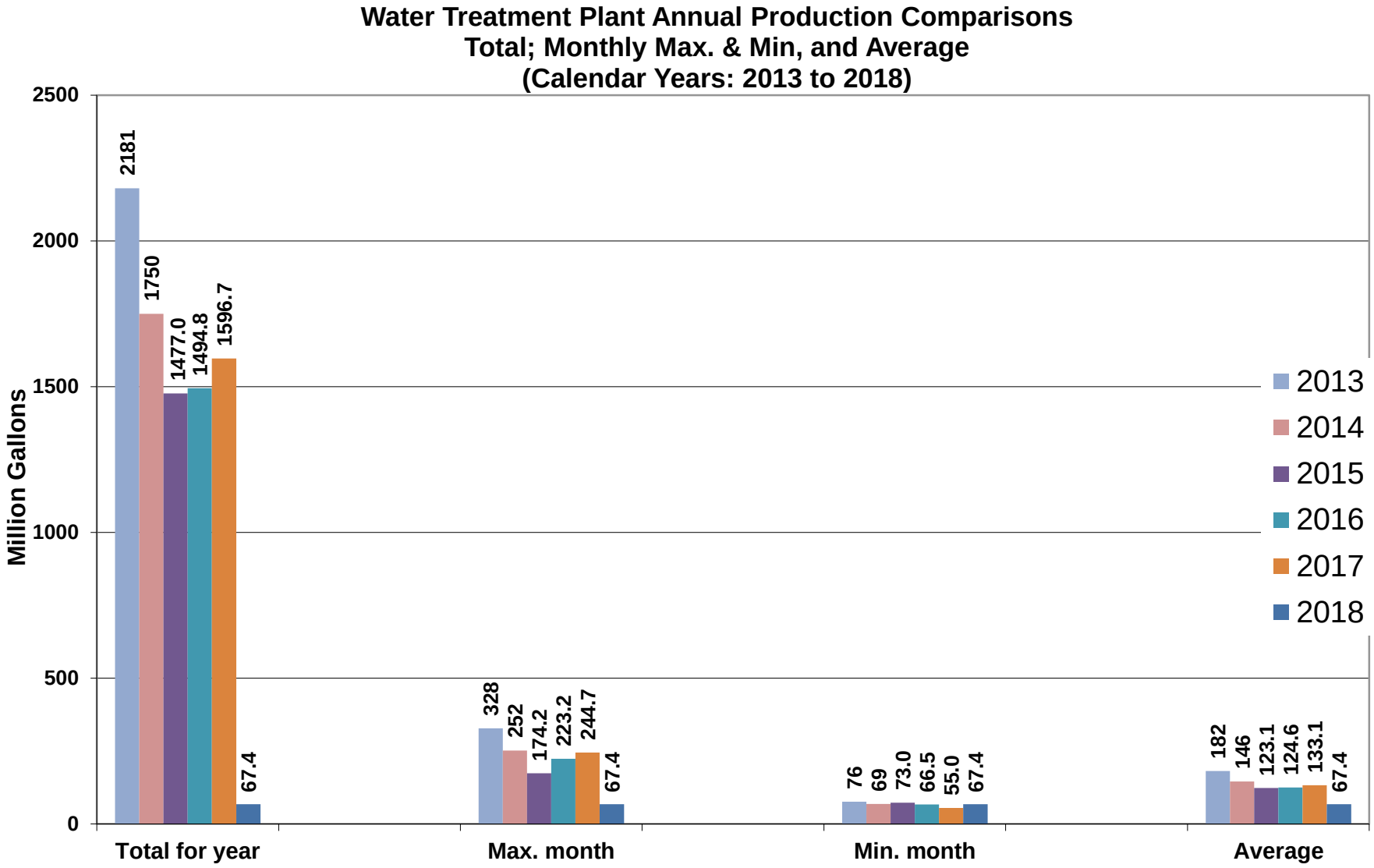
Krista Harper, P.E.
Project Manager

PRIORITIZATION OF THREE WATER TANKS
PARADISE IRRIGATION DISTRICT

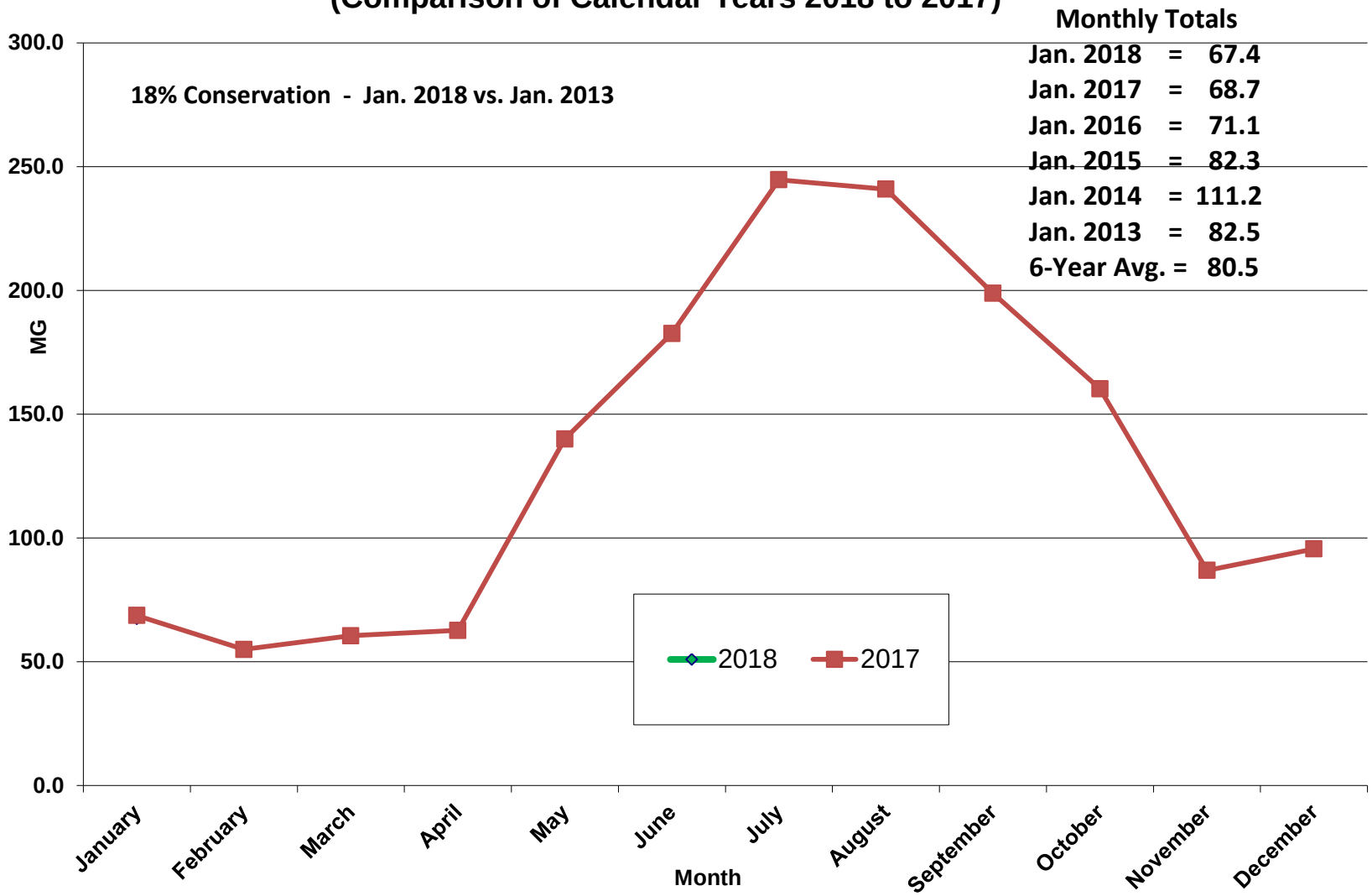
PRIORITY	TANK	CAPACITY (MG)	DIAMETER	HEIGHT	YEAR BUILT	REHAB YEAR	COATING	PAINT	SAFETY	STRUCTURAL	TOTAL REHAB	TOTAL REPLACEMENT
1	Tank C	2.00	104	29	1967	2018	$260,000	$126,000	$13,000	$18,500	$417,500	$1,500,000
2	Tank D	2.00	104	29	1967	2019	$260,000	$126,000	$11,000	$18,500	$415,500	$1,500,000
3	Tank E	1.50	90	29	1967	2020	$205,500	$102,000	$9,500	$0	$317,000	$1,125,000

Harper and Associates Engineering, Inc.

January 2018


Water Treatment Plant Annual Production Comparisons
Total; Monthly Max. & Min, and Average
(Calendar Years: 2013 to 2018)
Million Gallons
2500
2000
1500
1000
500
0
2181
1750
1477.0
1494.8
1596.7
67.4
328
252
174.2
223.2
244.7
67.4
76
69
73.0
66.5
55.0
67.4
182
146
123.1
124.6
133.1
67.4
Total for year
Max. month
Min. month
Average
2013
2014
2015
2016
2017
2018

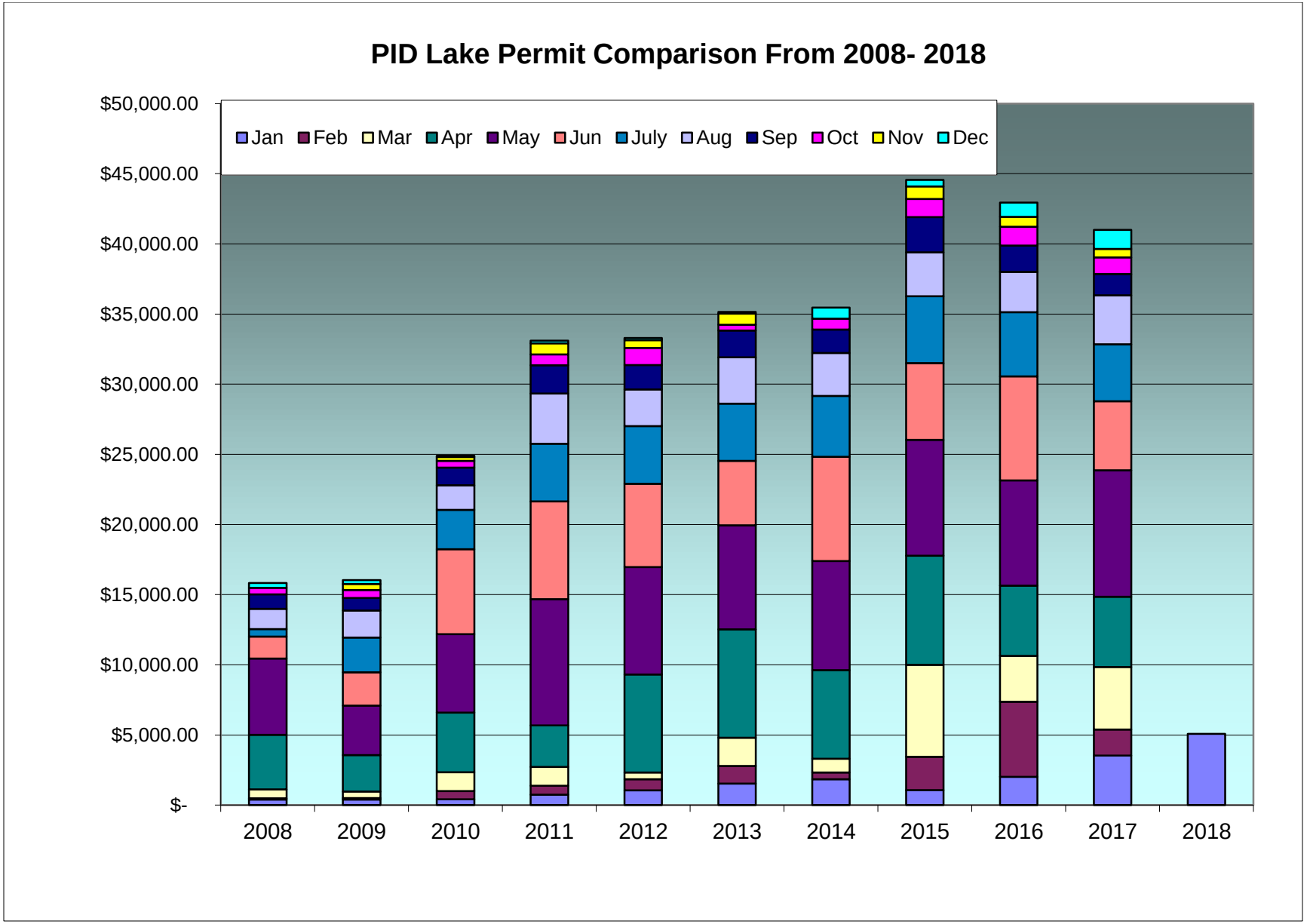
Monthly Treatment Plant Production (Million Gallons - MG)
(Comparison of Calendar Years 2018 to 2017)



Water Treatment Plant Annual Production Figures and 5 Year Averages (2013 - 2018)
(Million Gallons)

Note: 2013 is the conservation comparison/base year

	Years														6-Year Average
	2005	2006	2007	2008	2009	2010	2011	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2013-2018**
January	113.2	113.7	130.8	116.1	105	91.4	91.6	105.2	82.5	111.2	82.3	71.1	68.7	67.4	**80.5**
February	101	104.7	106.9	112.3	88.4	79.2	85.2	85.3	76.1	68.8	73.0	66.5	55.0		
March	129.3	110.7	150.2	147	108.9	100.2	84.6	79.3	101.6	85.8	98.7	67.1	60.5		
April	132	112.5	172	205.9	170.5	96.9	99.8	94.2	145.1	107.7	106.7	84.5	62.7		
May	181.5	243.9	259.3	275	221	140.8	146	214.7	241.6	175.6	136.5	119.6	140.0		
June	250.7	328.5	336.4	321.6	256.7	239.7	183.3	262.7	276.2	230.3	148.1	169.7	182.6		
July	393.2	428.9	384.6	360.5	350.6	344.4	283.3	325.5	327.5	252.1	174.2	207.6	244.7		
August	412.3	391.5	379.6	363.8	338.6	332.4	307.6	331.2	309.9	220.7	171.8	223.2	240.9		
September	312.1	338.4	295.3	317.5	281.4	271.3	280.3	283.7	230.1	196.3	157.9	191.0	198.8		
October	234.9	253.2	156.9	218.1	178.1	185.1	152.2	198.7	170.7	137.3	138.3	115.2	160.3		
November	117.8	128.7	142	124.7	114.2	95.8	107.3	91.7	117.4	85.4	95.6	90.6	86.9		
December	114.3	112.9	115.5	120.7	101.7	105.3	105.1	81.2	102.3	78.5	93.9	88.7	95.6		
	2005	2006	2007	2008	2009	2010	2011	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**5 Year Avg.**
Total for year	2492	2668	2630	2683	2315	2083	1926	2153	2181	1750	1477.0	1494.8	1596.7	67.4	80.5
Max. month	412	429	385	364	351	344	308	331	328	252	174.2	223.2	244.7	67.4	80.5
Min. month	101	105	107	112	88	79	85	79	76	69	73.0	66.5	55.0	67.4	80.5
Average	208	222	219	224	193	174	161	179	182	146	123.1	124.6	133.1	67.4	80.5


PID Lake Permit Comparison From 2008- 2018
$50,000.00
$45,000.00
$40,000.00
$35,000.00
$30,000.00
$25,000.00
$20,000.00
$15,000.00
$10,000.00
$5,000.00
$-
Jan
Feb
Mar
Apr
May
Jun
July
Aug
Sep
Oct
Nov
Dec
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018

Paradise Irrigation District

Lake Permit Sales

January -December 2018

	Recreation				Boating				Total
	Annual		Daily		Season		Daily		
January	62	$ 935.00	269	$ 808.30	71	$ 2,840.00	50	$ 500.00	$ 5,083.30
February	0		0		0		0		$ -
March	0		0		0		0		$ -
April	0		0		0		0		$ -
May	0		0		0		0		$ -
June	0		0		0		0		$ -
July	0		0		0		0		$ -
August	0		0		0		0		$ -
September	0		0		0		0		$ -
October	0		0		0		0		$ -
November	0		0		0		0		$ -
December	0		0		0		0		$ -
Totals	62	$ 935.00	269	$ 808.30	71	$ 2,840.00	50	$ 500.00	$ 5,083.30

ENGINEERING REPORT

January 2017

Activities This Month

This month engineering staff began work on the water loss audit for 2017. Staff continued work on the condition assessments for the spillways at Magalia Dam and Paradise Dam. Staff also continued efforts in support of the Town of Paradise Almond Street/Gap Complex project.

Engineering staff continued work on the Reservoir B expansion project. Staff also continued work on water rights measurement and reporting, including review of SCADA data suitability and investigation of an instrumentation upgrade for the water level measuring device at Magalia Reservoir.

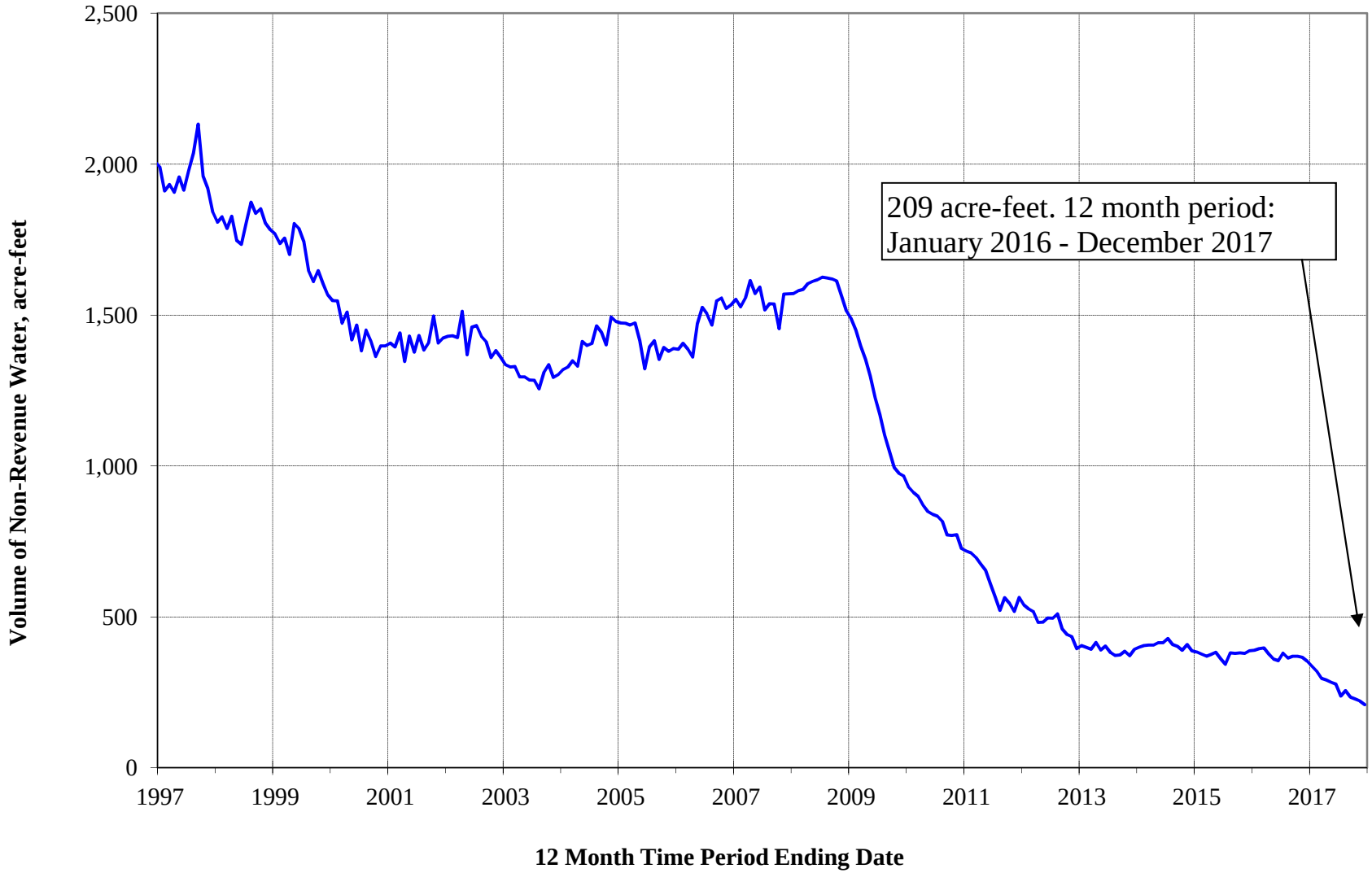
Summary of Development Review and Other Activities

Water Service Requirements Review Requests	5
New/revised projects reviewed in Project Evaluation Committee (TOP)	3
Review and direction of miscellaneous ongoing projects	3
Meter Sizing Audits (total to date)	60
Meter Size Reductions (total to date)	37

Non-Revenue Water

Production Minus Metered Sales

12 Month Cumulative Time Intervals



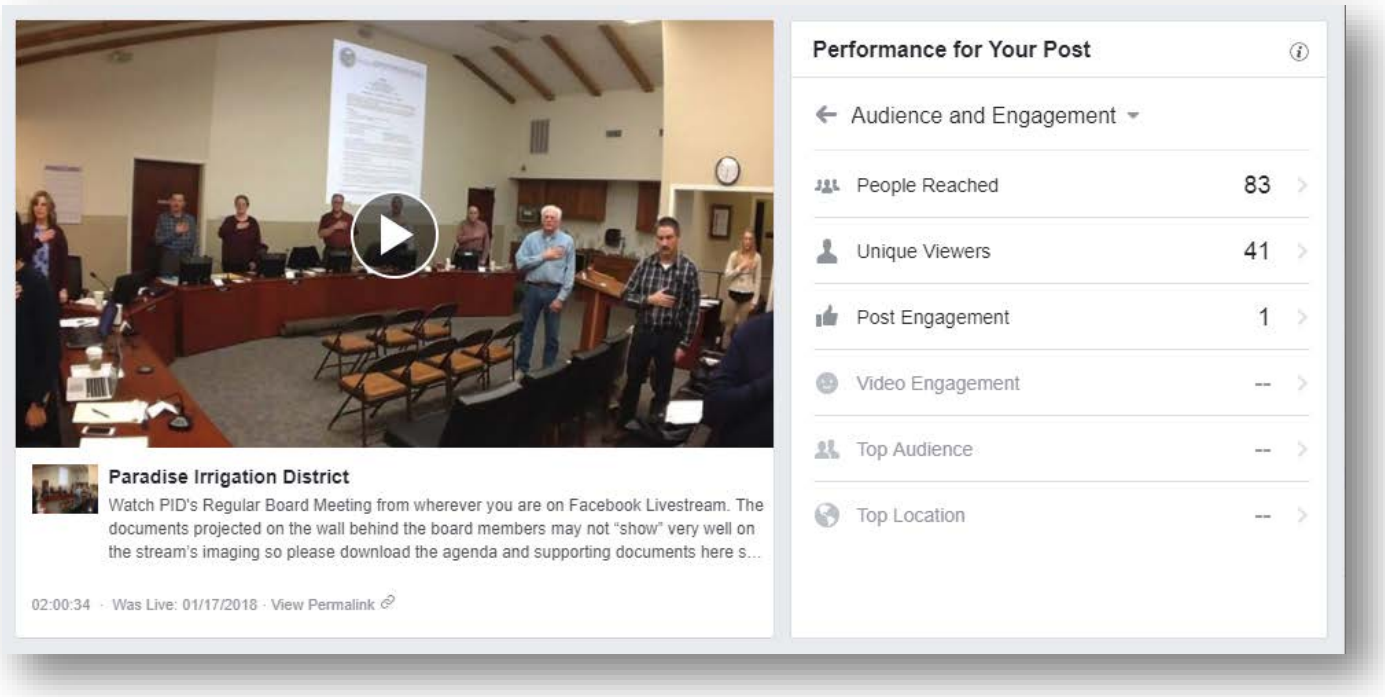
Information Technology Report

PID Website

Top 10 Pages - Jan. 1 through Jan. 31, 2018

	Page Title	Pageviews
		5,507 % of Total: 100.00% (5,507)
1.	Pidwater.com - Paradise Irrigation District - Water Utility for Paradise, California - Paradise Irrigation District	2,783 (50.54%)
2.	Payment Options for Paradise Irrigation District - Paradise Irrigation District	457 (8.30%)
3.	Search or browse PID documents - Paradise Irrigation District	327 (5.94%)
4.	PID Reservoir Levels: Paradise Lake and Magalia Reservoir - Paradise Irrigation District	294 (5.34%)
5.	Search - Paradise Irrigation District	128 (2.32%)
6.	Contact PID - Paradise Irrigation District	123 (2.23%)
7.	PID's Customer Assistance Program - Paradise Irrigation District	99 (1.80%)
8.	Redirect - Paradise Irrigation District	80 (1.45%)
9.	PID Board and Committee Meetings - Paradise Irrigation District	78 (1.42%)
10.	Careers at PID - Paradise Irrigation District	75 (1.36%)

January Regular Meeting on Facebook Live – Post Performance



Information Systems Security Policy

I have been working on a new information systems security policy. The current policy used by the District was created in 1996 and does not address current security considerations. I expect to present the policy to the Board for adoption within the next couple of months. The new policy will set a framework for staff practices and future IT purchases.

Mickey Rich
Information Systems Manager
February 2018