TRUCKEE MEADOWS WATER AUTHORITY
Board of Directors

AGENDA

Wednesday, May 23, 2018 at 9:00 a.m.
Sparks Council Chambers, 745 4th Street, Sparks, NV

Board Members

Chair Geno Martini
Vice Chair Vaughn Hartung
Member Neoma Jardon
Member Bob Lucey
Member Jenny Brekhus
Member Naomi Duerr
Member Ron Smith

NOTES:

1. The announcement of this meeting has been posted at the following locations: Truckee Meadows Water Authority (1355 Capital Blvd., Reno), Reno City Hall (1 E. First St., Reno), Sparks City Hall (431 Prater Way, Sparks), Sparks Justice Court (1675 E. Prater Way, Sparks), Washoe County Courthouse (75 Court St., Reno), Washoe County Central Library (301 South Center St., Reno), Washoe County Administration (1001 East Ninth St., Reno), at http://www.tmwa.com, and State of Nevada Public Notice Website, https://notice.nv.gov/.

2. In accordance with NRS 241.020, this agenda closes three working days prior to the meeting. We are pleased to make reasonable accommodations for persons who are disabled and wish to attend meetings. If you require special arrangements for the meeting, please call (775) 834-8002 at least 24 hours before the meeting date.

3. Staff reports and supporting material for the meeting are available at TMWA and on the TMWA website at http://www.tmwa.com/meeting/ or you can contact Sonia Folsom at (775) 834-8002. Supporting material is made available to the general public in accordance with NRS 241.020(6).

4. The Board may elect to combine agenda items, consider agenda items out of order, remove agenda items, or delay discussion on agenda items. Arrive at the meeting at the posted time to hear item(s) of interest.

5. Asterisks (*) denote non-action items.

6. Public comment is limited to three minutes and is allowed during the public comment periods. The public may sign-up to speak during the public comment period or on a specific agenda item by completing a "Request to Speak" card and submitting it to the clerk. In addition to the public comment periods, the Chairman has the discretion to allow public comment on any agenda item, including any item on which action is to be taken.

7. In the event the Chairman and Vice-Chairman are absent, the remaining Board members may elect a temporary presiding officer to preside over the meeting until the Chairman or Vice-Chairman are present (**Standing Item of Possible Action**).

8. Notice of possible quorum of Western Regional Water Commission: Because several members of the Truckee Meadows Water Authority Board of Directors are also Trustees of the Western Regional Water Commission, it is possible that a quorum of the Western Regional Water Commission may be present, however, such members will not deliberate or take action at this meeting in their capacity as Trustees of the Western Regional Water Commission.

1. Roll call*
2. Pledge of allegiance*
3. Public comment — limited to no more than three minutes per speaker*
4. Approval of the agenda **(For Possible Action)**

[1.] The Board may adjourn from the public meeting at any time during the agenda to receive information from legal counsel regarding potential or existing litigation and to deliberate toward a decision on such matters related to litigation or potential litigation.

5. Approval of the minutes of the April 18, 2018 meeting of the TMWA Board of Directors **(For Possible Action)**

6. PUBLIC HEARING ON ADOPTION OF BUDGET

   A. Discussion and action on request for adoption of Resolution No. 263: A resolution to adopt the final budget for the Fiscal Year ending June 30, 2019 and the 2019-2023 Five-Year Capital Improvement Plan — Michele Sullivan and Joe Petrelli **(For Possible Action)**

   B. Public comment — limited to no more than three minutes per speaker*

   CLOSE PUBLIC HEARING

7. Report and discussion on the results on TMWA's 2018 Refunding Bond Issue and Financial Update — Michele Sullivan*

8. Presentation of financial performance for the quarter ended March 31, 2018 — Matt Bowman*

9. General Manager's Report*

10. Public comment — limited to no more than three minutes per speaker*

11. Board comments and requests for future agenda items*

12. Adjournment **(For Possible Action)**

[1] The Board may adjourn from the public meeting at any time during the agenda to receive information from legal counsel regarding potential or existing litigation and to deliberate toward a decision on such matters related to litigation or potential litigation.

TRUCKEE MEADOWS WATER AUTHORITY
DRAFT MINUTES OF THE APRIL 18, 2018
MEETING OF THE BOARD OF DIRECTORS

The Board of Directors met on Wednesday, April 18, 2018, at Sparks Council Chambers, 745 4th Street, Sparks, Nevada. Vice Chair Hartung called the meeting to order at 10:00 a.m.

1. ROLL CALL

Members Present: Jenny Brekhus, *Alternate Kristopher Dahir, Naomi Duerr, Vaughn Hartung, Neoma Jardon, **Bob Lucey, and ***Ron Smith.

Members Absent: Geno Martini

A quorum was present.

**Alternate Member Dahir left at 11:32 a.m.*

***Member Lucey left at 11:41 a.m.*

****Member Smith left at 12:37 p.m.*

2. PLEDGE OF ALLEGIANCE

The Pledge of Allegiance was led by Mr. Danny Fleas.

3. PUBLIC COMMENT

Tammy Holt-Still, Lemmon Valley-Swan Lake Recovery Committee, presented information indicating it is not feasible to put injection wells in Lemmon Valley. Ms. Holt-Still requested the Board review the article and consider changing their policy on its recharge program.

Rachel Haverly, TMWA customer, explained she is a renter and the management company of the building she lives in charges on average $100 per month for utilities and she is asking for help from TMWA.

Sargent Jeff Church (retired), Reno Police Department Homeless Program founder, applauded TMWA in taking a leadership role in addressing the homeless situation, and presented a few solutions regarding the homeless situation in the Reno-Sparks area (see attached).

4. APPROVAL OF THE AGENDA

Upon motion by Member Smith, second by Member Lucey, which motion duly carried by unanimous consent of the members present, the Board approved the agenda.

5. APPROVAL OF THE MINUTES OF THE MARCH 21, 2018 MEETING

Upon motion by Member Dahir, second by Member Brekhus, which motion duly carried by unanimous consent of the members present, the Board approved the March 21, 2018 minutes.

6. APPOINTMENTS OF TRUSTEE(S) TO THE WESTERN REGIONAL WATER COMMISSION(WRWC):

A) PURSUANT TO SEC.25(3)(C) OF THE WRWC ACT FROM THE FOLLOWING LIST OF QUALIFIED PERSONS: BOB LUCEY.

B) PURSUANT TO SEC. 25(4) OF THE WRWC ACT REPRESENTING TMWA AS SUCCESSOR TO SOUTH TRUCKEE MEADOWS GENERAL IMPROVEMENT DISTRICT FROM THE FOLLOWING LIST OF QUALIFIED PERSONS: DAVID BOBZIEN, JENNY BREKHUS, OSCAR DELGADO, PAUL MCKENZIE, HILLARY SCHIEVE, MARSHA BERKBIGLER, JEANNE HERMAN, KITTY JUNG, CHARLENE BYBEE, ED LAWSON, AND GENO MARTINI.

Member Duerr recommended the Board consider Member Brekhus as a trustee to the WRWC representing the success to the South Truckee Meadows General Improvement District.

Member Lucey nominated Commissioner Jeanne Herman.

Michael Pagni, TMWA General Counsel, clarified the appointee by TMWA, as successor to South Truckee Meadows General Improvement District (STMGID), is due to the merger. The only restriction is that it is an elected official and not necessarily someone from the TMWA Board of Directors.

Member Brekhus reminded the Board she has served on the WRWC up until last year and a member from the TMWA Board should be appointed since the meetings are scheduled consecutively.

Member Smith agreed with Member Lucey that Commissioner Herman continue serving on WRWC.

Upon motion by Vice Chair Hartung, second by Member Smith, which motion duly carried by unanimous consent of the members present, the Board appointed Bob Lucey as a trustee to the WRWC as the TMWA Board's representative from the Washoe County Commission.

Motion by Member Duerr, second by Member Brekhus to appoint Member Brekhus as a trustee to the WRWC representing the successor to the South Truckee Meadows General Improvement District. Motion failed by vote of three to four, with Members Dahir, Hartung, Lucey and Smith voting against.

Upon motion by Member Lucey, second by Member Smith, which motion duly carried five to two, with Members Brekhus and Duerr dissenting, the Board appointed Jeanne Herman as a trustee to the WRWC representing TMWA as successor to the South Truckee Meadows General Improvement District.

7. DISCUSSION AND ACTION, AND POSSIBLE DIRECTION TO STAFF REGARDING THE RESULTS OF THE "STATEMENT OF INTEREST" FOR THE FARAD PROPERTY

Vice Chair Hartung stated for the record he took a tour of the property with a prospective buyer, who would like to remain anonymous, and would also like to see the Tahoe-Pyramid Bikeway maintained. He proposed garnering further interest from outside the region and consider how best to market the parcel to maintain the property. He stressed a sense of fiduciary responsibility to TMWA rate payers to make the most of the property while it is still TMWA's asset.

Pat Nielson, TMWA Distribution, Maintenance and Generation Director, presented the staff report, and the Statement of Interest (SOI) letters received. Mr. Nielson said most of the letters received were in support of the bikeway path, and others expressed interest in the wood from the flume, building a bridge over the river for fire access, and purchasing the property for conservation and public recreational access.

Member Smith inquired if the interested party submitted a letter by the deadline, February 28, 2018. Mr. Nielson replied no.

There was discussion favoring the public purpose proposals which is most consistent with land-use policies in Nevada County and Board direction; concern about privatizing the parcel; liability of the structures need to be mitigated; ensuring public access to the river; the need to get an appraisal at the current land use designation; staff to meet with Nevada County to discuss options for the parcel and potential planning parameters; what the cost is for obtaining an appraisal; and the option of putting a conservation easement on a portion of, or the entire, property.

Public Comment

Janet Phillips, Tahoe-Pyramid Bikeway President, reminded the Board that the Farad property is a crucial piece of the bikeway. Ms. Phillips explained they are very close to completing the bike trail to Truckee, but if the Farad property were to fall out of the sequence, there would no longer be a connecting trail. She would like the Board to move forward with a permanent easement. The recreational users are Reno-Sparks residents, TMWA rate payers and asked the Board to reconsider the fiduciary responsibility and consider their responsibility to rate payers.

John Svahn, Truckee Donner Land Trust (TDLT), stated the TDLT, a non-profit in Truckee, holds conservation easements up and downstream on the Truckee River of the Farad property. Mr. Svahn restated their interest in acquiring the property and all scenarios expressed today are of interest to TDLT.

End of Public Comment

Upon motion by Member Dahir, second by Member Brekhus, which motion duly carried by unanimous consent of the members present, the Board directed staff to: 1. Explore the cost of obtaining an appraisal; 2. Discuss options for zoning with the Nevada County; 3. Expand parameters for reposting the Statement of Interest; and 4. Explore other easement options for the property and bring back to the Board all discoveries within 120 days.

11. DISCUSSION AND ACTION ON ADOPTION OF RESOLUTION NO. 261: A RESOLUTION DESIGNATED BY THE SHORT TITLE "2018 REFUNDING BOND RESOLUTION" AUTHORIZING THE ISSUANCE BY THE AUTHORITY OF ITS "TRUCKEE MEADOWS WATER AUTHORITY, WATER REVENUE REFUNDING BONDS, SERIES 2018," IN THE APPROXIMATE PRINCIPAL AMOUNT OF $44,200,000 FOR THE PURPOSE OF DEFRAYING WHOLLY OR IN PART THE COST OF REFUNDING CERTAIN OUTSTANDING COMMERCIAL PAPER NOTES; PROVIDING THE FORM, TERMS, AND CONDITIONS OF THE BONDS AND THE SECURITY THEREFOR; PROVIDING FOR THE COLLECTION AND DISPOSITION OF REVENUES DERIVED FROM THE OPERATION OF THE AUTHORITY'S WATER SYSTEM; PLEDGING SUCH REVENUES TO THE PAYMENT OF THE BONDS; PROVIDING OTHER COVENANTS, AGREEMENTS, DETAILS AND OTHER MATTERS RELATING THERETO

Michele Sullivan, TMWA Chief Financial Officer, introduced Darrin Hodge, PFM Financial Advisors, and Ryan Henry, Sherman & Howard Attorney. Ms. Sullivan presented the staff report and provided an overview of the commercial paper program TMWA instituted in 2006, and has been using since, to buy water rights, fund construction projects, and refund Washoe County Water bonds during the merger. She stated the issuance of $44.2 million in senior lien bonds is to pay down TMWA's TECP, which will be structured to mature in years 2035-2042, and would reduce the outstanding TECP balance to $30 million, which is projected be paid off mainly with water will-serve revenues in the next five years according to the 5-year Funding Plan. Finally, TMWA still has $53.6 million in unissued TECP that is available, for any reason, until July 2036.

Discussion followed regarding TMWA no longer having commercial paper in five years, but would still have unissued commercial paper available to be used; Ms. Brekhus expressed concern with extending debt and the possibility of restructuring bonds in the future to further extend debt. Ms. Sullivan replied that debt service is insignificant in the latter years from this new bond, the bonds can be revisited in 10 years and it is possible that restructuring could happen, but it depends on the market rate, which if the interest rates are favorable, then it would be prudent to do so; interest rates were favorable these last three years and staff needed to ensure there was enough revenue to oversee the consolidation and implement the 5-year rate structure to prepare for the $12 million increase in debt service in two years. Mr. Dahir recognized the need to leverage TMWA's finances in the best possible way; it is common practice in

utilities to maintain debt service in order to preserve bond rating and allow for future commercial paper issuance; and by not paying down debt too fast, maintains credit rating.

Mr. Lucey asked if refunding debt was a common practice for a utility, and whether TMWA would be able to maintain its credit ratings after this transaction. Ms. Sullivan confirmed other utilities have commercial paper, senior lien debt, and subordinate debt through the state. Mr. Hodge added that it was an important part of the structure of the 2018 bond refunding, from a credit ratings perspective, to consider the cash on hand and maximum annual debt service coverage ratio, because that is what is most important to utilities' success or failure.

Upon motion by Member Lucey, second by Member Smith, which motion duly carried by unanimous consent of the members present, the Board adopted Resolution No. 261: A resolution designated by the short title "2018 Refunding Bond Resolution" authorizing the issuance by the Authority of its "Truckee Meadows Water Authority, Water Revenue Refunding Bonds, Series 2018," in the approximate principal amount of $44,200,000 for the purpose of defraying wholly or in part the cost of refunding certain outstanding commercial paper notes; providing the form, terms, and conditions of the bonds and the security therefor; providing for the collection and disposition of revenues derived from the operation of the Authority's water system; pledging such revenues to the payment of the bonds; providing other covenants, agreements, details and other matters relating thereto.

12. REQUEST FOR ADOPTION OF RESOLUTION NO. 262: A RESOLUTION APPROVING A REIMBURSEMENT AGREEMENT, LETTER OF CREDIT, FEE LETTER, BANK NOTE, AMENDED AND RESTATED DEALER AGREEMENT, AMENDED AND RESTATED ISSUING AND PAYING AGENT AGREEMENT, AND OFFERING MEMORANDUM RELATING TO THE TRUCKEE MEADOWS WATER AUTHORITY, NEVADA, WATER REVENUE COMMERCIAL PAPER NOTES, SERIES 2006B AND OTHER MATTERS RELATING THERETO

Ms. Sullivan informed the Board, with the assistance of PFM, they sent out a Request for Proposals for the letter of credit and liquidity support for TMWA's Tax-Exempt Commercial Paper Program (TECP) and Wells Fargo had the best offer for a 5-year term which is the time frame established to pay down the $30 million plus outstanding interest for the outstanding TECP.

Member Brekhus inquired if the letter of credit came with unnecessary policy requirements to TMWA. Ms. Sullivan replied no.

Upon motion by Member Brekhus, second by Member Dahir, which motion duly carried by unanimous consent of the members present, the Board adopted Resolution No. 262: A Resolution Approving a Reimbursement Agreement, Letter of Credit, Fee Letter, Bank Note,

Amended And Restated Dealer Agreement, Amended And Restated Issuing and Paying Agent Agreement, and Offering Memorandum Relating to the Truckee Meadows Water Authority, Nevada, Water Revenue Commercial Paper Notes, Series 2006B and other matters relating thereto.

8. INFORMATIONAL UPDATE ON THE BEDELL FLAT ACTIVITIES

Christian Kropf, TMWA Senior Hydrogeologist, and Nick White, TMWA Hydrogeologist, presented on the Bedell Flat conjunctive use strategy and aquifer storage and recovery (ASR) to see if it is a feasible area for recharge activities. TMWA staff is working with local partners in assessing the feasibility of storing available surface water, imported groundwater, or highly treated reclaimed water.

Vice Chair Hartung inquired if TMWA was constructing infrastructure and power lines in the Bedell Flat area. Mr. Kropf replied no.

Discussion ensued regarding the fact that the Vidler agreement does not allow for other resources to be put into the Fish Springs pipeline; TMWA can potentially receive water rights in the future from water recharged in the basin independent of other groundwater rights; water could be pumped from Fish Springs to Bedell Flat to help prove up 5,000 AF of potentially available future water supplies; the geology and water quality will be better understood upon the completion of the feasibility study; Bedell Flat is approximately 8-10 miles from Lemmon Valley; the reason for conjunctive use and ASR is to consider other ways to look at water supply resiliency, address climate change and off river reliability; regulations allow for groundwater augmentation with highly treated effluent; this feasibility study is evaluating phase 3 of a conceptual recharge project which is in partnership with City of Reno and Washoe County; phase 1 consists of a small pilot recharge test using potable water on TMWA property next to Reno-Stead Water Reclamation Facility which will occur this summer; all water issues are interrelated be it sewer, storm water, potable water, or effluent and it is more cost-effective to have all entities working together on solving these issues (there is an effluent management team which includes staff from TMWA, Reno-Sparks, Washoe County, Truckee Meadows Water Reclamation Facility[TMWRF], Northern Nevada Water Planning Commission [NNWPC] who then report to their respective directors and managers and it is also tied to the Nevada Water Innovation Campus); TMWA is conducting the feasibility study in Bedell Flat because TMWA has the hydrogeology staff so that the City of Reno does not have to contract out the study; and community members expect TMWA, as the regional water provider and expert, to look out 10-15-20 years, pioneering science and putting infrastructure in place for the unexpected.

9. PRESENTATION AND UPDATE ON TMWA'S AQUIFER STORAGE AND RECOVERY (ASR) PROGRAM

Randy Van Hoozer, TMWA Senior Hydrogeologist, and Lauren Roaldson, TMWA Associate Hydrogeologist, updated the Board on TMWA's ASR program, which promotes water supply sustainability and drought resiliency, and passive recharge (supplying surface water directly to customers

which reduces groundwater pumping). The ASR program in West Lemmon Valley does not influence groundwater levels, nor contribute to the water in Swan Lake, because there is a fault, the Airport, or Freds Mountain, Fault, which is considered a barrier that prevents groundwater flow from West Lemmon Valley to East Lemmon Valley (which is where Swan Lake resides). This is also the reason why the State of Nevada divides Lemmon Valley into two separate hydrographic sub-basins.

The Board requested this presentation be made public and to have staff present at the City of Reno Council as well as the Washoe County Commission and to include an analysis of development and storm water runoff, as well as integrate discharge from the wastewater treatment plant and groundwater and surface water in the model.

Mark Foree, TMWA General Manager, stated TMWA can provide the presentation that was shown here today, however, it is not in TMWA's purview to conduct studies related to storm water runoff, wastewater discharge or floods, and TMWA does not have the staff to do such studies.

10. UPDATE REGARDING DRAFT RETURN FLOW MANAGEMENT AGREEMENT BETWEEN CITY OF RENO, CITY OF SPARKS, TAHOE-RENO INDUSTRIAL GENERAL IMPROVEMENT DISTRICT (TRIGID) AND TMWA AND POSSIBLE DIRECTION TO STAFF

Mr. Enloe provided an update on the progress being made with the agreement. Staff is continuing to work with Reno-Sparks and the Tahoe Reno Industrial Center (TRI Center) on modelling the return flow issues, met with the Pyramid Lake Paiute Tribe (PLPT) to address issues, and working with the Desert Research Institute (DRI) on a water balance model. The TRI Center has a plan to build a 2,000 acre foot (AF) storage reservoir on their site, which the DRI modelling identified opportunities to use that storage reservoir for everyone's benefit and would greatly reduce TMWA's community resource obligation going forward (take advantage of water that does not have a return flow requirement in drought years, when it is available, and store it at TRI Center). At this point, the Federal Water Master will be reviewing the models and the results should be available by mid-May. TMWA would charge TRI Center if TMWA needed to modify its operations (pump a few more wells or need to release some POSW to satisfy return flow requirement) and the cost would be approximately $30-50/AF. He informed the Board the agreement would be brought before them for consideration at the May meeting and confirmed all administrative costs would be included in the contract (which is similar to the Cities of Reno and Sparks agreement with TRI Center on the rate of effluent that would be provided).

No action taken.

13. PRESENTATION ON PROPOSED CONSERVATION, COMMUNICATIONS AND OUTREACH PLAN FOR 2018, DISCUSSION AND POSSIBLE DIRECTION TO STAFF

Andy Gebhardt, TMWA Operations and Water Quality Director, presented the proposed conservation, communications and outreach plan for 2018.

Upon motion by Member Brekhus, second by Member Duerr, which motion duly carried by unanimous consent of the members present, the Board approved the proposed Conservation, Communications and Outreach Plan for 2018.

14. GENERAL MANAGER'S REPORT

Mr. Foree informed the Board that staff continues to work the Washoe County Health District (WCHD) and Nevada Department of Environmental Protection (NDEP) to make the water project review and approval process more streamlined. NDEP is working on an interlocal agreement with the WCHD and TMWA that would provide TMWA with more responsibility in reviewing and approving simple distribution type water projects such as subdivisions without the need to submit such projects to the Health Department.

15. PUBLIC COMMENT

There was no public comment.

16. BOARD COMMENTS AND REQUESTS FOR FUTURE AGENDA ITEMS

There was no Board comment.

17. ADJOURNMENT

With no further discussion, Vice Chair Hartung adjourned the meeting at 12:43 p.m.

Approved by the TMWA Board of Directors in session on _____.

Sonia Folsom, Recording Secretary

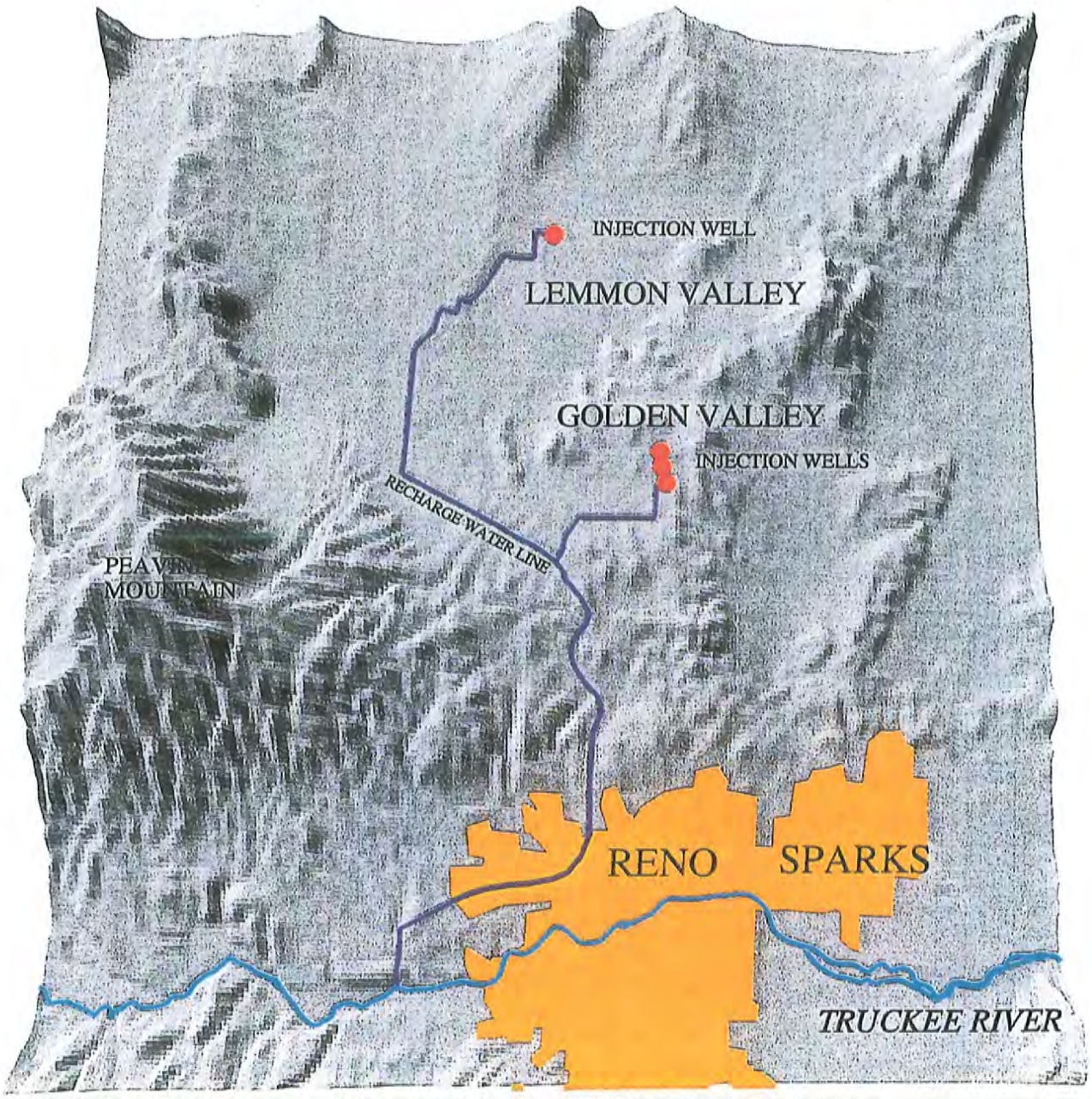
Alternate Member Dahir was present for agenda items 1 thru 8, and 11 and 12 only.

****Member Lucey was present for agenda items 1 thru 8, and 11 and 12 only.***

*****Member Smith was present for agenda items 1 thru 12 only.***

2368-00017

High Plains States Groundwater Demonstration Program



Washoe County Recharge Demonstration Study - Summary Report

A Cooperative Project by:
Washoe County, Nevada
U.S. Department of the Interior
Bureau of Reclamation

In Participation With:
U.S. Environmental Protection Agency
U.S. Geological Survey
August 1996

from FWS. Reducing the sampling and analyses requirements required permission from the EPA, NDEP, and NDWR.

In a 1989 memo referred to as the Cook, Mlay memo dated January 26,1989, EPA outlined the sampling and analyses requirements for recharge projects under the High Plains States Aquifer Recharge Demonstration Program. Requirements were stringent to ensure protection of aquifers proposed for injection. Incorporated in the 1989 memo was the option to reduce the sampling frequency and schedule based on sampling results prior to 1994. Washoe County provided justification. requesting changes in the frequency and number of samples collected.

After review, EPA approved the suggested modification of sampling requirements. Local approval from NDEP and NDWR was also granted. The proposed changes reduced projected sampling and analyses costs from approximately $123,000 per year to $21,000 per year. Direct savings were projected at over $100,000 per year with additional personnel cost savings by reducing the number of sampling events.

Because of the lower than expected injection capacities, Washoe County sought to extend the original injection period from September through January of each year to September through June of each year. FWS was primarily concerned with the timing of diversion for injection. Washoe County, through Reclamation, requested permission from the FWS to extend the injection period. Responding in a memo dated August 10, 1994 , FWS granted extensions to injection periods based on predictions of flow in the Truckee River. Predictions of flow are prepared monthly by the NRCS, based on water content of snow pack in the Truckee drainage basin.

1995

The winter of 1994/95 was one of the wettest on record. Snow pack in the Sierra Nevada Mountains approached 200 percent of average. The NRCS issued the first streamflow predictions for 1995 in February of that same year. Based on the higher than average streamflow predictions, recharge began in early February and continued throughout the year except for the months of July and August, as agreed upon with the FWS.

Injection pressures were gradually increased to improve injection rates. In Lemmon Valley, injection pressures were at about 43 psi at the well head with flow into the well exceeding 150 gallons per minute. However, at 43 psi, water began percolating at the ground surface along a distinct radial fracture around the nearby production well and the injection well. The nature of the fracture suggested that a subsidence crack may have formed as a result of the long term pumping of the municipal well and the de-watering or depressurizing of the aquifer. The subsidence crack provided a pathway for injection water to migrate upward to the ground surface. Injection pressures were reduced to a few psi, reducing injection to less than 50 gallons per minute.

Lemmon Valley

Artificial recharge in Lemmon Valley did not show any significant changes in water levels as water level elevations continued to decline during the period of artificial recharge. The amount of recharge was not enough to offset the drawdown caused by water pumped from the nearby municipal well.

Because the infrastructure for a municipal system is in place in Lemmon Valley, artificial recharge may not be the most efficient method to recharge the aquifer. Water for recharge is treated to drinking water standards before it is recharged. Delivering treated water directly to consumers would allow aquifer recharge to occur naturally by pumping the wells less, in effect creating "passive recharge." The wells could be used when surface water cannot meet municipal demands or is unavailable due to drought. Conversely, water could be recharged when municipal demands are low and surface water is available (see Figure 2). This conjunctive use of surface and groundwater supplies would greatly enhance the reliability of the water supply for the region.

Other Discussion

The Washoe Recharge project is considered a major success. The project promoted a concept of water resource management that was mutually acceptable to many competing entities. Recharge has entered mainstream thought as a water supply management tool and therefore, projects involving recharge are incorporated in regional, long range water resource planning.

The Golden Valley recharge facilities may be incorporated as one of Washoe County's permanent facilities for ongoing use. We believe artificial recharge will stabilize the aquifer that has been declining historically. The Lemmon Valley component may be used intermittently based on the concept of direct municipal use of available surface water and recharge of excess availability.

From a technical viewpoint, recharge through injection wells works best with the cleanest water available and the system kept fully pressurized for as long as possible. Suspended solids are the primary culprit causing injection well plugging. Keeping the system pressurized prevents problems associated with air or other foreign matter entering the system and potentially plugging the wells during recharge. Pressurization also prevents corrosion associated with repeated wetting and drying created by the changing water column in the well. Assuming the hydrogeology has been determined to be favorable for recharge, design of injection systems should focus on water as free of suspended solids as possible. Physical facilities should include injection wells, valves, pressure gages, and flow meters that are designed to minimize the potential for air entrainment, plugging, or contamination.

Mitigating the Homeless Issue in the USA

*No Easy Solutions

Would You Sleep Here? Is this the Solution?

Presented by Sgt Jeff Church (Retired)
Founder: Reno Police Dept Homeless Program
Founder of a Homeless Resource Center (a 501c3) at 220 Bell St in Reno, Nevada

Homeless the Short and Sweet Summary

Don't take or give free enabling housing to the homeless

<u>Take the Homeless to the Housing!</u>

Very simple:

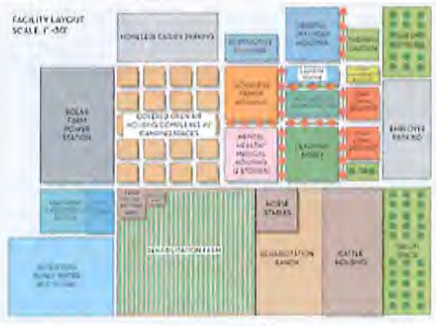
A safe pleasing environment in a Very rural location with ability to expand away from temptations of drugs and alcohol.

* Housing does not always mean barracks, apartments or houses

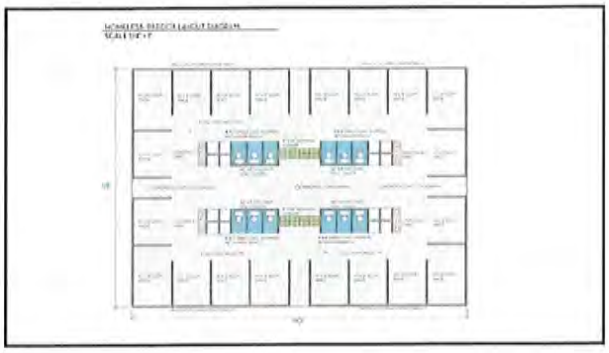
*Did we mention that it's cheaper? Land, labor, etc.

Burden on Everyone $$$

- Burden on homeless: victims of crime & criminal behavior
- Mental illness burden on Social Services and courts
- Overall burden on Taxpayer: police, courts, jails, hospitals, REMSA (ambulance), etc.
- Tourism and our Quality of Life affected
- No one wins under present situation
- Who's responsibility?
  - Feds, States, Counties, Cities, Non-Profits, Taxpayer, Medical Services, Social Services, etc. Therein lies the problem- no coordination. Mitigation does exist- read on!
- Trump administration announces $2B to help the homeless - Jan 11, 2018 - WASHINGTON— President Donald Trump's administration is announcing $2 billion in grants for local agencies seeking to help the homeless. The amount announced Thursday is an increase over recent years ...



Many Homeless will not live in crowded shelters: Pets, family, personal choice, etc so provide safe alternatives
Below offers pet friendly camping areas getting them off the river and streets where they are often the victims of crime
Note: guess what? People poop and it spreads disease: see San Diego homeless Hep A outbreak. Let's give them a sanitary place to camp.



THINK OUTSIDE THE BOX

Housing does not always mean houses nor apartments nor open bay barracks
May be the above ideas plus covered camping areas, (Re-habed) RV Campers and trailers in a homeless park , etc.

Cost: Only $10,000

Cost $1000 to free: Residents rehab it

Work and education areas based on need:

Basic education

Trades

Automotive

Auto & RV Rehabilitation for internal use

Art & Music

Internal infrastructure and services from food, laundry, maintenance, safety, fire, security, etc.

The Problem is Real and Growing

Hep A Outbreak in SoCal, Sanitation, Humane treatment
Citizen quality of life, legal issues

Coming Soon to Reno

True Story of Pablo and Lisa

- Pablo was a nasty violent drunk out of jail however.

  In jail he was a model trustee, helpful, hard working and yes- happy. He flourished in a structured no alcohol environment.

- Lisa panhandled with her small dog at a freeway off ramp. She and her boyfriend lived by the river and drank heavily with the money from panhandling. One day her boyfriend flagged down help and the medics found her deceased from a bleed out.

- Who won here?

Throwing Money at the Problem. Is free housing really the answer?

LOS ANGELES COUNTY OFFICIALS RELEASED A MAJOR DRAFT REPORT WITH 50 RECOMMENDED STRATEGIES TO COMBAT HOMELESSNESS TO BE CONSIDERED BY THE COUNTY BOARD OF SUPERVISORS.

OFFICIALS SAID THE RECOMMENDATIONS REPRESENT THE "MOST COMPREHENSIVE, COORDINATED EFFORT EVER UNDERTAKEN BY THE COUNTY TO ATTACK THE CAUSES OF HOMELESSNESS AND LIFT THOUSANDS OF INDIVIDUALS OFF THE STREET."

THE ESTIMATED COST OF THE PROPOSALS ARE ABOUT $150 MILLION. COUNTY (NOT CITY) FUNDING ALREADY IS AN ADDITIONAL $51 MILLION IN ADDITION TO THE $50 MILLION EXISTING BUDGET (101 MILLION)

VOTERS MAY BE ASKED FOR MORE TAXES FOR PROBLEM

* DO YOU REALLY THINK THIS WILL MAKE A DENT IN THE PROBLEM? IT HASN'T SO FAR!

The Joint Powers Agreement

While more government is seldom the solution in this case the JPA concept may have traction:

Current Situation: Multiple players not always in agreement each answering to different voters, boards or communities: County, Cities, State, local authorities, Sheriff, police, healthcare community, etc. etc.

Proposed: Joint Powers Authority has own funding, board, expert staff to be able to actively and quickly address issues.

*This is a national, state and regional issue

Can the homeless legally sleep in cars and trailers on the street?

Desertrain vs. City of Los Angeles

Factors and Issues

Homeless Definition: Addressing the true homeless living on the street or in shelters.

Homeless by mis-fortune, job loss, temporary bad choices: Represents an important minority that may be helped by temporary mass shelter.

Providing individual shelter is costly and enabling. Why not give shelter to those that work at low wage jobs?

Drug and alcohol addition a major problem

If a citizen has a medical event we call 911 and ems responds code 3 but if a person is severely mentally ill, society ignores them- don't make eye contact. Govt prohibited from helping.

Registered sex offenders have trouble finding lodging

Many homeless will not live in shelters

Many will not leave their pets.

Jails full and costly

Present system benefits no one. Harms businesses, tourism, homeless, hospitals, taxpayer: lose/lose

Mitigating Solutions: Build It and They Will Come

SUMMARY

- Safe Rural welcoming facility away from temptations
- Housing but not houses
- In-Resident Restricted facility- no come & go
- Showers/bathing restroom facilities
- Personal lockers
- Teaching facilities
- Employment/Recreation/opportunities
- Safety/personal space
- Mental/medical help
- Drug/Alcohol and relationship therapy
- Arts and Music essential
- Reduces burden on police, courts, corrections, hospitals, social services, quality of life, tourism, etc. Everyone wins!

TRUCKEE MEADOWS WATER AUTHORITY

TO: Board of Directors
THRU: Mark Foree, General Manager
FROM: Michele Sullivan, Chief Financial Officer
Joe Petrelli, Principal Financial Analyst
DATE: May 15, 2018
SUBJECT: **Discussion and action on request for adoption of Resolution No. 263: A resolution to adopt the final budget for the Fiscal Year ending June 30, 2019 and the 2019-2023 Five-Year Capital Improvement Plan**

Recommendation

That the TMWA Board approve the proposed Final Budget for the fiscal year ending June 30, 2019 and direct staff to file the adopted Final Budget and related 2019-2023 Capital Improvement Plan with the State of Nevada Department of Taxation as required by statute.

Summary

TMWA has prepared the proposed Final Budget for consideration and approval by the TMWA Board. Changes to the tentative budget presented originally at the March 21, 2018 board meeting result in a favorable increase in the change in net position of $1.3M. This is mainly due to estimated FEMA awards for repairs related to flood damage on TMWA access roads and the diversion at the Glendale water treatment plant. Adjustments to final interest expense related to the 2018 series bond transaction which closed on May 15, 2018 are also included. CIP spending for 2019-2023 increased from $191.6M to $195.8M, or $4.2M due to delays in projects due to be completed in 2018, as well as higher costs related to several projects.

Discussion

A comparison of the proposed Final Budget to the original approved Tentative Budget is accompanying this report in ***Attachments A and B***. An additional $1.2M in grants from FEMA related to road rehab and Glendale Plant diversion was added to contributions from grants. Included in the original tentative budget were $1.6M in flood related repairs, with $1.5M in services and supplies expenses and $0.1M in capital improvements. FEMA reimburses a portion of these expenses, and has approved these projects for reimbursement of which we expect to receive $1.2M in FY2019. Interest expense and interest paid were updated for the final numbers related to the 2018 series bonds. The cash flow statement was adjusted for these items, and for an increase of $1.8M in capital spending for a net cash decrease of $0.7M as compared to the tentative budget.

A draft CIP document was presented at the March 21, 2018 board meeting. The final CIP document is accompanying this report in ***Attachment C.*** FY 2019 changes in the accompanying CIP document are listed below and result in a net increase $1.8M:

• Paloma Pressure Regulating Station – Higher than anticipated bid	$.75M
• Chalk Bluff Additional Backup Generator – Increased design estimate	.30M
• Satellite Hills Booster Pump Station – Spend pushed into FY 19	.40M
• South Virginia Midtown to Liberty – Increased anticipated construction	1.50M
• Street & Highway Main Replacements – Offset to S. Virginia Midtown	-.50M
• Mt. Rose Surface Water Treatment Plant – Permitting delays	-.50M
• Eagle Canyon Transmission Main Phase 2 – Priority shift 1 Year	-.10M
• Furniture – Office Equipment – Removed from CIP	-.05M
• Total	$1.8M

In addition to the increased spending in FY2019, delays in permitting for the Mt Rose Water Treatment Plant pushed that project completion date further into FY 2020, increasing spend by $2.5M in that year.

TRUCKEE MEADOWS WATER AUTHORITY
(TMWA)

RESOLUTION NO. 263

A RESOLUTION ADOPTING THE FINAL BUDGET FOR THE FISCAL YEAR ENDING JUNE 30, 2019 AND THE 2019-2023 CAPITAL IMPROVEMENT PLAN FOR THE TRUCKEE MEADOWS WATER AUTHORITY AFTER PUBLIC HEARING

WHEREAS, pursuant to NRS 354.596, TMWA is required to hold a public hearing on its tentative budget to allow interested persons to be heard; and

WHEREAS, pursuant to NRS 354.596, TMWA scheduled and held a public hearing on the tentative budget and Capital Improvement Plan as prescribed on May 23, 2018, the fourth Wednesday in May; and

WHEREAS, the tentative budget and Capital Improvement Plan have been presented to the interested public and the Board; and

WHEREAS, the Board has considered and approved the revisions to the tentative budget and Capital Improvement Plan and has heard and considered comments from the public.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Truckee Meadows Water Authority to adopt the tentative budget as the final budget for the fiscal year ending June 30, 2019 and adopt the 2019-2023 Capital Improvement Plan and to direct staff to submit the final budget and Capital Improvement Plan to the State of Nevada Department of Taxation.

Upon motion of _____, seconded by _____, the foregoing Resolution was passed and adopted on May 23, 2018 by the following vote of the Board:

Ayes:_____

Nays:_____

Abstain: _____ Absent: _____

Approved: _____

_____
Geno Martini, Chairman

Truckee Meadows Water Authority
Resolution 263 (continued)

STATE OF NEVADA,)
: ss.
COUNTY OF WASHOE.)

On this 23rd day of May, 2018, Geno Martini, Chairman of the Board of Truckee Meadows Water Authority, personally appeared before me, a Notary Public in and for said County and State, and acknowledged that he executed the above instrument freely and voluntarily and for the purposes therein mentioned.

_____
Notary Public

TRUCKEE MEADOWS WATER AUTHORITY
SCHEDULE OF REVENUES, EXPENSES
AND CHANGES IN NET POSITION
FOR THE FISCAL YEAR ENDING JUNE 30, 2019

	Proposed Final Fiscal Year 2019 Total	Tentative Fiscal Year 2019 Total	Increase (Decrease)
OPERATING REVENUES			
Charges for water sales	$ 100,626,513	$ 100,626,513	$ -
Hydroelectric sales	2,812,568	2,812,568	-
Other operating sales	3,404,500	3,404,500	-
Total Operating Revenues	106,843,581	106,843,581	-
OPERATING EXPENSES			
Salaries and wages	21,078,271	21,078,271	-
Employee benefits	10,125,919	10,125,919	-
Services and supplies	28,268,124	28,268,124	-
Total Operating Expenses before Depreciation	59,472,314	59,472,314	-
Depreciation	33,862,476	33,862,476	-
Total Operating Expenses	93,334,790	93,334,790	-
Operating Income	13,508,791	13,508,791	-
NONOPERATING REVENUES (EXPENSES)			
Investment earnings	2,833,548	2,833,548	-
Unrealized gain on investments	-	-	
Gain (Loss) on disposal of assets	-	-	-
Amortization of bond/note issuance costs	(215,748)	(215,748)	-
Interest expense	(13,436,520)	(13,494,768)	58,248
Other non-operating revenue	-	-	-
Other non-operating expenses	-	-	-
Total Nonoperating Revenues (Expenses)	(10,818,720)	(10,876,968)	58,248
Income (Loss) before Capital Contributions	2,690,071	2,631,823	58,248
CAPITAL CONTRIBUTIONS			
Grants	1,700,000	500,000	1,200,000
Water meter retrofit/Sustainability program	676,020	676,020	-
Developer infrastructure contributions	-	-	
Developer will-serve contributions (net of refunds)	3,470,232	3,470,232	-
Developer capital contributions-other	5,922,000	5,922,000	-
Developer facility charges (net of refunds)	4,950,708	4,950,708	-
Contributions from others	-	-	-
Contributions from other governments	-	-	-
Net Capital Contributions	16,718,960	15,518,960	1,200,000
Change in Net Position	19,409,031	18,150,783	1,258,248
NET POSITION , BEGINNING OF YEAR	$ 602,342,294	$ 602,342,294	
NET POSITION, END OF YEAR	$ 621,751,325	$ 602,342,294	

Attachment A

TRUCKEE MEADOWS WATER AUTHORITY
STATEMENTS OF CASH FLOWS
FOR THE YEAR ENDED JUNE 30, 2019

	Proposed Final Fiscal Year 2019 Total	Tentative Fiscal Year 2019 Total	Increase (Decrease)
INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS			
CASH FLOWS FROM OPERATING ACTIVITIES			
Cash received from customers	$ 106,843,581	$ 106,843,581	$ -
Cash paid to employees	(31,204,190)	(31,204,190)	-
Cash paid to suppliers	(28,268,124)	(28,268,124)	-
Net Cash Provided by Operating Activities	47,371,267	47,371,267	-
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES			
Acquisition and construction of capital assets	(48,441,000)	(46,641,000)	(1,800,000)
Interest paid on financing	(17,103,819)	(16,993,550)	(110,269)
Principal paid on financing	(2,738,723)	(2,738,723)	-
Proceeds from capital debt issuance	-	-	-
Redemptions of commercial paper notes	(5,000,000)	(5,000,000)	-
Proceeds from refunding bonds	-	-	-
Proceeds transferred to refunding/redemption escrow	-	-	-
Proceeds (spending) from (on) capital asset disposal	-	-	-
Contributions for water meter retrofit program	676,020	676,020	-
Contributions from developers-will-serve letters	3,470,232	3,470,232	-
Contributions from developers-other	5,922,000	5,922,000	-
Contributions from developers-facility charges	4,950,708	4,950,708	-
Contributions from (to) others	-	-	-
Contributions from (to) other governments	-	-	-
Grants	1,700,000	500,000	1,200,000
Bond/Note issuance costs	(215,748)	(215,748)	-
Net Cash (Used) by Capital and Related Financing Activities	(56,780,330)	(56,070,061)	(710,269)
CASH FLOWS FROM INVESTING ACTIVITIES			
Interest received	2,833,548	2,833,548	-
Net Increase (Decrease) in Cash and Cash Equivalents	(6,575,515)	(5,865,246)	(710,269)
CASH AND CASH EQUIVALENTS, BEGINNING OF YEAR	$ 180,000,000	$ 180,000,000	$ -
CASH AND CASH EQUIVALENTS, END OF YEAR	$ 173,424,485	$ 174,134,754	$ (710,269)

Attachment B

TRUCKEE MEADOWS WATER AUTHORITY

Quality. Delivered.

June 2018

Photo: Brent Eisert

Five Year Capital Improvement Plan

Fiscal Year 2019 - 2023

Truckee Meadows Water Authority is a not-for-profit, community-owned water utility,overseen by elected officials and citizen appointees from Reno, Sparks, and Washoe County

Table of Contents

INTRODUCTION

The Truckee Meadows Water Authority's (TMWA's) Five-Year Capital Improvement Plan 2019-2023 (CIP), describes all infrastructure construction and major capital outlays that will take place between July 1, 2018 and June 30, 2023. Guidance for identifying and scheduling projects in the CIP is provided by TMWA's 2010-2030 Water Facility Plan (WFP) and the 2016-2035 Water Resource Plan (WRP). The WRP Plan was formally updated in calendar year 2016 and the WFP will be updated in calendar year 2018. The updated Plans will reflect a fully consolidated utility including the former Washoe County Water Utility (WCWU) and the former South Truckee Meadows General Improvement District (STMGID) and will be the cornerstone of future CIPs.

TMWA is a joint powers authority formed in November 2000, pursuant to a Cooperative Agreement (as amended and restated as of February 3, 2010, the "Cooperative Agreement") among the City of Reno, Nevada ("Reno"), the City of Sparks, Nevada ("Sparks") and Washoe County, Nevada (the "County"). The Authority owns and operates a water system (the "Water System") and develops, manages and maintains supplies of water for the benefit of the Truckee Meadows communities. On January 1, 2015, TMWA, the WCWU and STMGID consolidated to create a regional water system under TMWA. TMWA has a total of 158 square miles of service area, which includes the cities of Reno and Sparks and other surrounding populated areas of the County (except certain areas in the vicinity of Lake Tahoe and other small areas bordering California). TMWA has no authority to provide water service outside of its service area; however, may provide service in the future to developments that are annexed into its service area. The CIP incorporates a comprehensive compilation of water system improvements for TMWA. A major feature of the CIP is the construction of several projects that will expand the conjunctive use of the region's water resources. The philosophy behind conjunctive use of local water resources is to maximize the use of surface water while preserving the integrity of groundwater resources which are drawn upon during periods of persistently dry weather. Another aspect of the CIP is to expand the Aquifer Storage and Recovery Program (ASR Program) which is the recharge of groundwater basins with treated surface water. In addition, this CIP includes several major projects to extend limited water service to the Verdi area, made possible by cost effective oversizing of developer main extensions and Nevada Drinking Water State Revolving Fund (DWSRF) contributions for consolidation of small community water systems. The projects include potential acquisition of the Boomtown water system assets and a connection to the Boomtown system. This connection will provide a conjunctive use supply to a system that relies 100 percent on local groundwater that will experience increased pumping to serve growth in the area. Full capacity water service for the entire Verdi area will not be available until an additional $12.5 million of new backbone water facilities are constructed.

The CIP constitutes an essential component in TMWA's system of planning, monitoring and managing the activities of purveying water and generating hydroelectric power. The CIP is incorporated into a broader, constantly-updated Five-Year Funding Plan (FP) for a comparable period. This Funding Plan (FP) will determine adequate levels and sources of funding for projects contained in the CIP.

The 2018-2022 FP indicates that TMWA can fund the CIP in light of a significant funding gap. This situation is the result of substantial reductions in water demands resulting from the drought that ended in the spring of 2017. Otherwise there appears to be adequate treasury and revenues from various sources to fund operations, pay principal and interest on existing debt, and capital improvements as presented in the CIP.

The CIP includes total spending of $195.8 million with approximately 76.2% or $149.1 million dedicated to upgrades or replacement of existing infrastructure, and approximately 17.9% or $35.0 million allocated to construction of new water system capacity projects, conjunctive use construction projects, retrofit of remaining unmetered services, and potential opportunistic acquisition of water rights. Construction and capital outlays associated with the former STMGID service area are estimated to be approximately 4.5% or $8.8 million of total spending over fiscal years 2019-2023. There are sufficient STMGID transferred reserves to fund the next five years of capital improvements in this category. Of the total projected spending over the next five years 11.7% or $22.9 million is considered contingency spending which is dependent on certain events occurring to trigger spending. The $195.8 million in projected spending is grouped into broad categories of improvements and spending outlays. These categories are described below with detailed project descriptions to be found in the Project Description Section.

Raw Water Supply Improvements contains 4.1% or approximately $8.0 million of total spending in the CIP. Projects focus on improvements to the Highland Canal/Siphon raw water conveyance infrastructure, upstream storage improvements for Donner and Independence Lakes where TMWA stores its Privately-Owned Stored Water (POSW) and expenses associated with the storage and implementation of the Truckee River Operating Agreement (TROA). Implementation of TROA is invaluable to TMWA as it allows for the modification of river operations to expand upstream storage in the federal reservoir system for increased drought storage. TROA was implemented on December 1, 2015. TMWA is now storing water in the federal reservoir system under this new river operating regime.

Ground Water Supply Improvements contains 8.5% or approximately $16.6 million of total spending in the CIP. These projects focus on preserving existing well capacities, drilling and equipping of new wells and at times complete replacement of existing wells.

Treatment Plant Improvements contains 15.9% or approximately $31.1 million of total spending in the CIP. The principal spending in this category is construction of the Mt. Rose Surface Water Treatment Plant which will provide additional critical conjunctive use water supplies on the Mt. Rose/Galena Fan with water sourced from local creeks, the Glendale Diversion for emergency flood repairs, and the Sparks Groundwater Treatment Plant. Additionally, spending targets fix and finish projects with the primary focus on the Chalk Bluff and Glendale Surface Water Treatment Plants located on the Truckee River. Other improvements focus on satellite water system treatment upgrades and a complete upgrade of the Supervisory Control and Data Acquisition (SCADA) system which provides centralized automated system control and data storage for the distribution system.

Distribution System Pressure Improvements contains 14.5% or approximately $28.3 million of total spending and is the most significant spending category in the CIP. This spending is bifurcated into pressure improvements and water main and service line improvements. Pressure improvements include pump station rebuilds and new construction, correction of pressure or fire flow deficiencies, pressure regulating station rebuilds and new construction, as well as reconstruction of pressure regulating valves.

Water Main Distribution & Service Line Improvements contains 25.5% or approximately $50.0 million of total spending in the CIP. These improvements include replacement of aged water mains reaching end of service life, installation of new mains for new and expanded service, water main oversizing and extensions, Boomtown water system improvements and connection to TMWA, and the remaining two of three major conjunctive use projects to extend surface water supplies to the areas that rely heavily on year round groundwater pumping. The last set of projects furthers the conjunctive use philosophy of water resource management.

Potable Water Storage Improvements contains 9.3% or approximately $18.2 million of total spending in the CIP. These projects are comprised mainly of new treated water storage tank construction to serve new and expanded service, some replacement of existing treated water tank capacity as well as systematic recoating of treated water tank interiors and exteriors to extend service life of these facilities.

Hydroelectric Improvements contains 3.6% or approximately $7.1 million of total spending in the CIP. These improvements center on the three run-of-river hydroelectric facilities currently owned by TMWA. Efforts on these facilities focus primarily on flume, forebay, diversion and canal improvements as well as equipment upgrades.

Customer Service Outlays contains 6.1% or approximately $11.9 million of total spending in the CIP. Spending in this category focuses on meter reading device replacements and meter replacement if required. TMWA is currently conducting studies to determine the best option for consolidating the meter system to one format which will provide more frequent and automatic meter reading, meter data management, and a customer portal for water usage information and bill payment. Also in this category is a spending provision for new business meters which is funded by development.

Administrative Outlays contains 6.8% or approximately $13.3 million of total spending in the CIP. These outlays are primarily for Information Technology equipment, licenses, and desktop computer replacements as required. Included in this category of spending are fleet upgrades for heavy and light vehicles as well as excavation equipment.

Special Programs Funded by Development programs, are separated from a presentation standpoint because in the case of water right acquisitions, spending is currently driven by pricing opportunity and is part of the contingency spending. The completion of the water meter retrofit project may occur during the current five-year planning horizon since TMWA is seeing increasing contributions from developers to fund the few remaining meter installations. TMWA is seeking matching grant funding to combine with existing water meter retrofit cash reserves which together should be sufficient to complete the program. It contains 1.2% or approximately $2.4 million of total spending in the CIP. These outlays are for water meter retrofit and opportunistic water right purchases.

Former STMGID System Improvements, are separated from a presentation standpoint because projects in this category are funded by the STMGID reserve, which TMWA acquired through the acquisition of former STMGID. It contains 4.5% or approximately $8.8 million of total spending in the CIP. Improvements in this category focus on conjunctive use, well replacement and improvements, and tank recoats. Also as meter pit failures occur in the former STMGID water system service areas those meter pits are converted to TMWA material standards.

DEFINITIONS

Capital Improvement Program Definitions

The Five-Year CIP is a planning and budgeting tool, which provides information about TMWA's infrastructure needs for a five-year time frame. Each year, the list of projects is reviewed for cost and priority. New projects may be added and other projects delayed or deleted entirely. Since most projects are mandatory or necessary, deletion of a project would be rare with the exception of contingency spending. However, capital spending plans must remain flexible, and it is often necessary to take revisions to the approved fiscal year's CIP back to the TMWA Board for approval. If construction or outlays can be deferred, TMWA will defer spending in order to preserve cash reserves, regardless whether or not there are difficult economic times. These decisions are made on a case by case basis.

Generally, capital improvements/outlays are defined as physical assets, constructed or purchased, that have a useful life of one year or longer and a cost of $5,000 or more.

Definition of Capital Outlays

"Capital Outlays," which are in TMWA's capital budget, include such things as furniture, computer equipment and software, vehicles, and heavy equipment needed to support TMWA's operations. These items are generally found in the Administrative category of projects. For Customer Service category, these outlays involve meter installations, and acquiring meter reading equipment.

PRIORITIZATION OF PROJECTS/OUTLAYS

TMWA may not have sufficient funding to meet all its capital needs each year or may divert funding to meet unexpected capital improvements. If such conditions arise, projects are prioritized based on the effect each project has on TMWA's ability to meet customer demand and maintain water system reliability. TMWA's Five-Year FP is used to analyze total spending, identify various funding alternatives, and determine whether or not water rate adjustments will be required.

The priority categories represent a relative degree of need for any particular project and are described below.

* **PRIORITY 1 MANDATORY:** These are considered absolutely required, and are the highest priority of all capital projects. Mandatory projects include those in final design or already under construction, or those required by legislation or regulation for protection of public health and safety. These projects are generally found in the first fiscal year of the 2019-2023 CIP. Water demands or infrastructure conditions are such that if the project is not completed TMWA runs the risk of eventually being unable to reliably provide water service to its existing customers and/or new and expanded service, or incur extended outages.

* **PRIORITY 2 NECESSARY:** A project that is important for providing water service to customers, yet timing of construction or spending outlay is not as critical as a mandatory project. These projects are required and are generally found in the last four years of the 2019-2023 CIP. External factors such as the pace of new development or the condition of existing infrastructure may delay or accelerate the timing of project construction. A rate of return may not be applicable to projects whose economic/financial benefits cannot be easily quantified.

* **PRIORITY 3 CONTINGENCY:** These projects or capital outlays are not immediately critical to the operation of the water system. Expenditures in this category generally require a business case study or specific criteria to be met before spending can occur. If such criteria are not met, then spending may or may not be justified. Also, some projects are deferrable if spending is required in an area of higher priority. Even though these projects and outlays are in the 2019-2023 CIP the likelihood that spending will occur may be remote and is based upon future conditions that are difficult to predict.

FUNDING OF CAPITAL SPENDING

Funding Sources

The CIP will rely on various funding sources to pay for capital projects/capital outlays. TMWA relies heavily on revenues generated from water sales, hydroelectric, and other operating sales to fund the majority of projects. Developer contributions have historically been an important funding source for certain construction projects for new and expanded water system capacity. Investment income is also available to augment other revenue sources but is minor in relation to other funding sources. Collection of developer fees have rebounded since reaching historical lows during the great recession. TMWA continues a non-reliance policy on these fees to fund operations or fund annual principal and interest payments on TMWA's outstanding debt. In fiscal year 2017 residential, and commercial development activity, has accelerated in a meaningful manner providing financial resources to fund projects listed in the CIP for new and expanded service. TMWA may rely on the issuance of new money debt to fund large levels of capital spending in a particular period. The CIP does not anticipate reliance on funding from new money at this time. TMWA has relied on a number of new money debt issuances in the past to fund capital spending.

Developer Contributions

TMWA looks to the development community for developer contributions in the form of system development charges or direct reimbursements to fund capital expenditures related to new or expanded water service, including pump station construction or expansions and feeder main extension projects. In June 2003, the TMWA Board adopted facility charges to pay for new treatment/supply capacity projects and new storage capacity projects. TMWA began collecting these facility charges in January 2004. Under TMWA's Rule 5 these proceeds are used to support new capacity construction. Rule 7 governs the purchase of water rights and reimbursement by developers for issuance of will-serve commitments for water service. However, because of the timing of certain growth driven capital projects, additional financial resources may be called upon as needed. The TMWA Board updated the system development charges in March 2005, in October 2006, in February 2008 (effective March 1, 2008) and finally in July 2013. In January 2015, TMWA created new area fees for the former Washoe County Department of Water Resources. In June 2015 TMWA revised fees for Areas 14 and 15 and in June 2016 TMWA Board approved consolidating Area 10 fees for Areas 8A, 10, 13 and 13B and Storage Fee were revised. These fees are subject to periodic review for funding adequacy.

Bonds and Other Financing/Funding Tools

New money revenue bond issuance has been historically an integral part of funding construction spending. TMWA prefers to not use senior lien debt, but rather rely on subordinated debt financing obtained through the Drinking Water State Revolving Loan Fund and the tax-exempt commercial paper program due to lower cost of capital and repayment subordination features of these funding vehicles. Customer water sales and various developer fees may not be immediately sufficient to pay for construction spending and capital outlays so there may be some reliance on new money debt and reliance on future tax-exempt commercial paper note sales.

At the time of the acquisition of the water assets of Sierra Pacific Resources (SPR), TMWA established a $40.1 million capital improvement project fund from proceeds of Series 2001-A acquisition bonds issuance. Since inception, TMWA has primarily relied upon operating cash flow, investment income and developer fees to fund capital projects. However, during fiscal year 2005, TMWA was able to utilize a low cost *Drinking Water State Revolving Fund (DWSRF)* loan for $4.8 million to fund arsenic removal projects and to issue $40.0 million in additional senior lien bonds to fund various capital improvements. The $40.0 million Series 2005 Revenue bond proceeds (totaling a net $37.2 million to apply to construction) were fully expended before the end of fiscal year 2008, primarily to construct the North Virginia-Stead pump station and transmission pipelines. TMWA inaugurated a tax-exempt commercial paper program in August 2006; initially to fund water right purchases with two issues that totaled $43 million. Moreover, the program provides another resource to draw upon for additional funding for capital projects and water rights acquisitions. Market conditions were extremely favorable in February 2008, at which time TMWA took the opportunity to issue an additional $25 million at an initial rate of 1.59% which includes letter of credit fees and commercial paper remarketing costs. TMWA has taken advantage of 0% interest rate federal stimulus funding and obtained a $2.3 million loan through the DWSRF program to partially fund the Mogul Bypass Siphon Project. In December 2009 TMWA obtained an $8.5 million DWSRF loan authorization to construct the Glendale Raw Water Diversion and Intake Structure which was completed in fiscal year 2011. TMWA drew only $4.4 million on this facility and de-obligated the remaining authorization. TMWA extended its tax-exempt commercial paper program in fiscal year 2012 and completed the process of extending the direct pay liquidity facility with two banks, Wells Fargo N.A and J.P. Morgan N. A. to substitute Lloyds TSB, the originator of the first liquidity facility. Subsequently in fiscal year 2014 TMWA extended the tax-exempt commercial paper program again and replaced Wells Fargo N.A and J.P. Morgan N. A. liquidity facility with an expanded Liquidity facility with Bank of Tokyo-Mitsubishi UFJ. The new liquidity facilities provide for a direct-pay letter of credit to support remarketing of TMWA's commercial paper and also supports an A-1/P-1 rating (highest rating) for TMWA's short term variable rate debt program. This has resulted in favorable interest rates, ranging from less than 1/10 of 1% to 1.4% which was continually

experienced throughout the last three years. Due to recent and projected federal interest rate hikes, TMWA is planning to reduce $44.2 million of its variable rate commercial paper with a new bond offering with fixed interest rate payments. In the fourth quarter of fiscal year 2015, TMWA applied for a DWSRF Loan for $15.0 million to fund the construction phase of the North Valleys Integration Project. Draws on this loan total $8.9 million and were used to fund the North Valleys Integration Pipeline Project.

Rule 5 and Rule 7 Fees

These fees are collected from the development community. Rule 5 fees are paid by developers to TMWA for the construction of new water feeder mains, new treatment/supply capacity, new storage capacity, and for new or rebuilt pump stations to meet demand resulting from new and expanded service. Rule 7 Fees are derived from will-serve sales to development. TMWA historically purchased water rights on the open market and reserves these rights for will-serve letters to be sold to development. TMWA also recovers a modest amount of administrative and financing costs with the sale of each will-serve. The title to water rights are retained by and dedicated to TMWA. TMWA has sufficient inventory of water rights to meet the demands for new and expanded service for the foreseeable future.

Water Meter Retrofit Fees

TMWA has been retrofitting flat rate water services with meter boxes, setters and meters. The intent is to meter the entire water system which is now in the final stage. To accomplish this task TMWA collects $1,830 for each surface acre-foot of demand when will-serve commitments are issued for new or expanded service. Proceeds from the $1,830 per surface acre-foot fee are used to fund the water meter retrofit project. TMWA expects to complete the water meter retrofit program over the course of the next several years

Capital Contributions from Other Governments

TMWA is a water wholesaler to the Sun Valley General Improvement District (SVGID). From time to time, new infrastructure must be constructed to service this retail water-service provider. There are no expectations of any need for reimbursement from this source in the CIP although historically SVGID has made contributions to TMWA.

Reserves from the Water Utility Consolidation

TMWA, the WCWU and STMGID consolidated on January 1, 2015. As a result of the consolidation, the respective treasuries of the WCWU and STMGID were transferred to

TMWA. The WCWU treasury that was transferred to TMWA amounted to approximately $43.4 million after the final transfer of funds (which was absorbed into TMWA's account) while the STMGID treasury transferred to TMWA was approximately $15.7 million of which $10.7 million remains. These cash and investment reserves will continue to be used to make necessary improvements in the former water utility service areas including conjunctive use enhancements.

Other Resources

One method of generating additional funds for capital improvements is to increase existing fees/charges or to add new fees/charges. However, future increases will be provisional if TMWA is able to meet revenue requirements and maintain bond coverage ratios that will suffice to maintain strong investment-grade credit ratings. TMWA has obtained many benefits of Aa2/AA+ credit ratings with positive/stable outlooks. The Board ultimately decided up through fiscal year 2009 to forego any potential customer rate increases since the last rate increase that occurred in March 2005. The TMWA Board did approve a 4.5% general rate increase for fiscal year 2010 and another 4.4% general rate increase for fiscal year 2011. The TMWA Board has approved and implemented a 3.5% general rate increase that was put into effect February 1, 2012 and a 3.4% water rate increase in February 2014. As a consequence of the water utility consolidation any review of water rate adjustments was forestalled until TMWA had at least one full year of operating history as a consolidated water utility. Consequently, an additional water rate increase of 3.0% was put into effect in May of 2017, and an increase of 3% has been approved by the Board for May of 2018. Water rate increases are essential for TMWA to maintain sound credit ratings, to preserve access to opportunities in the capital markets. TMWA also funds rehabilitative capital projects in a meaningful manner due to water delivery being an essential municipal service.

FISCAL YEAR 2019 CAPITAL SPENDING-THE CAPITAL BUDGET

TMWA expects to spend $48.4 million for fiscal year 2019, the first year of the FY 2019-2023 CIP. Of this total $38.9 million will be paid for by customer rates for water system rehabilitation, hydroelectric improvements, pressure system improvements, water main distribution service line improvements, and administrative and customer service outlays. While $6.3 million will be paid for by developer fees, which includes $0.5 million in grants awarded by DWSRF Loan Forgiveness for the Verdi Main Extension project, and will be dedicated to water system expansion, limited opportunistic acquisition of water rights and some water meter retrofit activities. Finally, STMGID treasury reserves account for $2.8 million of improvements in the STMGID area.

SUMMARY OF PROJECTS FOR THE FISCAL YEAR 2019 BUDGET

Total construction spending, acquisition spending, and capital outlays are expected to be $48.4 million for the fiscal year 2019. TMWA has established the following projects for the capital budget in fiscal year 2019 (Amounts presented in thousands of dollars):

Summary of Projects for FY 2019	Amount
Raw Water Supply Improvements	
Highland Canal-Upgrades-Downstream	225
Highland Canal-Upgrades-Diversion to Chalk Bluff	100
Independence Lake Permitting Study	100
Indirect Potable Reuse	100
TROA Drought Storage / Implementation	75
Donner Lake Outlet Improvements Phase 2	300
Total	**900**
Ground Water Supply Improvements	
Well Rehabilitation Improvements	725
Sunrise Well #3 Replacement	100
Bedell Flat Water Bank	100
Well Fix & Finish	150
NDEP Monitoring Wells	110
Wellhead Biological Treatment Pilot Study	200
Well Head TTHM Mitigation	300
Spring Creek Well 7 Recharge	75
Desert Springs 1 & 2 and Spring Creek 5 ASR Retrofit (Bureau of Rec Grant)	10
Total	**1,770**

Project Summary for FY 2019 (continued)	Amount
Treatment Plant Improvements	
Chalk Bluff Treatment Plant Fix & Finish	780
Glendale Treatment Plant Fix and Finish	485
Chalk Bluff Pump Building Air Handler	150
Truckee Canyon Water Treatment Improvements	50
Lightning W Treatment Improvements	60
SCADA Rehab / Plant Operating Software	1,331
Mount Rose Surface Water Treatment Plant	10,500
Glendale Diversion Emergency Flood Repairs (FEMA)	100
Total	**13,456**
Pressure Improvements	
Pressure Regulators Rehabilitation	500
Pressure Reducing Valve (Roll Seal) Removal	400
Land Acquisitions	250
Paloma Pressure Regulating Station / Main	950
Longley Booster Pump Station / Double R Capacity Increase	500
Pump Station Oversizing	100
Pump Station Rebuilds, Rehabilitations	1,450
Mount Rose Well #3 Pump Station Improvements	50
Chalk Bluff Additional Backup Generator	1,300
Huffaker Booster Pump Station	400
Twin Lakes Booster Pump Station	400
Satellite Hills Booster Pump Station	400
Total	**6,700**
Water Main-Distribution-Service Line Improvements	
Street & Highway Main Replacements	2,500
South Virginia / Midtown Main Plumb to Liberty	3,000
California-Marsh 24" Main Replacement	50
South Virginia 24" Main (Kumle to Peckham)	100
Spanish Springs - Spring Creek South Zone Conversion	50
Spanish Springs Main Replacement	300
South Truckee Meadows Capacity Improvements	400
General Waterline Extensions	100
Verdi Main	2,500
Mount Rose 5 Distribution / Pressure Improvements	150
Gordon Avenue Main Replacement	1,580
Boomtown Water System Improvements	1,990

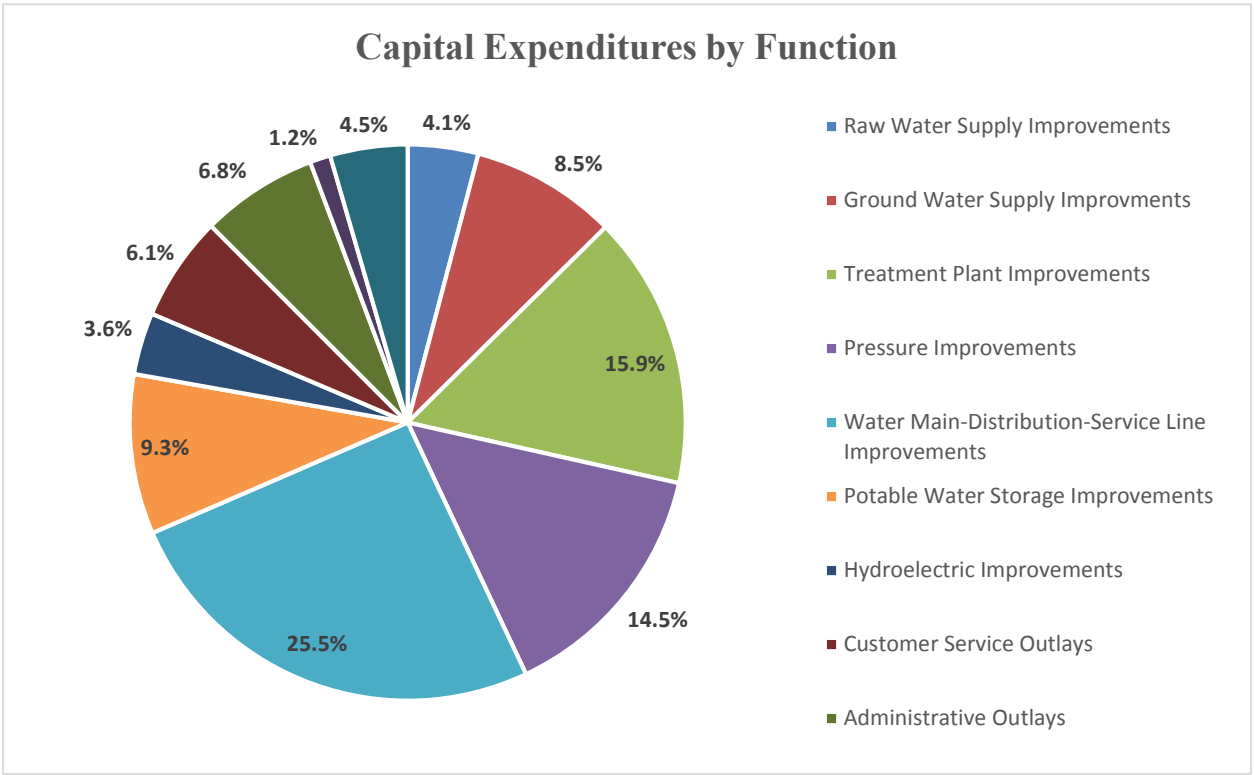
Project Summary for FY 2019 (continued)	Amount
Water Main-Distribution-Service Line Improvements (continued)	
Boomtown to TMWA Connection	130
Lemmon Valley Sand Yard	530
Total	**13,380**
Potable Water Storage Improvements	
Sun Valley #2 Tank	50
Storage Tank Recoats; Access; Drainage Improvements	900
STMGID Tank East (Zone 11 Tank (Not STMGID)	50
Total	**1,000**
Hydroelectric Improvements	
Forebay, Diversion, and Canal Improvements	55
Flume Rehabilitation	600
Hydro Plant Generator Rewinds	650
Fleish Overflow Reconstruction	1,400
Total	**2,705**
Customer Service Outlays	
New Business Meters	350
Mueller Pit Replacements former Washoe County	125
Meter - ERT-RTR Replacements	1,250
Galvanized / Poly Service Line Replacements	400
AMI Automated Meter Infrastructure	750
Total	**2,875**
Administrative Outlays	
GIS / GPS System Mapping Equipment	40
Desktop Computer Upgrades	100
Network Server / Storage Upgrades	175
Network Security Upgrades	150
Crew Trucks / Vehicles	1,270
Security-ER Projects	150
CIS System Replacement	100
Emergency Operations Annex Design / Construction	250
System Wide Asphalt Rehabilitation	200
Total	**2,435**

Project Summary for FY 2019 (continued)	Amount
Special Projects Funded by Development	
Water Meter Retrofits	300
Water Right Purchases	150
Total	**450**
Former STMGID System Improvements	
STMGID Well Bypass & Chlorine Room Improvements	300
STMGID Well Fix & Finish	150
STMGID Conjunctive Use Facilities	1,800
STMGID Tank Recoats	220
STMGID Mueller Pit Replacements	50
STMGID NAC Deficiencies - Saddlehorn, Upper Toll, STMGID East	250
Total	**2,770**

CAPITAL EXPENDITURE BY FUNCTION

(Amounts in thousands of dollars)

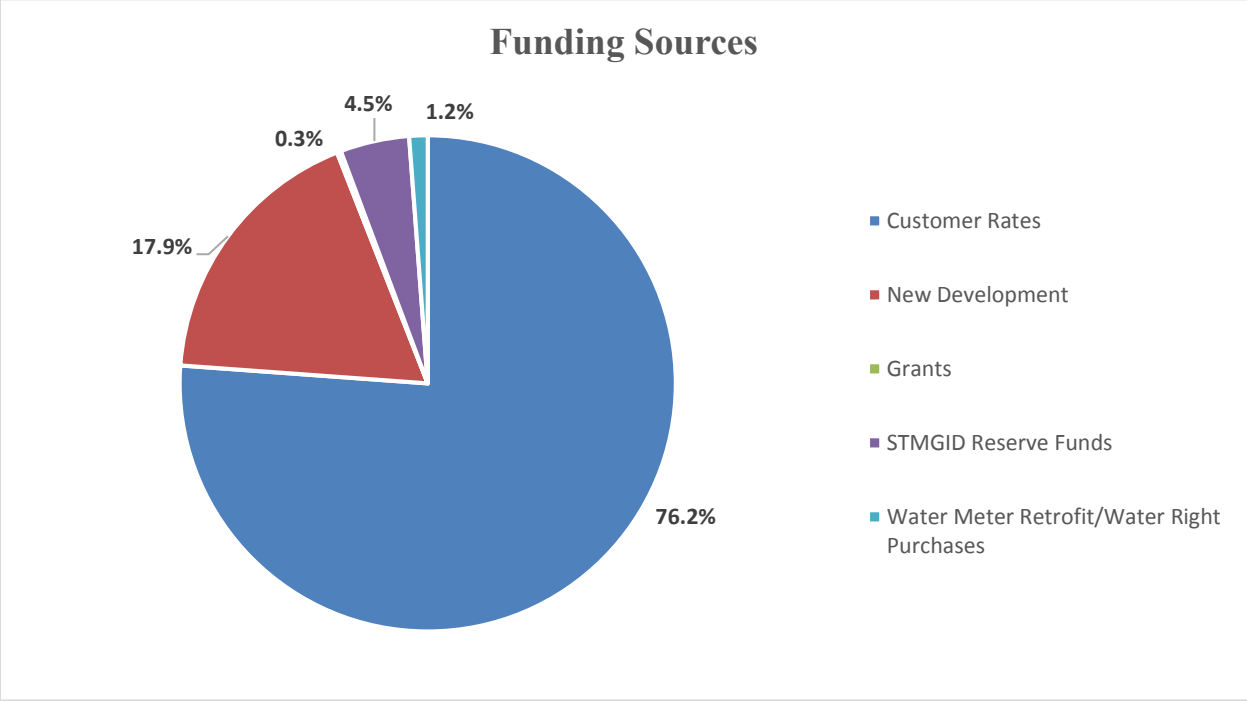
Summary of Capital Expenditures by Function	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	Five Year CIP Total
Raw Water Supply Improvements	900	775	5,375	475	475	8,000
Ground Water Supply Improvements	1,770	2,510	5,175	2,735	4,415	16,605
Treatment Plant Improvements	13,456	10,272	3,633	1,104	2,641	31,106
Distribution System Pressure Improvements	6,700	6,430	4,100	5,200	5,900	28,330
Water Main Distribution Service Line Improvements	13,380	12,750	10,000	6,590	7,260	49,980
Potable Water Storage Improvements	1,000	4,875	2,750	6,700	2,900	18,225
Hydroelectric Improvements	2,705	2,900	1,050	400	50	7,105
Customer Service Outlays	2,875	2,760	2,625	2,285	1,375	11,920
Administrative Outlays	2,435	4,850	2,965	1,515	1,515	13,280
Water Meter Retrofit/ Water Right Purchases	450	450	450	450	600	2,400
Sub-Total TMWA Construction Spending & Outlays	**45,671**	**48,572**	**38,123**	**27,454**	**27,131**	**186,951**
Former STMGID System	2,770	2,900	2,500	500	150	8,820
Total Projected Capital Spending, Including STMGID	**48,441**	**51,472**	**40,623**	**27,954**	**27,281**	**195,771**



PRELIMINARY FUNDING PLAN FUNDING SOURCES

(Amounts in thousands of dollars)

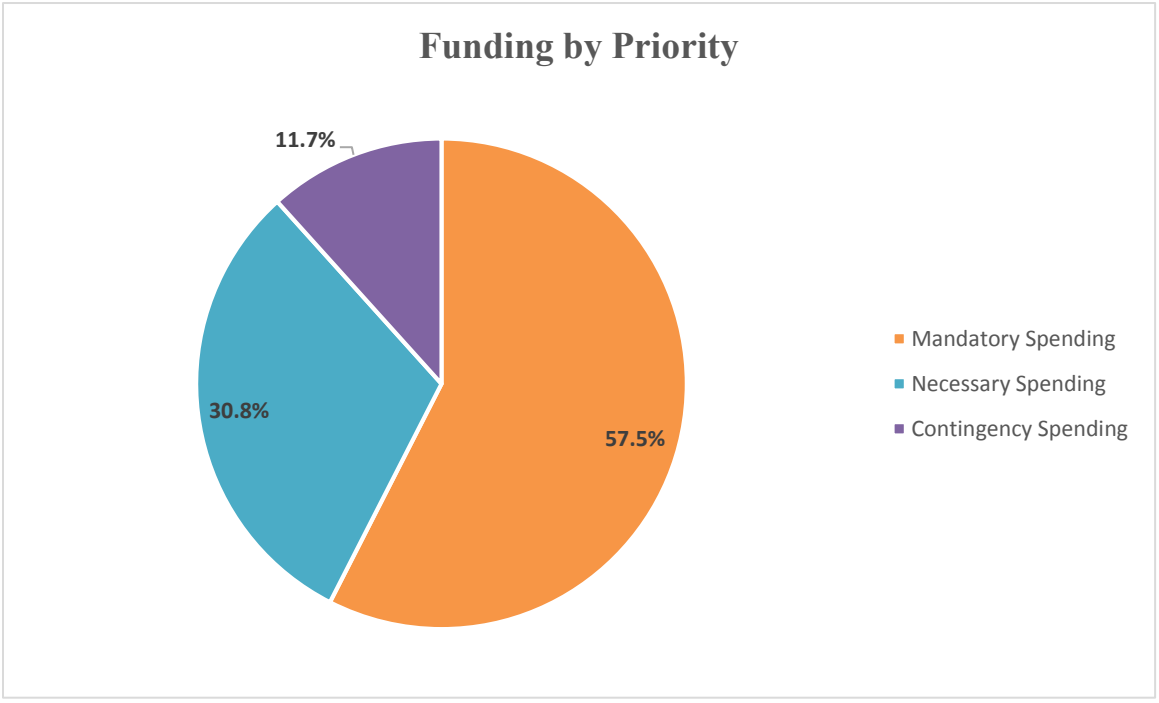
Summary of Funding Sources	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	Five Year CIP Total
Capital Improvements Funded by Customer Rates	38,926	34,622	32,628	22,804	20,101	149,081
Capital Improvements Funded by Development	5,795	13,500	5,045	4,200	6,430	34,970
Capital Improvements Funded by Grants	500	—	—	—	—	500
Capital Improvements Funded with former STMGID Reserve Funds	2,770	2,900	2,500	500	150	8,820
Water Meter Retrofit/ Water Right Purchases	450	450	450	450	600	2,400
Total Projected Capital Spending	**48,441**	**51,472**	**40,623**	**27,954**	**27,281**	**195,771**



FUNDING BY PRIORITY

(Amounts in thousands of dollars)

Summary of Funding by Priority	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	Five Year CIP Total
Priority 1 - Mandatory Spending, Projects in Progress, Regulatory	36,671	34,452	17,518	12,714	11,246	112,601
Priority 2 - Necessary Spending	9,400	14,795	20,055	6,880	9,185	60,315
Priority 3 - Contingency Spending	2,370	2,225	3,050	8,360	6,850	22,855
Total Projected Capital Spending	**48,441**	**51,472**	**40,623**	**27,954**	**27,281**	**195,771**



PROJECT FUNCTIONS AND DESCRIPTIONS

RAW WATER SUPPLY IMPROVEMENTS
Summary

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Highland Canal-Upgrades-Downstream	225	225	225	225	225	1,125
1	Customer Rates	Highland Canal-Upgrades-Diversion to Chalk Bluff	100	100	1,000	100	100	1,400
2	Customer Rates	Independence Lake Permitting Study	100	—	—	—	—	100
2	Customer Rates	Indirect Potable Reuse	100	100	100	100	100	500
1	Customer Rates	TROA Drought Storage/Implementation	75	50	50	50	50	275
2	Customer Rates	Donner Lake Outlet Improvements Phase 2	300	300	4,000	—	—	4,600
Subtotal			**900**	**775**	**5,375**	**475**	**475**	**8,000**

Project Locations: Map of all *Raw Water Supply Improvements* projects are highlighted in the following map.


HIGHLAND CANAL UPGRADES
HIGHLAND CANAL DIVERSION
INDIRECT POTABLE REUSE
TROA DROUGHT STORAGE/IMPLEMENTATION
INDEPENDENCE LAKE PERMITTING STUDY
DONNER LAKE OUTLET IMPROVEMENTS PHASE 2
TRUCKEE RIVER
Sun Valley
Sparks
Reno
Kings Beach
Lake Tahoe
Lake Tahoe Nevada State Park
Washoe Lake State Park
Dayton
Carson City
Minden
Truckee
California
Nevada
W:\projects\Engineering\CIP\projects\mxd\2019\8.5x11_RAW_WATER_CIP_2019_TMWA.mxd
TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.
FY 2019-2023 CIP
RAW WATER SUPPLY IMPROVEMENTS
SUMMARY
DATE 4/1/2018
MAP BY: JK
REQUESTED BY: LK
SCALE: 1 in = 8 miles
NORTH
NAD 83 NEVADA STATE PLANE WEST FEET

Raw Water Supply Improvements

Highland Canal-Upgrades-Downstream

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Highland Canal - Upgrades - Downstream	225	225	225	225	225	1,125

PROJECT DESCRIPTION: The improvements reflected in this capital project item are for betterments along the canal downstream of the Chalk Bluff Water Treatment Plant to the Rancho San Rafael Park. Approximately 2,000 feet of "smart ditch" (a molded plastic trapezoidal channel section) has been installed downstream of Chalk Bluff in recent years. This product reduces leakage and maintenance and it is planned to continue to extend the installation in the future. Other efforts are rehabilitative in nature and may address access and security concerns.

SCHEDULE: Projects are identified and prioritized on an annual basis.

Raw Water Supply Improvements

Highland Canal – Upgrades – Diversion to Chalk Bluff

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Highland Canal - Upgrades-Diversion to Chalk Bluff	100	100	1,000	100	100	1,400

PROJECT DESCRIPTION: These improvements are for the stretch of canal between the diversion on the Truckee River and Chalk Bluff Water Treatment Plant. The proposed spending is to secure the canal from trespass to enhance public safety and prevent encroachment on TMWA property. Due to swift flows in the Highland Canal TMWA will also complete fencing along the canal for public safety, install security cameras and access barriers. The proposed FY 2021 budget is for replacement of the existing 54" siphon pipe under the Truckee River just downstream of the diversion installed in 1954.

SCHEDULE: Projects are identified and prioritized on an annual basis.

Raw Water Supply Improvements

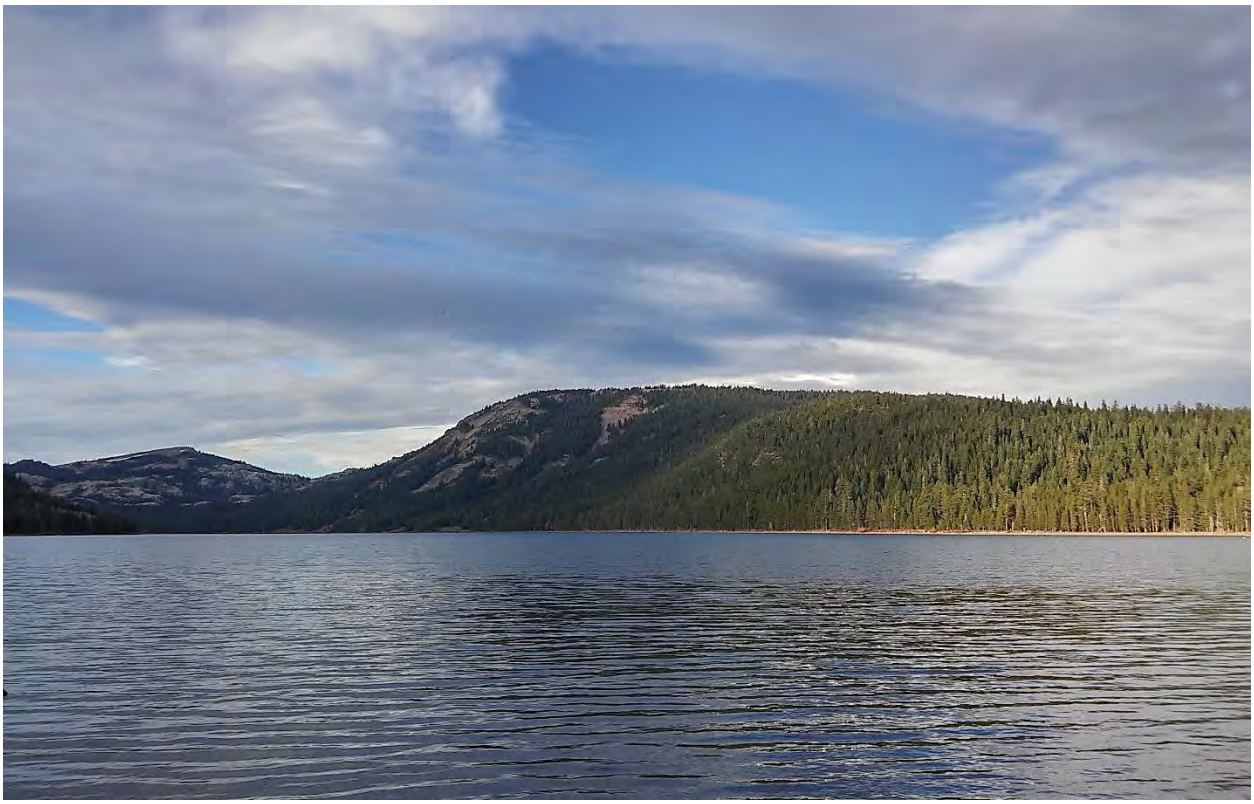
Independence Lake Permitting Study

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Independence Lake Permitting Study	100	—	—	—	—	100

PROJECT DESCRIPTION: TROA calls for the use of storage at Independence Lake before TMWA can access its Credit Water Storage. There is a provision in TROA to provide fish passage between the natural lakes in the event of a substantial reservoir drawdown. The purpose of this project is to begin a dialogue with the appropriate permitting agencies to proactively develop a strategy to understand the future implementation steps to satisfy the fish passage requirement.

SCHEDULE: Permitting strategy to be developed in FY 2019.



Raw Water Supply Improvements

Indirect Potable Reuse

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Indirect Potable Reuse	100	100	100	100	100	500

PROJECT DESCRIPTION: NDEP has approved new regulations for future reuse in Nevada, including urban, agricultural (food and non-food crops), impoundments, environmental, industrial, and indirect potable reuse (IPR). IPR is a process whereby the purified water is stored in an environmental buffer such as a lake or aquifer before re-entering the drinking water supply.

Conceptually, an IPR project might be well suited for areas such as the North Valleys or the South Truckee Meadows. IPR in these locations could improve the utilization of existing water resources and water rights, since the Water Reclamation Facilities for these areas do not return the treated water to the Truckee River. The purified water could be recharged using infiltration basins or injection wells in areas generally isolated from domestic wells, blended with ambient groundwater, and eventually recovered using TMWA's municipal wells.

SCHEDULE: Planning, permitting, design and operation of an advanced treatment pilot / demonstration projects with Nevada Water Innovation Campus (NWIC) over the next 3-5 year time frame, with additional funding support from Reno, Sparks, Washoe County, and WRWC.

Raw Water Supply Improvements

TROA Drought Storage/Implementation

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	TROA Drought Storage / Implementation	75	50	50	50	50	275

PROJECT DESCRIPTION: TROA became effective and TMWA began implementation officially on December 1, 2015.

Ongoing budget under TROA implementation is for additional stream gages in new locations as required, as well as improving the monitoring capabilities of existing gages as needed on an annual basis. Other smaller capital improvements are related to the operation of reservoir sites.

Raw Water Supply Improvements

Donner Lake Outlet Improvements Phase 2

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Donner Lake Outlet Improvements Phase 2	300	300	4,000	—	—	4,600

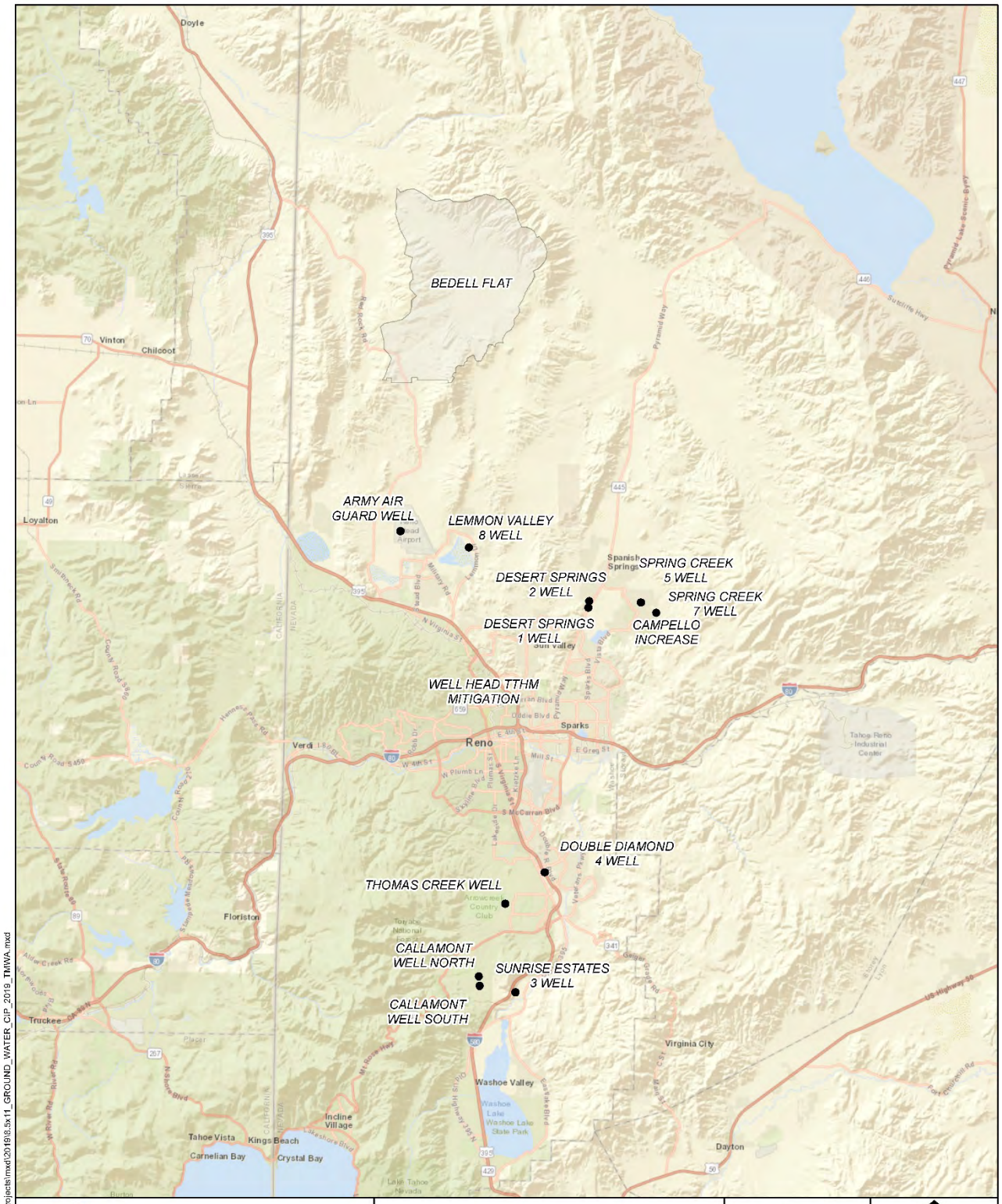
PROJECT DESCRIPTION: Dredging of a portion of the Donner Lake outlet channel was completed in FY2018. The project was scaled back to fit within the CEQA emergency permitting requirements. Additional work is required to extend and improve the outlet channel further into the lake, including possible bank stabilization improvements to minimize future dredging requirements.

SCHEDULE: Permitting and preliminary design will be conducted over the next two years. Construction of improvements tentatively scheduled for FY2021.

GROUND WATER SUPPLY IMPROVEMENTS
Summary

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Well Rehabilitation Improvements	725	925	925	925	925	4,425
2	Developer Fees	Double Diamond #4 Equipping	—	—	—	—	1,100	1,100
2	Customer Rates	Campello Capacity Increase	—	250	—	—	—	250
2	Customer Rates	Callamont Well South Equip	—	60	1,040	—	—	1,100
2	Customer Rates	Air Guard Well Replacement	—	—	1,000	—	—	1,000
1	Customer Rates	Sunrise #3 Replacement	100	—	—	—	—	100
3	Customer Rates	Bedell Flat Water Bank	100	100	100	100	100	500
2	Customer Rates / Developer	Lemmon Valley Well #8 Replacement	—	—	—	—	1,000	1,000
1	Customer Rates	Well Fix & Finish	150	150	150	150	150	750
2	Customer Rates	Well Plugging / Conversion	—	—	110	—	—	110
1	Customer Rates	NDEP Monitoring Wells	110	100	100	—	—	310
2	Customer Rates	Thomas Creek Well Replacement	—	—	1,250	1,000	—	2,250
2	Customer Rates	Wellhead Biological Treatment Pilot Study	200	—	—	—	—	200
2	Customer Rates	Well Head TTHM Mitigation	300	500	500	500	—	1,800
2	Customer Rates	Spring Creek Well #7 Recharge	75	425	—	—	—	500
1	Customer Rates / Grant	Desert Springs 1 & 2 and Spring Creek 5 ASR Retrofit	10	—	—	—	—	10
2	Customer Rates	Callamont Well North Equipping	—	—	—	60	1,140	1,200
Subtotal			**1,770**	**2,510**	**5,175**	**2,735**	**4,415**	**16,605**

Project Locations: Map of all *Ground Water Supply Improvements* projects are highlighted in the following map.


BEDELL FLAT
ARMY AIR GUARD WELL
LEMMON VALLEY 8 WELL
DESERT SPRINGS 2 WELL
SPRING CREEK 5 WELL
SPRING CREEK 7 WELL
DESERT SPRINGS 1 WELL
CAMPELLO INCREASE
WELL HEAD TTHM MITIGATION
DOUBLE DIAMOND 4 WELL
THOMAS CREEK WELL
CALLAMONT WELL NORTH
SUNRISE ESTATES 3 WELL
CALLAMONT WELL SOUTH
Doyle
Vinton
Chilcoot
Loyalton
Verdi
Reno
Sparks
Floriston
Truckee
Incline Village
Tahoe Vista
Kings Beach
Carnelian Bay
Crystal Bay
Washoe Valley
Virginia City
Dayton
TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.
FY 2019-2023 CIP
GROUND WATER SUPPLY IMPROVEMENTS
SUMMARY
DATE 4/1/2018
MAP BY: JK
REQUESTED BY: LK
SCALE: 1 in = 6 miles
NORTH
NAD 83 NEVADA STATE PLANE WEST FEET
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Ground Water Supply Improvements

Well Rehabilitation Improvements

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Well Rehabilitation Improvements	725	925	925	925	925	4,425

PROJECT DESCRIPTION: Funds are budgeted to rehabilitate TMWA production wells as required. Typically for subgrade rehabilitation efforts, six to eight wells are inspected, tested and evaluated every year to determine if rehabilitation is required. Typical subgrade rehab activities include but are not limited to: pump and pump column pipe replacements; rehabilitation of well casing and screen; and other enhancements to maintain well function and capacities. Spending in fiscal years 2019-2023 will include improvements at several wells to provide general above grade well equipment and building upgrades including upgrades to electrical and telemetry equipment. TMWA has over 80 water production wells operating throughout the water system. TMWA relies on these wells to provide drought and emergency supply and as a supplemental source to meet peak demands on the water system.

SCHEDULE: Wells targeted for rehabilitation improvements in FY 2019 include STMGID 2, Lightning W 3, Corbett, Nugget, and Lemmon Valley 9.

Ground Water Supply Improvements

Double Diamond #4 Equipping

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Developer Fees	Double Diamond #4 Equipping	—	—	—	—	1,100	1,100

PROJECT DESCRIPTION: Construct pumping facilities for the existing Double Diamond Well #4 including the pump house building, electrical power, pump/motor and valves and piping to provide an additional 1,200 gallons per minute of peak period supply to the Double Diamond area.

SCHEDULE: Based on current growth rates, it is anticipated that the additional capacity from the new well will be needed in the summer of 2023.

Ground Water Supply Improvements

Campello Capacity Increase

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Campello Capacity Increase	—	250	—	—	—	250

PROJECT DESCRIPTION: These improvements will increase the transfer capacity between the Spanish Springs #2 pressure zone and the former County Spring Creek system on the east side of Spanish Springs Valley to provide sufficient surface water supply for passive and/or active recharge of former County wells.

SCHEDULE: The improvements are currently planned to be completed in FY 2020.

Ground Water Supply Improvements

Callamont Well South Equipping

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Callamont Well South Equipping	—	60	1,040	—	—	1,100

PROJECT DESCRIPTION: Construct pumping facilities for one of the existing Callamont wells in the Mt. Rose system including the pump house building, electrical power, pump/motor and valves and piping to provide an additional 500 gallons per minute of peak period supply to the area.

SCHEDULE: This project is currently scheduled for construction in FY 2021, but may be constructed sooner (or later) depending on the actual schedule for the proposed 210 unit Callamont residential development.

Ground Water Supply Improvements

Air Guard Well Replacement

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Air Guard Well Replacement	—	—	1,000	—	—	1,000

PROJECT DESCRIPTION: Replacement of the Air Guard Well in Stead was necessary to reduce sanding and provide additional capacity to the Stead system. The new/replacement well was drilled and constructed in FY 2016. Test pumping indicates the new well will have a capacity of about 2,500 gallons per minute which is twice the capacity of the old well. The budget for FY 2021 is for constructing the pumping facilities including the well building, pump and motor, valves and piping, electrical and controls, etc.

SCHEDULE: The pumping facilities are scheduled for construction in FY 2021.

Ground Water Supply Improvements

Sunrise #3 Replacement

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Sunrise #3 Replacement	100	—	—	—	—	100

PROJECT DESCRIPTION: This project involves activities associated with relocating a septic tank that is currently within the regulated setback distance of Sunrise Estates Well #3. Groundwater quality and available land space will be reviewed to verify the potential for septic tank relocation. If septic tank relocation efforts are found to be non-feasible, additional exploratory drilling may be carried out in order to attempt to identify a new groundwater resource at a different location.

SCHEDULE: Septic tank relocation activities will begin during FY 2019.

Ground Water Supply Improvements

Bedell Flat Water Bank

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Customer Rates	Bedell Flat Water Bank	100	100	100	100	100	500

PROJECT DESCRIPTION: As part of TMWA's overall water resource conjunctive use management strategy, TMWA is working with cost sharing partners including the City of Reno, Sparks, Washoe County, and the U.S. Geological Survey (USGS) to evaluate the feasibility of expanding TMWA's conjunctive use program to include aquifer storage and recovery (ASR) in Bedell Flat. Bedell Flat is located in southern Washoe County, about 13 miles north of Stead and appears to have favorable hydrogeologic characteristics for a large-scale ASR program. Several water resource options are under consideration, including: injection of potable water using ASR wells near the existing Fish Springs pipeline; infiltration of highly treated reclaimed water along a natural drainage referred to as Bird Spring Wash; infiltration of highly treated reclaimed water through rapid infiltration basins (RIBs); or a combination of these. Water stored or banked in Bedell Flat could serve as a future non-Truckee River based drought or emergency water supply for the region. This project includes a joint funding agreement with the USGS to conduct water infiltration monitoring and assessments to determine the feasibility of ASR in Bedell Flat, and an NDEP grant for infiltration testing.

SCHEDULE: Geologic/hydrogeologic feasibility investigations and environmental clearance and permitting work are proposed over the next 3-5 years to gain an understanding of the feasibility, scope and cost of a water banking program in Bedell Flat.

Ground Water Supply Improvements

Lemmon Valley Well #8 Replacement

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates / Developer	Lemmon Valley Well #8 Replacement	—	—	—	—	1,000	1,000

PROJECT DESCRIPTION: The exiting Lemmon Valley 8 Well has been in service since 1974, making it one of the older wells in the East Lemmon Valley system. The exiting well casing and screens show signs of significant corrosion. With the potential for a well casing failure, TMWA intends to drill and equip a replacement well on the exiting well property. In addition, the replacement well is expected to have similar construction while producing at least 20 percent more capacity than the original Lemmon Valley 8 Well. The additional capacity will provide supply to support base load supplied from the Fish Springs groundwater system.

SCHEDULE: Well drilling will occur in FY23 and well equipping in FY24.

Ground Water Supply Improvements

Well Fix & Finish

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Well Fix & Finish	150	150	150	150	150	750

PROJECT DESCRIPTION: Equipment improvements are expected to bring existing wells up to modern standards, including antiquated equipment replacements and improvements for water quality purposes. This project includes improvements to sodium hypochlorite rooms, pump to waste lines and drainage improvements. It also includes well retrofit for recharge where needed.

SCHEDULE: Improvements are planned to continue for the duration of this CIP funding plan.

Ground Water Supply Improvements

Well Plugging / Conversion

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Well Plugging / Conversion	—	—	110	—	—	110

PROJECT DESCRIPTION: There are a number of old wells in the TMWA system that were recently replaced by new wells (or system supply) and are no longer viable or necessary. These old production wells may be plugged or, if they occur in areas where water level and water chemistry data are needed, they will be converted to monitoring wells. Wells slated for plugging will be disconnected from the distribution system and filled with neat cement to 2 feet below land surface. Wells slated for conversion will be designed to accommodate a 2" PVC monitoring well liner, appropriate gravel pack, and sanitary seal to allow formerly screened aquifer intervals to transmit water to the new monitoring well. Plugged wells will be terminated 1 foot below grade. Monitoring wells will be completed to 2' above land surface and secured with a steel monument where possible; otherwise they will be completed at grade with a traffic-rated vault.

SCHEDULE: New monitor well drilling and installation as well as old monitoring well plugging activities will occur in FY21.

Ground Water Supply Improvements

NDEP Monitoring Wells

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	NDEP Monitoring Wells	110	100	100	—	—	310

PROJECT DESCRIPTION: There are a number of old monitoring wells in the TMWA system that were relied on to collect water level and/or water quality data to meet the Nevada Division of Environmental Protection - Underground Injection Control (NDEP-UIC) Permit requirements. Several of these wells were found to be plugged and no longer viable monitoring points. This project estimate assumes 3 monitoring wells will be replaced with new monitoring wells and the 3 replaced monitoring wells will be plugged.

SCHEDULE: New monitor well drilling and installation as well as old monitoring well plugging activities will occur in FY 18-19.

Ground Water Supply Improvements

Thomas Creek Well Replacement

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Thomas Creek Well Replacement	—	—	1,250	1,000	—	2,250

PROJECT DESCRIPTION: This project involves complete replacement of the existing Thomas Creek well, pump, tank and booster pump system. The existing well, which has been in service since 1978, is inefficient and results in excessive drawdown, which in turn burns out the motor on a frequent basis. The new well will be designed to pump directly into the system, so the existing tank and booster pump system can be abandoned. The replacement well is expected to have higher capacity compared to the existing well.

SCHEDULE: This project requires drilling in FY21 and well equipping in FY22.

Ground Water Supply Improvements

Well Head Biological Treatment Pilot Study

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Well Head Biological Treatment Pilot Study	200	—	—	—	—	200

PROJECT DESCRIPTION: Operation of a 5 gallon per minute pilot treatment process in Spanish Springs to potentially treat several groundwater wells that are out of service due to elevated Nitrate and Arsenic.

TMWA completed the planning, permitting and site design of the pilot treatment plant in 2017. Biological treatment of Nitrate in potable water is currently not permitted in Nevada. TMWA, working with Carollo Engineers, UNR and WaterStart, is evaluating this innovative technology to see if it can be a cost-effective treatment solution compared to traditional, high cost alternatives. WaterStart contributed $60,000 towards funding the local operation of the pilot plant using a master's student from UNR.

SCHEDULE: Continued operation, testing and evaluation of the pilot unit will be ongoing through calendar year 2018.

Ground Water Supply Improvements

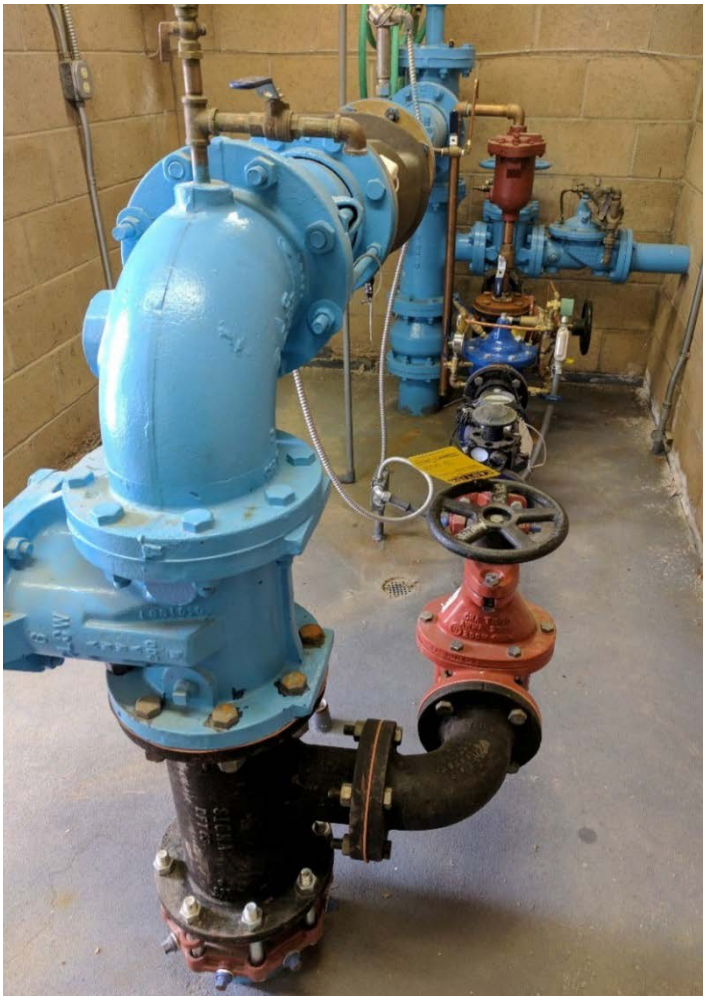
Well Head TTHM Mitigation

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Well Head TTHM Mitigation	300	500	500	500	—	1,800

PROJECT DESCRIPTION: Planning, permitting and implementation of tank mixers and ventilation equipment at Zolezzi and Verdi Business Park tanks, dechlorination and testing alternative treatment technologies to reduce disinfection by product (DBP) formation in recharged water and receiving groundwater.

SCHEDULE: Planning and design began in FY 2018 and is ongoing. Construction of tank mixers and ventilation equipment at Zolezzi and Verdi Business Park tanks will begin in summer FY 2019 and will be completed by winter FY 2019. Other technologies will be implemented at key recharge well sites in subsequent years based on priority.



Ground Water Supply Improvements

Spring Creek Well #7 Recharge

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Spring Creek Well #7 Recharge	75	425	—	—	—	500

PROJECT DESCRIPTION: A new 12-inch diameter recharge water line and well piping improvements are needed to provide the necessary capacity to allow TMWA to recharge SC Well 7. TMWA is in the process of expanding its ASR program into areas formerly served by Washoe County.

SCHEDULE: Construction will begin in FY 2019.

Ground Water Supply Improvements

Desert Springs 1 & 2 and Spring Creek 5 ASR Retrofit

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates / Grant	Desert Springs 1 & 2 and Spring Creek 5 ASR Retrofit	10	—	—	—	—	10

PROJECT DESCRIPTION: Three wells in Spanish Springs Valley (Desert Springs #1, #2, and Spring Creek #5) will be retrofit to function as dual-purpose ASR wells to improve conjunctive use of surface water and groundwater in the basin, in order to be more drought resilient. These three wells will be modified with downhole flow control valves, SCADA controls, and modified wellhead and well house piping to allow the wells to recharge water from the distribution system. Prior to retrofit activities, each well will be rehabilitated to increase pumping and recharge efficiency. The project was made possible through a competitive grant received from the Bureau of Reclamation in 2016.

SCHEDULE: Construction was completed in FY 2018. Monitoring and reporting to be completed in FY 2019.

Ground Water Supply Improvements

Callamont Well North Equipping

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Callamont Well North Equipping	—	—	—	60	1,140	1,200

PROJECT DESCRIPTION: Construct pumping facilities for the remaining existing Callamont well in the Mt. Rose system including the pump house building, electrical power, pump/motor and valves and piping to provide an additional 500 gallons per minute of peak period supply to the area.

SCHEDULE: This project is currently scheduled for construction in FY 2023, but may be constructed sooner (or later) depending on the actual schedule for the proposed 210 unit Callamont residential development.

TREATMENT PLANT IMPROVEMENTS
Summary

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Chalk Bluff Treatment Plant Fix & Finish	780	600	360	355	355	2,450
2	Customer Rates	Glendale Treatment Plant Fix & Finish	485	1,250	210	65	65	2,075
1	Customer Rates	Chalk Bluff Pump Building Air Handler	150	—	—	—	—	150
2	Customer Rates	Chalk Bluff Lighting Upgrade	—	—	350	—	—	350
2	Customer Rates	Glendale Lighting Upgrade	—	250	—	—	—	250
2	Customer Rates	Eagle Canyon Transmission Main Phase	—	100	1,800	—	—	1,900
2	Developer Fees	Truckee Canyon Water Treatment Improvements	50	60	60	35	—	205
2	Customer Rates	Lightning W Treatment Improvements	60	10	60	160	—	290
1	Customer Rates	SCADA Rehab/Plant Operating Software	1,331	1,002	793	489	471	4,086
1	Developer Fees	Mt. Rose Surface Water Treatment Plant	10,500	5,500	—	—	—	16,000
2	Customer Rates	Longley Lane Water Treatment Plant Assessment/Retrofit	—	600	—	—	—	600
1	Customer Rates	Glendale Diversion Emergency Flood Repairs	100	900	—	—	—	1,000
2	Developer Fees	Sparks Ground Water Treatment Plant	—	—	—	—	1,750	1,750
Subtotal Treatment Improvements			**13,456**	**10,272**	**3,633**	**1,104**	**2,641**	**31,106**

Project Locations: Map of all *Treatment Plant Improvements* projects are highlighted in the following map.


EAGLE CANYON TRANSMISSION MAIN
Spanish Springs
Sun Valley
SPARKS GROUND WATER TREATMENT PLANT
Sparks
CHALK BLUFF TREATMENT PLANT
Reno
GLENDALE TREATMENT PLANT
LONGLEY TREATMENT PLANT
TRUCKEE CANYON
Verdi
MT ROSE TREATMENT PLANT
Virginia City
Washoe Valley
Incline Village
Crystal Bay
LIGHTNING W
Dayton
Reno Stead Airport
Arrowcreek Country Club
Toiyabe National Forest
Washoe Lake Washoe Lake State Park
Lake Tahoe Nevada State Park
Tahoe Reno Industrial Center
TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.
FY 2019-2023 CIP
TREATMENT PLANT IMPROVEMENTS
SUMMARY
DATE 4/1/2018
MAP BY: JK
REQUESTED BY: LK
SCALE: 1 in = 4 miles
NORTH
NAD 83 NEVADA STATE PLANE WEST FEET
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Treatment Plant Improvements

Chalk Bluff Treatment Plant Fix & Finish

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Chalk Bluff Treatment Plant Fix & Finish	780	600	360	355	355	2,450

PROJECT DESCRIPTION: The Chalk Bluff Water Treatment Plant is 24 years old and requires rehabilitation work to remain operational 24/7/365. This spending is classified as necessary due to the criticality of maintaining plant operations during rehabilitation work. Plant improvements include, but are not limited to, plate settlers inspections, valve and instrument replacement, filter media replacement, UPS upgrades, Trac Vac improvements, treatment train isolation valves, Orr Ditch Pump Station improvements, flow meter improvements and safety improvements.

SCHEDULE: Major projects and timelines include: improvements to maintain raw water via the Highland Canal, raw water scaffolding additions and valve/meter replacements, which was started in FY 2018, will be completed in FY 2019. Work to isolate sections of the treatment plant influent trains will begin in FY 2019. Orr Ditch Pump Station Improvements are scheduled for FY 2022. Filter media removal will occur as filter media evaluations indicate that replacement will soon be necessary. As the Chalk Bluff plant is operated year-round, most work will continue over the course of the five-year CIP and when system demands allow maintenance.

Treatment Plant Improvements

Glendale Treatment Plant Fix & Finish

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Glendale Treatment Plant Fix & Finish	485	1,250	210	65	65	2,075

PROJECT DESCRIPTION: The Glendale Water Treatment Plant is 40 years old and while there have been significant upgrades, Glendale remains a significant piece of the water supply portfolio by operating 24/7 typically during the months of April through October. Glendale plays an important role due to its availability to treat off-river water supplies, such as groundwater wells that cannot pump straight to the distribution system. This spending is classified as necessary due to the criticality of maintaining plant operations. Plant improvements include, but are not limited to, plate settlers inspections, valve and instrument replacement, filter media replacement, Trac Vac improvements, flow meter improvements, installation of a second clearwell, treatment chemical upgrades and maintenance storage/shop upgrades.

SCHEDULE: Major projects such as soda ash mixer improvements and water recovery basin piping planning was completed in FY 2018 with construction scheduled for FY 2019. The treatment plant maintenance shop and storage improvements are currently scheduled in FY 2020. Initial planning for the addition of a second clearwell is slated for FY 2022. Filter media removal will occur as filter media evaluations indicate that replacement will soon be necessary. As the Glendale plant is used seasonally, most work will continue over the course of the five-year CIP and during the periods that the plant is not operating.

Treatment Plant Improvements

Chalk Bluff Pump Building Air Handler

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Chalk Bluff Pump Building Air Handler	150	—	—	—	—	150

PROJECT DESCRIPTION: This project replaces the Chalk Bluff Outflow Pump Station Air Handlers. Existing evaporative cooling air handlers will be replaced with 2-stage closed loop air handlers with 1st stage cooling provided by a cooling tower and second stage cooling accomplished by a chiller. The electrical room will be cooled with three standalone evaporator/ condenser units.

SCHEDULE: Construction is scheduled for the end of FY 2018 and continue into the first quarter of FY 2019.

Treatment Plant Improvements

Chalk Bluff Lighting Upgrade

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Chalk Bluff Lighting Upgrade	—	—	350	—	—	350

PROJECT DESCRIPTION: Upgrade lighting at the Chalk Bluff Water Treatment Plant. Work will include all areas and buildings outside of the most recent remodel areas as well as upgrades to outside area lighting.

SCHEDULE: Lighting upgrade is scheduled to begin in FY 2021.

Treatment Plant Improvements

Glendale Lighting Upgrade

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Glendale Lighting Upgrade	—	250	—	—	—	250

PROJECT DESCRIPTION: Upgrade lighting at the Glendale Water Treatment Plant. Work will include all areas and buildings outside of the most recent remodel areas as well as upgrades to outside area lighting.

SCHEDULE: Lighting upgrade is scheduled to begin in FY 2020.

Treatment Plant Improvements

Eagle Canyon Transmission Main Phase 2

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Eagle Canyon Transmission Main Phase 2	—	100	1,800	—	—	1,900

PROJECT DESCRIPTION: This project involves construction of approximately 4,700 feet of 24-inch pipe to complete a dedicated blending pipeline to the Desert Springs 2B Tank sites. The project allows poor quality groundwater from several wells on the west side of the Spanish Springs Valley to be utilized by blending with surface water from the Lazy 5 intertie.

SCHEDULE: The project design is scheduled to be completed in FY 2020 with construction scheduled to begin in FY 2021.

Treatment Plant Improvements

Truckee Canyon Water Treatment Improvements

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Developer Fees	Truckee Canyon Water Treatment Improvements	50	60	60	35	—	205

PROJECT DESCRIPTION: The current treatment system which removes arsenic, iron, and manganese consists of a greensand filter system and an evaporation pond for backwash water with a total capacity of about 100 gallons per minute. Scheduled improvements may include the addition of a polymer feed system to improve filter performance, fine tuning of the treatment process to reflect chemical changes in the raw water and replacement of miscellaneous components and control upgrades.

SCHEDULE: Expenditures in FY 2019 – FY 2022 are contingent spending related to treatment efficiency and for chemical changes in the raw water.

Treatment Plant Improvements

Lightning W Treatment Improvements

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Developer Fees	Lightning W Treatment Improvements	60	10	60	160	—	290

PROJECT DESCRIPTION: The existing treatment process consists of two ion exchange resin pressure vessels to remove uranium. Previous work includes change out/replacement of the filter media, disposal of the spent media. The remaining work includes miscellaneous improvements to the building that houses the treatment equipment including making provisions to hook up a portable generator.

SCHEDULE: The FY 2019 work includes miscellaneous building improvements.

Treatment Plant Improvements

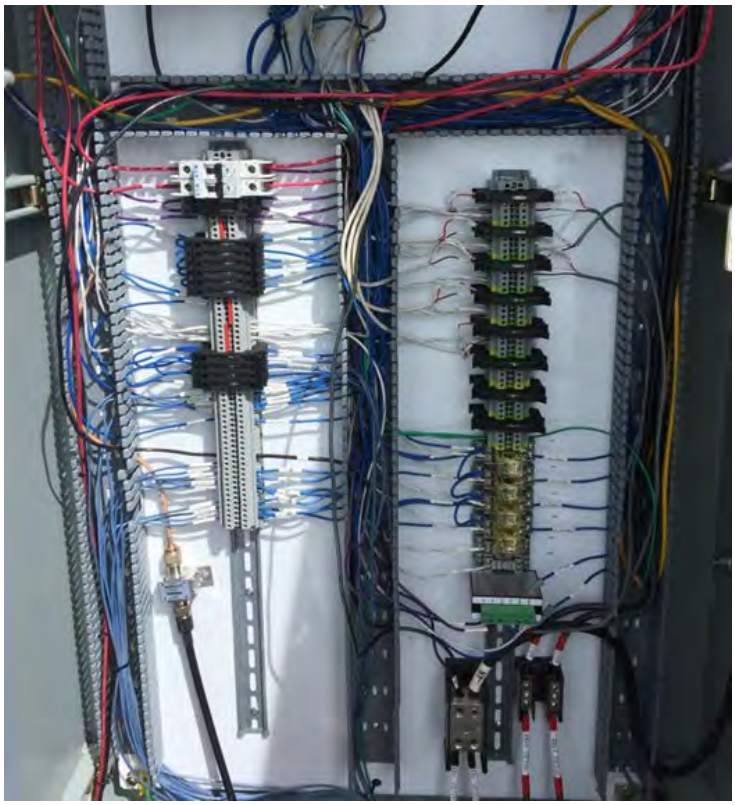
SCADA Rehab/Plant Operating Software

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	SCADA Rehab/Plant Operating Software	1,331	1,002	793	489	471	4,086

PROJECT DESCRIPTION: SCADA (Supervisory Control and Data Acquisition) is the system by which TMWA monitors, records and controls the water system inputs, outputs, flows and pressures. Data acquired by these system controls are primarily monitored at the treatment plants, but the system equipment and technology is spread throughout the water system infrastructure. Much of the technology is approaching obsolescence and needs to be replaced with emphasis on standardization of programmable logic controllers (PLC) and other equipment. Therefore, TMWA settled on a systematic approach to updating the equipment and operating software starting in fiscal year 2015 with telemetry improvement in the ensuing four years to convert to wireless transmission of data feeds where possible.

SCHEDULE: The improvements and replacements of the equipment and operating software have already begun and will continue over the course of the five-year CIP.



Treatment Plant Improvements

Mt. Rose Surface Water Treatment Plant

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Developer Fees	Mt. Rose Surface Water Treatment Plant	10,500	5,500	—	—	—	16,000

PROJECT DESCRIPTION: Due to a combination of municipal and domestic well pumping and the extended drought, TMWA has determined that additional infrastructure and facilities are needed to utilize Whites Creek resources to improve the long-term viability and sustainability of groundwater supplies in this region. To provide reliability of supply, avoid or reduce pumping costs and avoid major on-peak capacity improvements within the lower TMWA gravity system, a 4 MGD treatment plant located off of Callahan Road near the Monte Vista subdivision has received a SUP to treat Whites Creek water. The County's South Truckee Meadows Facility Plan recognized "The upper treatment plant is an integral component of the recommended water supply plan. Most importantly; it will provide recharge water and/or offset winter groundwater pumping in the upper Mt Rose fan area."

SCHEDULE: Permitting, design, and bidding to be completed in FY 2018. Construction will occur in FY2019, and completion of construction in FY 2020.

Treatment Plant Improvements

Longley Lane Water Treatment Plant Retrofit

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Longley Lane Water Treatment Plant Retrofit	—	600	—	—	—	600

PROJECT DESCRIPTION:

The Longley Lane Water Treatment Plant cannot currently be operated due to safety concerns with chemical feed, clean in place and solids handling piping systems. An assessment of the plant was completed and short-term improvements identified to modify the facility to serve as a booster pump station using either surface water or groundwater supply sources. Preliminary Engineering Report (PER) will be completed in FY2018.

SCHEDULE: Improvements will be implemented in FY2020.

Treatment Plant Improvements

Glendale Diversion Emergency Flood Repairs

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Glendale Diversion Emergency Flood Repair	100	900	—	—	—	1,000

PROJECT DESCRIPTION: This project will consist of emergency repairs to the Glendale Diversion dam due to flood damage incurred during the winter of 2016-17.

SCHEDULE: Basic repairs were completed in FY 2018. Improvements to mitigate future failures is scheduled for completion in FY 2019 pending environmental permitting.

Treatment Plant Improvements

Sparks Ground Water Treatment Plant

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Developer	Sparks Ground Water Treatment Plant	—	—	—	—	1,750	1,750

PROJECT DESCRIPTION: The Sparks Ground Water Treatment Plant will have a 12 million gallons a day (MGD) capacity with the initial phase built to accommodate 8 MGD. Phase 1 includes equipping Prater, Dillworth and Stanford wells and constructing raw water pipelines to the I Street WTP site. Phase 2 includes equipping Sparks High, Sparks UMC and Mitchell wells and construction of raw water pipelines to the site. Current planning suggests Phase 2 would be needed in FY 2039.

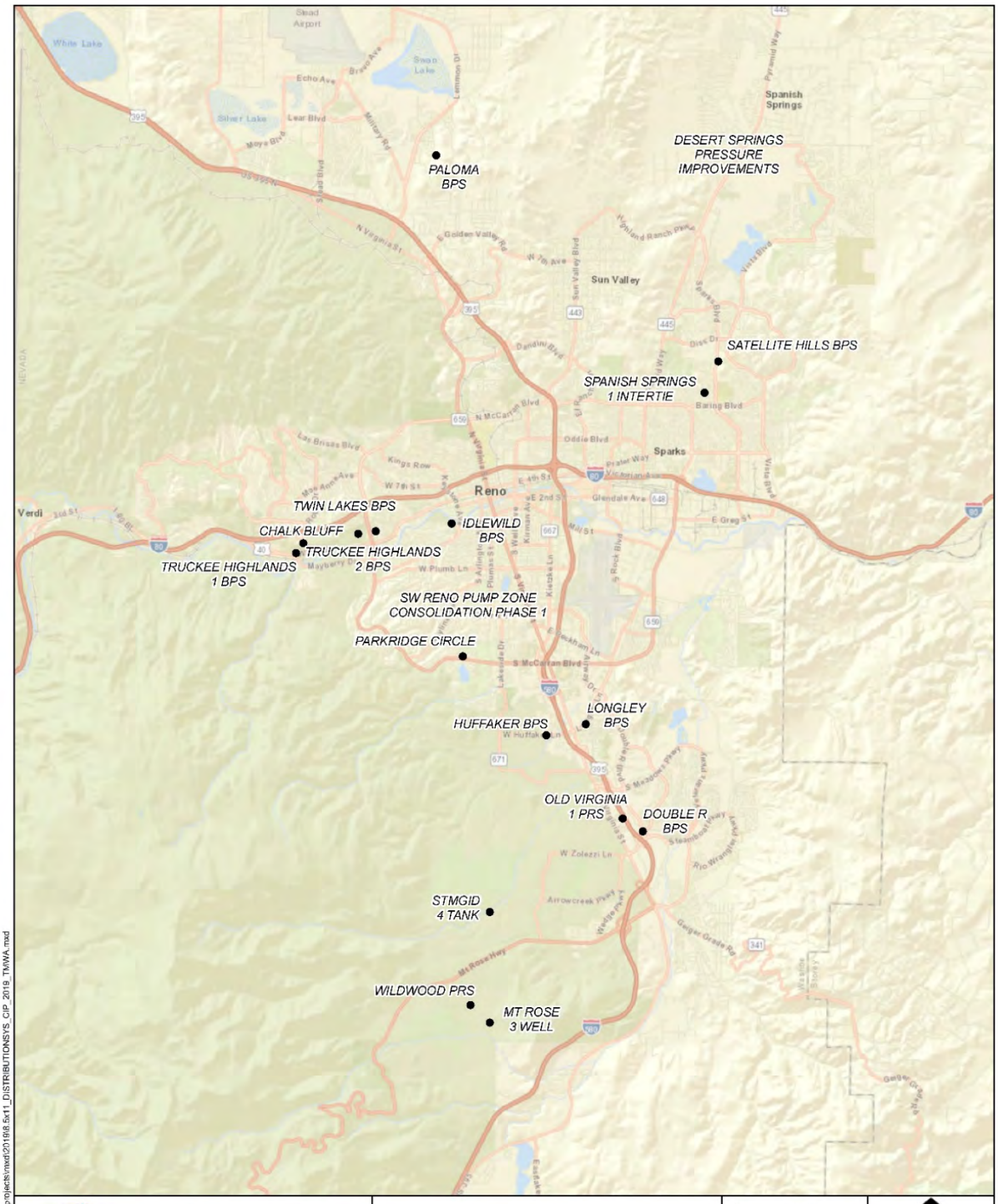
SCHEDULE: Design is planned for FY 2023 with Construction of Phase 1 planned for FY 2024-2025.

DISTRIBUTION SYSTEM PRESSURE IMPROVEMENTS
Summary

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Pressure Regulators Rehabilitation	500	500	500	500	500	2,500
1	Customer Rates	Pressure Reducing Valve (Roll Seal) Removal	400	400	400	400	400	2,000
2	Customer Rates	Land Acquisitions	250	250	250	250	250	1,250
2	Customer Rates	Desert Springs Pressure Improvements	—	400	—	—	—	400
1	Customer Rates	Paloma Booster Pump Station / Pressure Regulating Station /Main	950	—	—	—	—	950
2	Developer Fees	Longley Booster Pump Station /Double R Capacity Increase	500	—	—	—	—	500
3	Customer Rates	Pump Station Oversizing	100	100	100	100	100	500
1	Customer Rates	Pump Station Rebuilds	1,450	1,000	1,000	1,000	1,000	5,450
3	Developer Fees	Truckee River Highlands PS #1	—	—	1,000	—	—	1,000
2	Customer Rates	Mt. Rose Well #3 Pump Station Improvements	50	250	—	—	—	300
3	Customer Rates	Standby Generator Improvements	—	150	150	150	150	600
2	Customer Rates	Idlewild Booster Pump Station Improvements	—	—	100	1,200	—	1,300
2	Customer Rates	Parkridge Circle Conversion	—	—	—	300	—	300
3	Customer Rates /	SW Reno Pump Zone Consolidation Phase 1	—	—	—	300	3,500	3,800
2	Customer Rates	Spanish Springs #1 Pressure Zone Intertie	—	600	—	—	—	600
2	Developer Fees	STMGID Tank 4 Booster Pump Station/ Transmission Line	—	2,450	550	—	—	3,000
3	Developer Fees	Wildwood Pressure Regulating Station /Scada Control	—	—	50	—	—	50

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Developer Fees	Truckee River Highland Pump Station #2	—	—	—	1,000	—	1,000
3	Customer Rates	Old Virginia Regulation Station	—	330	—	—	—	330
1	Customer Rates	Chalk Bluff Additional Backup Generator Design	1,300	—	—	—	—	1,300
1	Customer Rates	Huffaker Booster Pump Station	400	—	—	—	—	400
1	Customer Rates	Twin Lakes Booster Pump Station	400	—	—	—	—	400
1	Customer Rates	Satellite Hills Booster Pump Station	400	—	—	—	—	400
Sub-Total Pressure Improvements			**6,700**	**6,430**	**4,100**	**5,200**	**5,900**	**28,330**

Project Locations: Map of all *Distribution System Pressure Improvements* projects are highlighted in the following map.


PALOMA BPS
DESERT SPRINGS PRESSURE IMPROVEMENTS
SATELLITE HILLS BPS
SPANISH SPRINGS 1 INTERTIE
TWIN LAKES BPS
CHALK BLUFF
IDLEWILD BPS
TRUCKEE HIGHLANDS 2 BPS
TRUCKEE HIGHLANDS 1 BPS
SW RENO PUMP ZONE CONSOLIDATION PHASE 1
PARKRIDGE CIRCLE
LONGLEY BPS
HUFFAKER BPS
OLD VIRGINIA 1 PRS
DOUBLE R BPS
STMGID 4 TANK
WILDWOOD PRS
MT ROSE 3 WELL
Reno
Sparks
Sun Valley
Spanish Springs
Verdi
TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.
FY 2019-2023 CIP
DISTRIBUTION SYSTEM IMPROVEMENTS -
PRESSURE IMPROVEMENTS SUMMARY
DATE 4/1/2018
MAP BY: JK
REQUESTED BY: LK
SCALE: 1 in = 3 miles
NORTH
NAD 83 NEVADA STATE PLANE WEST FEET
W:\projects\Engineering\CIP\p\bjects\mxd\2018\8.5x11_DISTRIBUTIONSYS_CIP_2019_TMWA.mxd

Distribution System Pressure Improvements

Pressure Regulators Rehabilitation

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Pressure Regulators Rehabilitation	500	500	500	500	500	2,500

PROJECT DESCRIPTION: Provision is made in the annual budget for major rehabilitation or complete reconstruction of several pressure regulators in the distribution system. TMWA has evaluated nearly 130 pressure regulator stations currently in service and has identified a number of pressure regulator stations requiring a certain amount of rehabilitation on an annual basis.

SCHEDULE: This is an ongoing rehabilitation project with about 130 individual stations identified as requiring rehabilitation or replacement over the next fifteen years.

Distribution System Pressure Improvements

Pressure Reducing Valve (Roll Seal) Removal

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Pressure Reducing Valve (Roll Seal) Removal	400	400	400	400	400	2,000

PROJECT DESCRIPTION: There are approximately 180 pressure regulating stations in former County systems where Roll Seal pressure reducing valves are installed. These valves are subject to failure on a 3-5 year basis as compared to an expected life of 10-20 years for the Cla-Val regulator valves utilized in the TMWA system. A Roll Seal failure can result in significant damage to customer homes and in most cases requires a major service outage to repair or replace the valve.

SCHEDULE: Projects will be prioritized based on potential damage (unregulated pressure) and failure rate records. This will be a multi-year project to replace Roll Seals at about 20 stations per year.

Distribution System Pressure Improvements

Land Acquisition

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Land Acquisitions	250	250	250	250	250	1,250

PROJECT DESCRIPTION: TMWA has over 120 pump stations in service. Many of these pump stations have 480 volt electrical services and are underground (below grade) in locations that allows for water infiltration. Many underground pump stations will be reaching the end of their service life, which will require replacement of the underground vault. Rather than replace the stations in place TMWA is planning to acquire other sites so these stations can be rebuilt above grade improving access and safety. Acquisition of sites may be time consuming and may not be purchased in a particular year.

SCHEDULE: This is an ongoing project with funding to allow purchase of 3-4 sites per year depending on location and market conditions.

Distribution System Pressure Improvements

Desert Springs Pressure Improvements

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Desert Springs Pressure Improvements	—	400	—	—	—	400

PROJECT DESCRIPTION: Distribution improvements to correct Nevada Administrative Code (NAC) pressure deficiencies in the southwest portion of the Desert Springs South system including a 1,500 foot 8-inch main tie between Shelby and Grove, a main/check valve tie at Taryn and Indian Springs, a main/check valve tie at Erin and Dolores and approximately 24 individual booster pump systems.

SCHEDULE: The improvements are scheduled for construction in FY 2020.

Distribution System Pressure Improvements

Paloma Pressure Regulating Station/Main

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Paloma PRS/Main	950	—	—	—	—	950

PROJECT DESCRIPTION: The Paloma pressure zone is a continuous pumping zone in Lemmon Valley currently served by a booster pump station and 10,000 gallon pneumatic tank. The existing facilities do not provide adequate emergency or fire flow capacity to the 35 customers in the pressure zone. The improvements will consist of a pressure regulating station supplied by a main tie to the high pressure 24-inch Lemmon Drive main.

SCHEDULE: The improvements are currently scheduled for construction in FY 2018 and will continue into FY 2019.

Distribution System Pressure Improvements

Longley Booster Pump Station/Double R Capacity Increase

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Developer Fees	Longley BPS / Double R Capacity Increase	500	—	—	—	—	500

PROJECT DESCRIPTION: Increase pumping capacity at the existing Longley Lane Booster Pump Station and make improvements at the Double R Intertie to provide additional peak supply to the Double Diamond area. The improvements at the Longley pump station will consist of replacing one of the existing pumps/motors with a new higher capacity unit along with electrical and motor starter upgrades. Certain components of the Double R Intertie will also be replaced to provide the additional capacity without excessive friction losses.

SCHEDULE: The improvements are scheduled for FY 2019 but are dependent upon growth. The improvements are necessary when supply through the Double R Intertie must exceed 5,400 gallons per minute.

Distribution System Pressure Improvements

Pump Station Oversizing

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Customer Rates	Pump Station Oversizing	100	100	100	100	100	500

PROJECT DESCRIPTION: The FY 2019 project may consist of cash contributions towards construction of a new above ground booster pump station located near the Comstock Tank to replace the existing Sierra Pump Station which is located in an underground vault and is in need of major rehabilitation. TMWA would normally expend approximately $1 million to replace an existing underground pump station with a new above ground station.

SCHEDULE: The improvements are ongoing, but the schedule is subject to change based on development & operational needs.

Distribution System Pressure Improvements

Pump Station Rebuilds, Rehabilitations

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Pump Station Rebuilds, Rehabilitations	1,450	1,000	1,000	1,000	1,000	5,450

PROJECT DESCRIPTION: TMWA has over 120 pump stations in service. An amount is budgeted annually for rehabilitation of TMWA's older pump stations. Other pump stations may require pump, motor, and electrical upgrades. Budget for future years will allow TMWA to complete up to one above ground replacement project per year if suitable sites can be acquired. Otherwise, normal rehabilitation work will be performed per the priorities established by the study at a lower overall annual cost. In FY 2019, TMWA plans to reconstruct the Sun Valley #1 pump station above ground and potentially make distribution system improvements to improve the hydraulic connectivity in the combined Sun Valley-Sutro-Valley system. The pump station may also be equipped with a standby generator.

SCHEDULE: Construction is scheduled for FY 2019.

Distribution System Pressure Improvements

Truckee River Highlands Pump Station #1

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Developer Fees	Truckee River Highlands Pump Station #1	—	—	1,000	—	—	1,000

PROJECT DESCRIPTION: The project is a new booster pump station located on an existing site in the Truckee River Highlands development between W. Fourth St. and I-80. Completion of this pump station along with the proposed Truckee River Highlands #2 pump station and a main tie to the existing 16-inch main on Robb Drive will ultimately replace capacity in the US 40 booster pump system that will be diverted to the Verdi area. The new pump system will also improve reliability of supply to the Northgate area.

SCHEDULE: Construction is scheduled for FY 2021, but the actual construction date will be determined by growth and demand in the Verdi area.

Distribution System Pressure Improvements

Mt. Rose Well #3 Pump Station Improvements

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Mt. Rose Well #3 Pump Station Improvements	50	250	—	—	—	300

PROJECT DESCRIPTION: The project involves rehab of the building, removal of pipe and valves that will no longer be necessary following completion of the Mt. Rose Well #5 improvements and upgrades to electrical and control systems.

SCHEDULE: Improvements are scheduled for design in FY 2019 and construction in FY 2020.

Distribution System Pressure Improvements

Standby Generator Improvements

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Customer Rates	Standby Generator Improvements	—	150	150	150	150	600

PROJECT DESCRIPTION: A number of TMWA pumps stations have backup generation in case of power failures. TMWA incorporates a contingency for replacement of a generator in case of failure or if the Washoe County Health District requires backup generation at a particular site. No spending will occur unless necessary. This spending does not include backup generation for new pump stations required by and paid for by growth.

SCHEDULE: In FY 2019, a second generator will be installed pump at Chalk Bluff to allow more pumping and treatment processes to continue during a power failure. This project is contained in a stand alone line item as reflected in the FY 2019 budget above.

Distribution System Pressure Improvements

Idlewild BPS Improvements

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Idlewild BPS Improvements	—	—	100	1,200	—	1,300

PROJECT DESCRIPTION: The project will replace existing pumps and motors at the Idlewild BPS Transfer Station to insure adequate and reliable emergency capacity. It is the only booster station that is capable of transferring water from the Highland Reservoir Zone to the Hunter Creek Reservoir Zone. The station was originally constructed as part of the Idlewild WTP, and was never designed specifically for the purpose that it is used for today. Improvements identified in the project include: Properly sizing new pumps and motors for today's application, upgrading antiquated electrical systems and HVAC systems and bringing building up to modern construction codes. Evaluations by TMWA indicated this was the most cost effective alternative to provide a redundant supply for the zone and allowed retirement of the old 24-inch transmission pipeline on Plumb Lane all the way to the Hunter Creek Reservoir.

SCHEDULE: Design is scheduled for FY 2021 and construction should begin in FY 2022. This schedule may be moved based on system needs.

Distribution System Pressure Improvements

Parkridge Circle Conversion

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Customer Rates	Parkridge Circle Conversion	—	—	—	300	—	300

PROJECT DESCRIPTION: Construct a new pressure regulating station on the discharge side of the Lakeridge pump zone and approximately 640 feet of parallel main on Parkridge Circle to correct NAC pressure and fire flow deficiencies.

SCHEDULE: The improvements are scheduled for FY 2022. Construction of either Phase 1 of the Southwest Pump Zone Consolidation project or replacement of the Lakeridge pump station must occur prior to or concurrently with this project.

Distribution System Pressure Improvements

SW Reno Pump Zone Consolidation Phase 1

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Developer Fees	SW Reno Pump Zone Consolidation Phase 1	—	—	—	300	3,500	3,800

PROJECT DESCRIPTION: The project includes a new high head booster pump station located on Lakeridge golf course property adjacent to Plumas; a new 12-inch suction pipeline from Lakeside Dr.; a high pressure transmission pipeline from the pump station across golf course property to Greensboro and McCarran Blvd.; and another 12-inch pipeline tie to the Ridgeview #1 pump zone. The completion of Phase 1 will allow the retirement of four existing below ground pump stations (Lakeside, Lakeridge, Plumas, Ridgeview #1).

SCHEDULE: Design of the improvements is scheduled to begin in FY 2022. Construction is scheduled to start in FY 2023 and continue into FY 2024 ($6.8 million total over 3 years).

Distribution System Pressure Improvements

Spanish Springs #1 Pressure Zone Intertie

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Customer Rates	Spanish Springs #1 Pressure Zone Intertie	—	600	—	—	—	600

PROJECT DESCRIPTION: The project consists of about 1,600 feet of 8-inch main from Rio Alayne Ct to Martini Rd. paralleling the Orr Ditch and a new pressure regulating station. Completion of the facilities will allow the retirement of the existing underground Spanish Springs #1 pump station.

SCHEDULE: The project is scheduled for FY 2020. The relocation of the Satellite Hills pump station must be completed prior to this project.

Distribution System Pressure Improvements

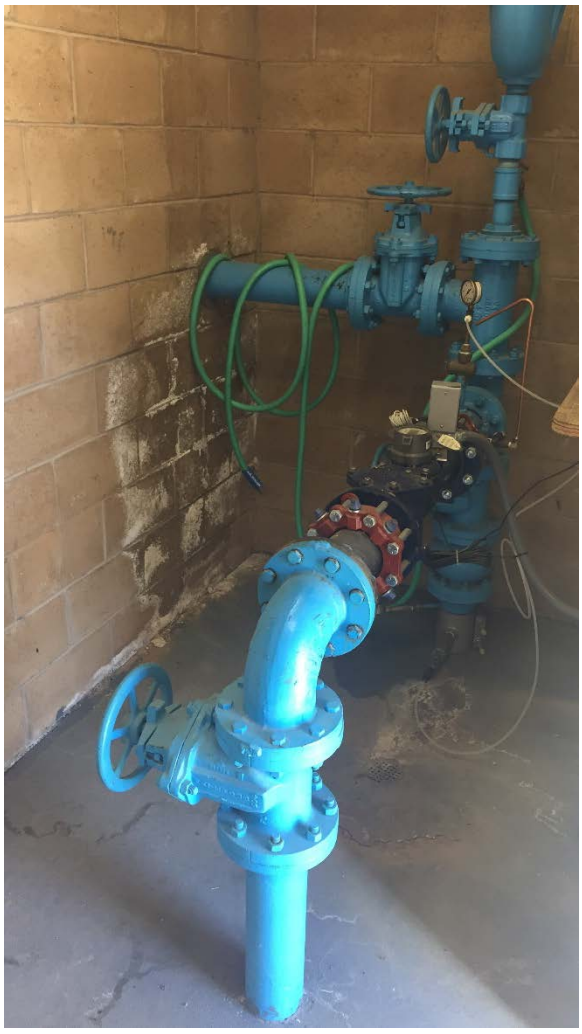
STMGID Tank #4 Booster Pump Station / Transmission Line

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Developer Fees	STMGID Tank #4 BPS/ T-Line	—	2,450	550	—	—	3,000

PROJECT DESCRIPTION: The project includes a new booster pump station located at or near the STMGID Tank 4/5 site and approximately 5800 feet of 12-inch discharge main to the Mt Rose WTP. The facilities will provide a supplemental source to the Mt Rose WTP that will back up plant production on the maximum day during drought and will also provide another source of supply for implementing conjunctive use in the area.

SCHEDULE: Design and construction will begin in FY 2020 and construction will continue into FY 2021. Schedule assumes that the STMGID Conjunctive Use facilities are completed by 2020.



Distribution System Pressure Improvements

Wildwood Pressure Regulating Station/Scada Control

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Developer Fees	Wildwood PRS/Scada Control	—	—	50	—	—	50

PROJECT DESCRIPTION: The project involves retrofitting an existing pressure regulating station to SCADA (remote) control to provide additional transfer capacity into the Mt Rose Tank #2 zone. It will be necessary to obtain electrical service to the existing vault; install a new PLC; and to equip the existing pressure regulating valve with solenoid control to allow the valve to be remotely operated from the Glendale control room.

SCHEDULE: The project is scheduled for FY 2021 but may be delayed or accelerated depending on the timing of growth and the need for the additional tank fill capacity.

Distribution System Pressure Improvements

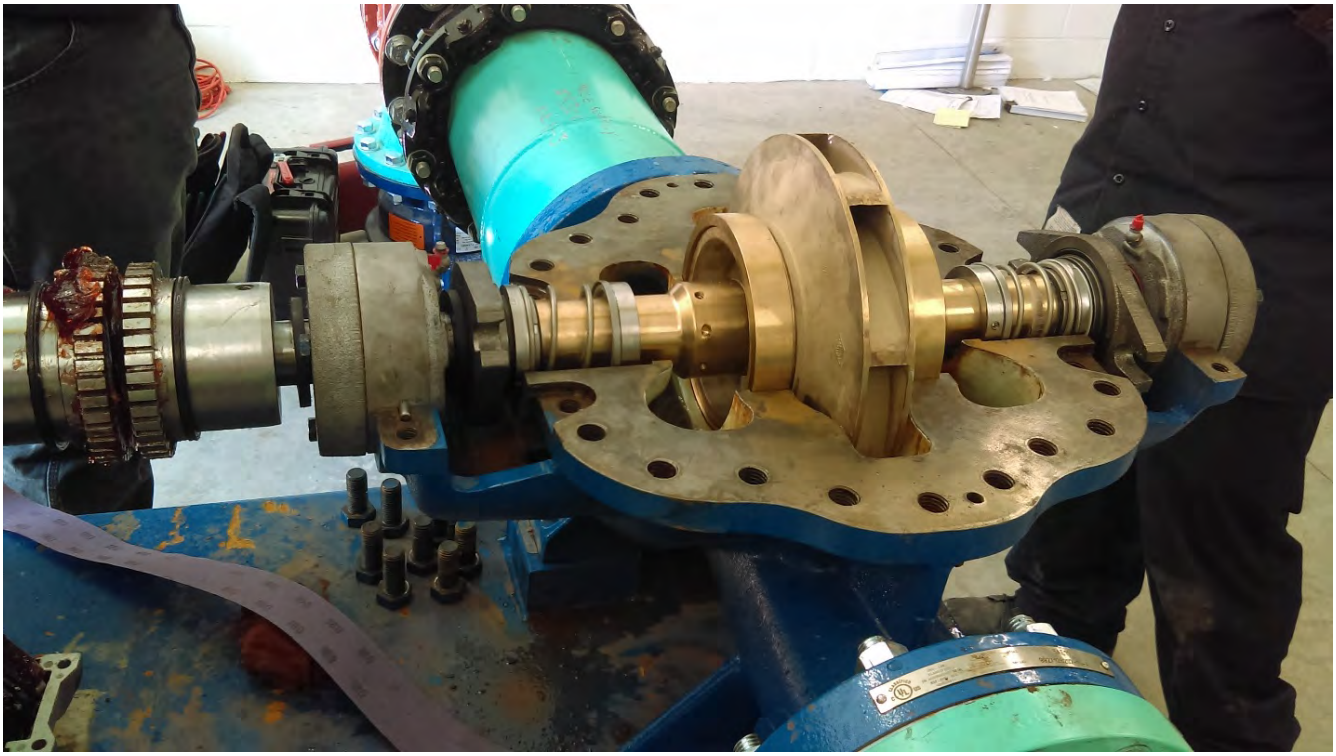
Truckee River Highlands Pump Station #2

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Developer Fees	Truckee River Highlands PS #2	—	—	—	1,000	—	1,000

PROJECT DESCRIPTION: The project consists of a new booster pump station located on a yet to be determined site between the Truckee River Highlands (TRHL) subdivision north of W. Fourth St and the Robb Dr. interchange at I-80. Along with the Truckee River Highlands Pump Station #1, the pump system will provide a third source of supply for the Northwest water system and it will free up some capacity in the existing US40 pump station for deliver to the Verdi area.

SCHEDULE: Construction is scheduled for FY 2022, but the actual construction date will be determined by growth and demand in the Verdi area. The TRHL Pump Station #1 must be completed before the #2 pump station can be placed into service.



Distribution System Pressure Improvements

Old Virginia Regulation Station

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Customer Rates	Old Virginia Regulation Station	—	330	—	—	—	330

PROJECT DESCRIPTION: The project involves construction of a new pressure regulating station (PRS) at Old Virginia and Sutherland; a short main tie between the former STMGID Well #9 site and the distribution system; and about 450 feet of 8-inch main in Sutherland from the PRS to Sage Hill Road. The improvements will convert an area with very high distribution system pressures to the existing Kohl's Regulated Zone. A future Phase 2 would expand the regulated zone by consolidating the Kohl's, Walmart and Old Virginia #2 regulated pressure zones.

SCHEDULE: The project is scheduled for construction in FY 2020.

Distribution System Pressure Improvements

Chalk Bluff Additional Backup Generator

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Chalk Bluff Additional Backup Generator	1,300	—	—	—	—	1,300

PROJECT DESCRIPTION: The project was originally scoped as a dedicated generator for the 6,000 gallons per minute Northgate booster pump located at Chalk Bluff; however, studies revealed that it was more efficient and effective to add a larger standby generator in parallel with the existing generator at Chalk Bluff to allow more treatment processes and pumps (raw water and effluent pumps) to be operated during power outages.

SCHEDULE: Construction is scheduled for FY 2019.

Distribution System Pressure Improvements

Huffaker Booster Pump Station

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Huffaker Booster Pump Station	400	—	—	—	—	400

PROJECT DESCRIPTION: In the floods of 2017, this station sustained damage. The repairs were completed and submitted to FEMA for reimbursement. Upon further inspection it was noted that the vault roof was not structurally sound and needs replacement. Additional safety improvements were identified to bring live electrical equipment above grade so that if future flooding occurs it will be safe to deenergize and work on the station. This pump station is on the list for replacement in the next 10-20 years, however all viable land options are cost prohibitive at this point in time.

SCHEDULE: Construction is scheduled for FY 2019.

Distribution System Pressure Improvements

Twin Lakes Booster Pump Station

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Twin Lakes Booster Pump Station	400	—	—	—	—	400

PROJECT DESCRIPTION: The project cost contains oversizing of a developer funded booster pump station to provide redundant supply to the Summit Ridge Regulated Zone which is currently fed off of the Chalk Bluff / Highland Zone. Supply will be provided from the Hunter Creek zone. The current total is estimated at $800,000 with TMWA providing 50% reimbursement to the developer.

SCHEDULE: Construction is planned to start in FY 2018 and go into FY 2019 with reimbursement planned in FY 2019.

Distribution System Pressure Improvements

Satellite Hills Booster Pump Station

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Satellite Hills Booster Pump Station	400	—	—	—	—	400

PROJECT DESCRIPTION: The Satellite Hills pump station was designed in FY2017. The project went to bid but was canceled due to unfavorable bid conditions. In an effort to stay on top of the booster station rehabilitation projects, the project was re-bid in FY2018. The FY2019 budget includes the final portion of the relocation of the Satellite Hills pump station to an above ground location. Once this project is completed, in FY2020 the "Spanish Springs #1 Pump Zone Intertie" will allow the Spanish Springs #1 pump station to be retired.

SCHEDULE: Construction will be completed in FY 2019.

WATER MAIN DISTRIBUTION SERVICE LINE IMPROVEMENTS
Summary

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Street & Highway Main Replacements	2,500	5,000	5,000	5,000	5,000	22,500
1	Customer Rates	South Virginia / Midtown Main Plumb to Liberty	3,000	—	—	—	—	3,000
1	Customer Rates	California-Marsh 24" Main Replacement	50	1,150	—	—	—	1,200
2	Customer Rates	Booth, Sharon Way, Monroe 24" Main	—	100	3,100	—	—	3,200
2	Developer Fees	South Virginia 24" Main (Kumle to Peckham)	100	900	—	—	—	1,000
2	Customer Rates	NE Sparks Feeder Main Relocation	—	50	950	—	—	1,000
2	Customer Rates	Spanish Springs -Spring Creek South Zone	50	650	—	—	—	700
2	Customer Rates	West Hidden Valley, Surge St., Piping Rock Main	—	1,000	230	500	—	1,730
2	Customer Rates	Spanish Springs Main Replacement	300	1,000	—	—	—	1,300
2	Customer Rates	Bonnie Ln., Snow Flower, Main Extensions	—	—	620	900	—	1,520
2	Customer Rates	South Truckee Meadows Capacity Improvements	400	—	—	—	—	400
2	Customer Rates/Developer Fees	Stead Golf Course Main Replacement	—	—	—	90	2,160	2,250
3	Developer Fees	General Waterline Extensions	100	100	100	100	100	500
2	Developer Fees/Grants	Verdi Main Extension	2,500	—	—	—	—	2,500
1	Developer Fees	Mt. Rose 5 Distribution / Pressure Improvements	150	1,000	—	—	—	1,150
1	Customer Rates	Gordon Avenue Main Replacement	1,580	—	—	—	—	1,580
1	Developer Fees	Boomtown Water System Improvements	1,990	—	—	—	—	1,990
1	Developer Fees	Boomtown to TMWA	130	1,800	—	—	—	1,930
2	Customer Rates	Lemmon Valley Sand Yard	530	—	—	—	—	530
Subtotal Water Main Distribution Improvements			**13,380**	**12,750**	**10,000**	**6,590**	**7,260**	**49,980**

Project Locations: Map of all *Water Main Distribution Service Line Improvements* projects are highlighted in the following map.


NE SPARKS FEEDER MAIN
LEMMON VALLEY SAND YARD
STEAD MAIN
SURGE ST MAIN
STEAD GOLF COURSE MAIN
SPANISH SPRINGS MAIN
SPANISH SPRINGS - SC SOUTH ZONE CONVERSION
4TH & PRATER WAY REPLACEMENT
VERDI MAIN EXTENSION
CALIFORNIA-AVE AREA 24" MAINS
SOUTH VIRGINIA / MIDTOWN MAIN PLUMB TO LIBERTY
BOOMTOWN WATER SYSTEM
HIDDEN VALLEY IMPROVEMENTS
SOUTH VIRGINIA 24" MAIN
SOUTH TRUCKEE MEADOWS CAPACITY IMPROVEMENTS
MT. ROSE 5
BONNIE LN & SNOW FLOWER MAINS
Reno
Sparks
Verdi
Sun Valley
Spanish Springs
TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.
FY 2019-2023 CIP
WATER MAIN DISTRIBUTION - SERVICE LINE IMPROVEMENT SUMMARY
DATE 4/1/2018
MAP BY: JK
REQUESTED BY: LK
SCALE: 1 in = 3 miles
NORTH
NAD 83 NEVADA STATE PLANE WEST FEET
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Water Main-Distribution Service Line Improvements

Street & Highway Main Replacements

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Street & Highway Main Replacements	2,500	5,000	5,000	5,000	5,000	22,500

PROJECT DESCRIPTION: Provision is made each year for water main replacements in conjunction with repaving efforts by the City of Reno, City of Sparks, Washoe County and RTC. In addition to repaving projects, TMWA coordinates water main replacements with sewer main replacements in areas where TMWA also has older water lines. TMWA plans for approximately $5.0 million annually for these efforts, so that TMWA can capitalize on repaving projects planned by other entities. The FY 2019 budget reflects that three large projects totaling $1.8 million have already been identified and are listed separately in the CIP. Anticipated spending in the out years is reflective of historical activity. Levels of spending can vary year to year and are difficult to predict. These efforts by far are the largest expenditure in the water system rehabilitation category.

Water Main-Distribution Service Line Improvements

South Virginia/Midtown Main Plumb to Liberty

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	South Virginia / Midtown Main Plumb to Liberty	3,000	—	—	—	—	3,000

PROJECT DESCRIPTION: Replacement of antiquated water main, valves, service connections and appurtenances in South Virginia Street from Plumb Lane to Liberty Street.

SCHEDULE: Planning and design will conclude in fall of FY 2018, and construction to begin in spring FY 2018 and completed in FY 2019.

Water Main-Distribution Service Line Improvements

California-Marsh 24" Main Replacement

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	California-Marsh 24" Main Replacement	50	1,150	—	—	—	1,200

PROJECT DESCRIPTION: When TMWA evaluated the alternatives to replacing the 24-inch main on Plumb Lane (installed in 1949) when the west end of Plumb Lane was widened in 2012-2013, it was decided to abandon that section of the pipeline, ultimately saving about $4 million in replacement costs. The alternate plan for providing water service to the Hunter Creek gravity zone should a main break occur on the existing 42-inch Mayberry main, or if transmission capacity from Chalk Bluff was disrupted requires replacement of existing 24-inch mains on Booth, Sharon and Monroe (installed in 1948) to allow transfer of adequate capacity through the Idlewild transfer facilities. The construction of the California-Marsh Ave Intertie will be installed in FY 2019-2020 so that a significant amount of pipe that is located under private property between California and Marsh can be retired.

SCHEDULE: The pipeline will be designed in FY 2019 and construction in fiscal year 2020.

Water Main-Distribution Service Line Improvements

Booth, Sharon Way, Monroe 24" Main Replacements

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Booth, Sharon Way, Monroe 24" Main Replacements	—	100	3,100	—	—	3,200

PROJECT DESCRIPTION: This project is a continuation of the previously described California-Marsh Intertie to provide reliable emergency capacity to the Hunter Creek gravity zone. The project consists of about 6,900 feet of 24-inch main on Booth, Sharon to Plumb Lane and on Monroe between Sharon and Nixon to supply the Nixon-Monroe regulator.

SCHEDULE: Design is scheduled for FY 2020 and construction is scheduled for FY 2021. TMWA will attempt to coordinate construction with other municipal infrastructure projects if possible, but the existing pipes will be 73-years old by the proposed construction date.

Water Main-Distribution Service Line Improvements

South Virginia 24" Main (Kumle to Peckham)

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Developer Fees	South Virginia 24" Main (Kumle-Peckham)	100	900	—	—	—	1,000

PROJECT DESCRIPTION: The project consists of construction of about 1,700 feet of new 24-inch water main on South Virginia Street between Kumle Lane and Peckham Lane. The project is required to expand transmission capacity to the South Truckee Meadows area.

SCHEDULE: Design is planned in FY 2019 and construction is planned in FY 2020 subject to adjustment for actual growth or coordination with road improvements.

Water Main-Distribution Service Line Improvements

North-East Sparks Tank Feeder Main Relocation

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	NE Sparks Tank Feeder Main Relocation	—	50	950	—	—	1,000

PROJECT DESCRIPTION: The North-East Sparks Tank Feeder Main was constructed in 1988 within private easements several years prior to the construction of South Los Altos Parkway. The final alignment selected for South Los Altos Parkway does not follow the alignment of the tank feeder main. As a result, the tank feeder main now runs through developed properties next to buildings, under parking areas and at considerable depth in some locations. This situation presents potential problems for access to the pipe for maintenance and repair of the critical pipeline. This project will relocate approximately 3000 feet of the 18-inch tank feeder main out into the public right-of-way in South Los Altos Parkway.

SCHEDULE: Design is scheduled for FY 2020 and the improvements will be constructed in FY 2021.

Water Main-Distribution Service Line Improvements

Spanish Springs - Spring Creek South Zone Conversion

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Spanish Springs - Spring Creek South Zone Conversion	50	650	—	—	—	700

PROJECT DESCRIPTION: The project will convert the southern portion of the Spring Creek system over to the Pyramid pump zone and avoid operational problems of adequately replenishing storage in the Spring Creek tanks. The project will require construction of main ties on Pah Rah Drive, Panama Drive and Pyramid Hwy, removal/demolition of the Spring Creek tanks, modification of the Canoe Hill intertie, retirement of the Blue Skies flow control valve and a main tie connection south of the Lazy 5 intertie.

SCHEDULE: Design is scheduled for FY 2019 and the improvements are scheduled for construction in FY 2020.

Water Main-Distribution Service Line Improvements

West Hidden Valley, Surge St., Piping Rock Main Replacements

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	West Hidden Valley, Surge St., Piping Rock Main Replacements	—	1,000	230	500	—	1,730

PROJECT DESCRIPTION: The project consists of priority main replacements in former County systems including replacing 12" steel pipe on Piping Rock and West Hidden Valley Drive in the Hidden Valley system with extensive history of leaks. Also, replacement of existing 6" steel pipe on Surge Street in the Lemmon Valley system is planned.

SCHEDULE: Replacement of the West Hidden Valley Drive main is scheduled for FY 2020, the Surge Street main is scheduled for FY 2021 and the Piping Rock main replacement is scheduled for FY 2022.

Water Main-Distribution Service Line Improvements

Spanish Springs Main Replacement

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Spanish Springs Main Replacement	300	1,000	—	—	—	1,300

PROJECT DESCRIPTION: The project involves replacement of approximately 6,700 feet of existing Schedule 40 PVC pipe on Cordoba Blvd, Virgil Dr., Virgil Ct, La Posada, Benedict Dr., Valparaiso Ct and Cortez Ct in Spanish Springs. The actual extent of the Schedule 40 pipe has not been determined, but several of these substandard pipes have failed in the last several years in the areas noted.

SCHEDULE: Construction is currently scheduled for FY 2019-2020.

Water Main-Distribution Service Line Improvements

Bonnie Ln., Snow Flower, Main Extensions

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Developer Fees	Bonnie Ln., Snow Flower, Main Extensions	—	—	620	900	—	1,520

PROJECT DESCRIPTION: The project involves main extensions in the Mt. Rose system to provide looping of the distribution system and eliminate these two long dead end mains in accordance with the NAC 445A water regulations.

SCHEDULE: Unless required and constructed sooner by specific developments, the projects are scheduled for construction in FY 2021 and FY 2022.

Water Main-Distribution Service Line Improvements

South Truckee Meadows Capacity Improvements

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Developer Fees	South Truckee Meadows Capacity Improvements	400	—	—	—	—	400

PROJECT DESCRIPTION: The project consists of a 500 foot long extension of a 12-inch main on Offenhauser and a new intertie to the Area 11 distribution system on Gateway. Also included is an 8-inch main tie between Portman and Bluestone. The improvements will provide an incremental increase in capacity to the South Truckee Meadows area where growth is anticipated to occur.

SCHEDULE: The improvements are scheduled for construction in FY 2019.

Water Main-Distribution Service Line Improvements

Stead Golf Course Main Replacement

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Developer Fees/Customer Rates	Stead Golf Course Main Replacement	—	—	—	90	2,160	2,250

PROJECT DESCRIPTION: The project consists of replacement of about 10,000 feet of 14-inch steel pipe installed around 1945. The pipe provides an important hydraulic tie between the Stead tanks and the northeast extremities of the Stead distribution system. The pipeline may also be useful to alleviate an existing bottleneck between the Stead wells and the distribution system.

SCHEDULE: The project is scheduled for construction in 2023.

Water Main-Distribution Service Line Improvements

General Waterline Extensions

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Customer Rates	General Waterline Extensions	100	100	100	100	100	500

PROJECT DESCRIPTION: A nominal amount of funding is budgeted each year to accommodate water main extensions to correct pressure, dead ends and fire flow deficiencies as they are identified. Funds will not be expended unless determined necessary.

SCHEDULE: This is an ongoing annual project budget. Projects will not be constructed unless determined necessary to correct deficiencies identified above.

Water Main-Distribution Service Line Improvements

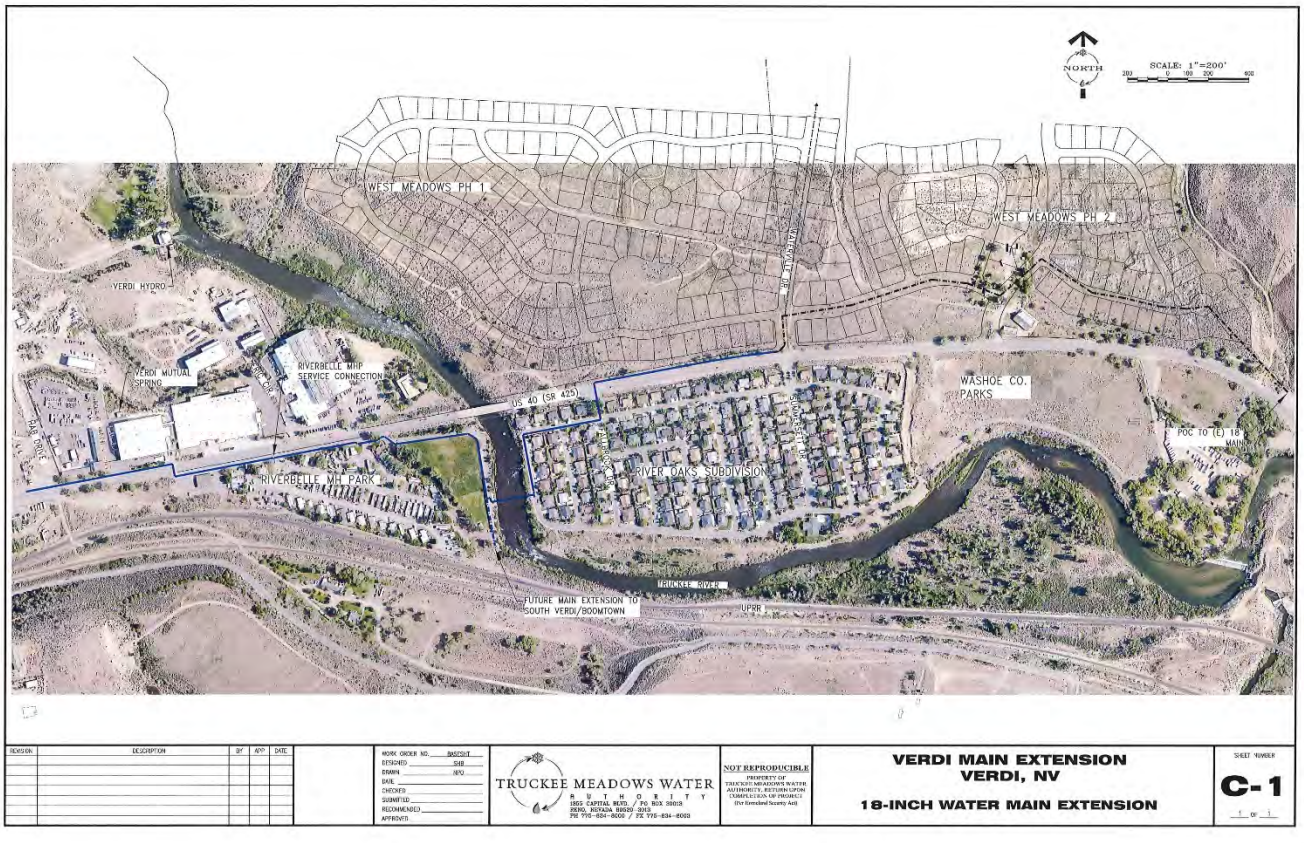
Verdi Main Extension

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Developer Fees/Grants	Verdi Main Extension	2,500	—	—	—	—	2,500

PROJECT DESCRIPTION: The project involves construction of about 4,000 feet of 18-inch transmission main from the West Meadows subdivision to the Riverbelle MHP and further west on US 40 to the Verdi Mutual Water Company.

SCHEDULE: The project is scheduled for construction in FY2019 subject to acquisition of the necessary private easements.



Water Main-Distribution Service Line Improvements

Mount Rose Well 5 Distribution/Pressure Improvements

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Developer Fees	Mount Rose Well 5 Distribution/Pressure Improvements	150	1,000	—	—	—	1,150

PROJECT DESCRIPTION: Improvements are intended as off-peak conjunctive use supply. The proposed improvements are intended to be consistent with future improvements to improve peaking supply to the Mt. Rose system and will reduce pressure in the high pressure pipeline downhill of Mt. Rose Well 5. It will also increase the off-peak pumping capacity of surface water into the Mt. Rose 1 and 4 tanks to 650 gpm from 400 gpm. Future phases are intended to increase system redundancy and further reduce high pressures in the system.

SCHEDULE: The improvements will be designed in FY 2019 and construction is scheduled for FY 2020.

Water Main-Distribution Service Line Improvements

Gordon Avenue Main Replacement

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Gordon Avenue Main Replacement	1,580	—	—	—	—	1,580

PROJECT DESCRIPTION: The project scope involves replacing approximately 5,300' of older (1912-1940) cast iron and steel water main ahead of the City of Reno's 2019 Neighborhood Street Rehabilitation Project.

SCHEDULE: Design was completed in FY 2018, construction is scheduled for FY 2019.

Water Main-Distribution Service Line Improvements

Boomtown Water System Improvements

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Developer Fees	Boomtown Water System Improvements	1,990	—	—	—	—	1,990

PROJECT DESCRIPTION: If TMWA successfully acquires the Boomtown water system assets, the system will initially be operated as a stand-alone system that will be 100 percent dependent upon local groundwater resources. To insure reliable water service to existing Boomtown customers, several high priority improvements are necessary to bring the system into compliance with NAC 445A regulations and TMWA standards and to allow efficient operation and maintenance of the water facilities. The improvements consist of upgrades to two existing wells (pump to waste facilities, SCADA, new pumps, new motors, new starters and arc flash analyses), tank site improvements (grading, drainage, overflow, fencing, paving, sampling vault, SCADA) and tank access improvements (improved gravel road, bridge over Steamboat Ditch).

SCHEDULE: Assuming escrow closes in June 2018, the improvements will be designed and constructed in FY 2019.

Water Main-Distribution Service Line Improvements

Boomtown to TMWA Connection

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Developer Fees	Boomtown to TMWA Connection	130	1,800	—	—	—	1,930

PROJECT DESCRIPTION: If TMWA successfully acquires the Boomtown water system assets, the system will initially be operated as a stand-alone system that will be 100 percent dependent upon local groundwater resources. Significant growth in the Boomtown area will require increased pumping of Boomtown wells. The additional groundwater pumping may result in deficiencies in water quality and quantity. To insure reliable water service to Boomtown and to protect the viability of the groundwater resource, TMWA plans to connect the Boomtown system to the TMWA system. The connection will provide an emergency backup source of supply and most importantly, an off-peak source of supply that will allow TMWA to implement conjunctive use management of surface water and groundwater resources within the Boomtown system. Assuming the Verdi Main has been extended to the Riverbelle mobile home park, the Boomtown connection consists of about 1,800 feet of 16" main, including a jack and bore crossing of the railroad tracks and a new booster pump station.

SCHEDULE: Assuming the Verdi Main is extended to Riverbelle in FY 2019 and that a suitable property can be acquired for the pump station, the construction of the facilities would occur in FY 2020.

Water Main-Distribution Service Line Improvements

Lemmon Valley Sand Yard

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Lemmon Valley Sand Yard	530	—	—	—	—	530

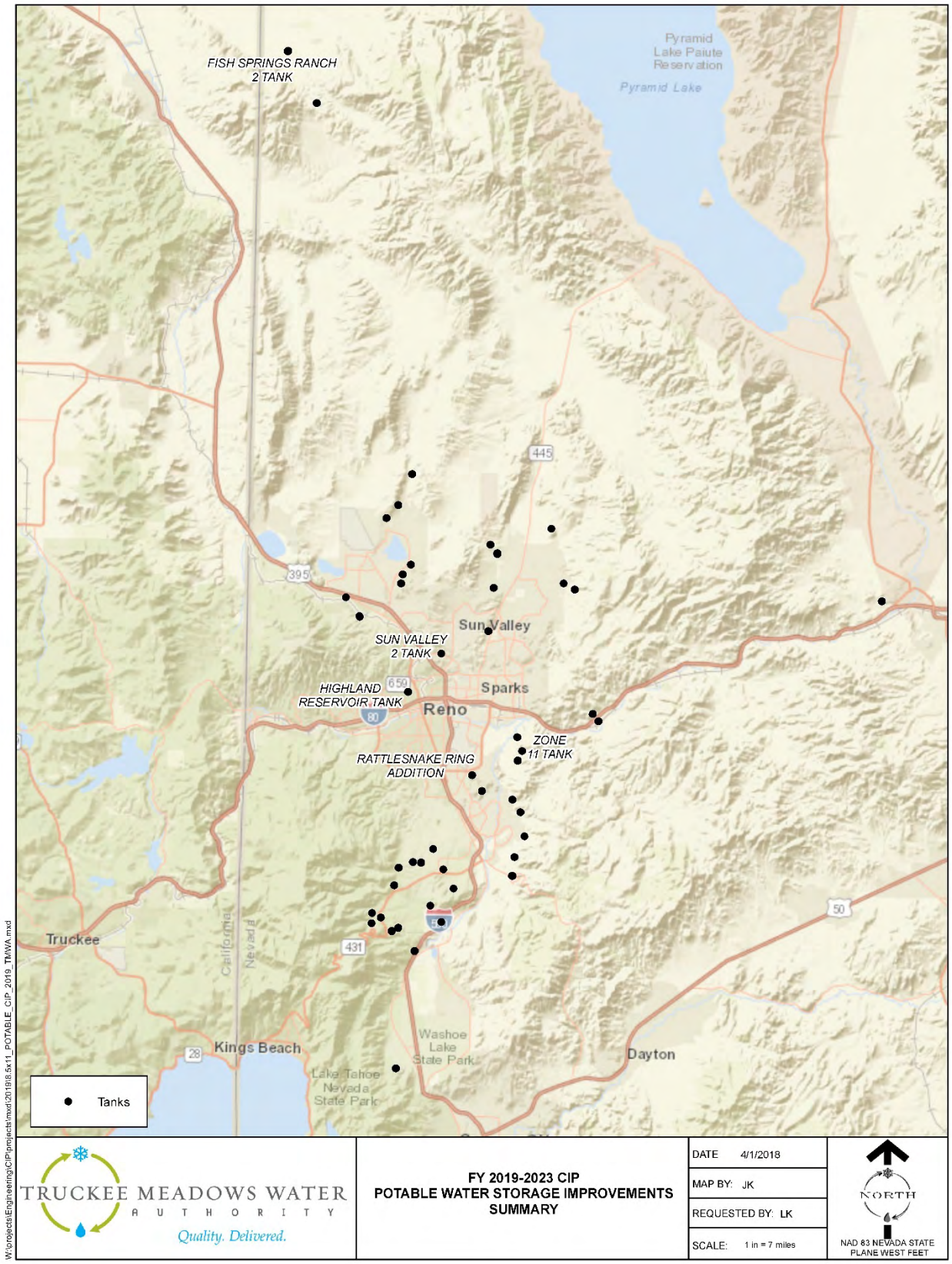
PROJECT DESCRIPTION: With continued growth in the area including the acquisition of the Lemmon Valley water system formerly owned by Washoe County, it is very inefficient for TMWA crews to respond to a main break or other major issue in the North Valleys and have to either return to the Truckee Meadows or call out a second crew to transport materials to the site to complete the repairs. To increase the efficiency of maintenance operations in the North Valleys, TMWA plans to improve the balance of the 1.25 acre lot surrounding Lemmon Valley Well #6 (near the intersection of Lemmon Drive and Arkansas Drive) to store the common materials such as sand and base rock normally used in water system maintenance. The improvements consist of import, grading, fencing, drainage, material storage bins, lighting and landscaping. The project has been designed and the building permit has been acquired.

SCHEDULE: Assuming flood water recede sufficiently, the project would be constructed in FY 2019.

POTABLE WATER STORAGE IMPROVEMENTS
Summary

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates / Developer Fees	Sun Valley #2 Tank	50	100	1,750	—	—	1,900
2	Developer Fees	Rattlesnake Ring Addition	—	800	—	—	—	800
3	Developer Fees	Fish Springs Ranch #2 Tank	—	—	—	100	2,000	2,100
1	Customer Rates	Storage Tank Recoats; Access; Drainage Improvements	900	900	900	900	900	4,500
3	Customer Rates / Developer Fees	Highland Reservoir Tank	—	—	100	5,700	—	5,800
1	Developer Fees	STMGID Tank East (Zone 11 Tank)	50	3,075	—	—	—	3,125
Subtotal Storage Improvements			**1,000**	**4,875**	**2,750**	**6,700**	**2,900**	**18,225**

Project Locations: Map of all *Potable Water Storage Improvements* projects are highlighted in the following map.


FISH SPRINGS RANCH
2 TANK
Pyramid
Lake Paiute
Reservation
Pyramid Lake
445
395
Sun Valley
SUN VALLEY
2 TANK
HIGHLAND
RESERVOIR TANK
659
80
Sparks
Reno
ZONE
11 TANK
RATTLESNAKE RING
ADDITION
50
431
Truckee
California
Nevada
Kings Beach
28
Washoe
Lake
State Park
Dayton
Lake Tahoe
Nevada
State Park
Tanks
TRUCKEE MEADOWS WATER
AUTHORITY
Quality. Delivered.
FY 2019-2023 CIP
POTABLE WATER STORAGE IMPROVEMENTS
SUMMARY
DATE 4/1/2018
MAP BY: JK
REQUESTED BY: LK
SCALE: 1 in = 7 miles
NORTH
NAD 83 NEVADA STATE
PLANE WEST FEET
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Potable Water Storage Improvements

Sun Valley #2 Tank

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Developer Fees/ Customer Rates	Sun Valley #2 Tank	50	100	1,750	—	—	1,900

PROJECT DESCRIPTION: TMWA continues to analyze opportunities to consolidate pump zones to eliminate future pump station replacement costs and to increase reliability to continuous pumping zones. Several years ago, TMWA consolidated the Sutro #1 pump zone with the Sun Valley/Sullivan pump zone, placing additional capacity requirements on the Sun Valley zone. This tank is needed to provide the required emergency storage capacity to the expanded zone and will also provide the capacity for the Sun Valley zone to reach buildout.

SCHEDULE: The project is scheduled for construction in FY 2020-2021 subject to successful acquisition of a suitable tank site which is elevation sensitive.

Potable Water Storage Improvements

Rattlesnake Ring Addition

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Developer Fees	Rattlesnake Ring Addition	—	800	—	—	—	800

PROJECT DESCRIPTION: Additional storage is necessary to meet the total system capacity requirements of NAC 445A regulations under buildout conditions. The bulk of the additional storage is planned for the major gravity zones since distribution facilities make the storage available to other parts of the system. The existing 2.5 MG Rattlesnake Tank is the only major storage facility on the south end of the gravity system. The addition of another 8-foot high ring to the tank would increase storage by about 1.0 MG and would also increase the available head to allow the tank to operate under a wider range of hydraulic conditions.

SCHEDULE: The project is currently scheduled for construction in FY 2020.

Potable Water Storage Improvements

Fish Springs Ranch #2 Tank

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Developer Fees	Fish Springs Ranch #2 Tank	—	—	—	100	2,000	2,100

PROJECT DESCRIPTION: Ultimately, a second storage tank is needed at the terminus of the Fish Springs pipeline at the north end of Lemmon Valley to equalize demand and supply during peak use periods.

SCHEDULE: The project is currently scheduled for design in FY 2022 with construction to follow in FY 2023. The actual schedule will be dependent upon the rate of growth in the North Valleys.

Potable Water Storage Improvements

Storage Tank Recoats; Access; Drainage Improvements

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Storage Tank Recoats; Access; Drainage Improvements	900	900	900	900	900	4,500

PROJECT DESCRIPTION: TMWA has a very proactive tank reservoir maintenance program whereby 20% of all tanks are inspected annually on a rotating basis. Based upon these inspection observations, a determination is made as to whether interior tank coatings (for steel tanks) or other fix and finish work is required. TMWA has 93 storage tanks in service, with combined storage of approximately 121 million gallons. Interior coating/liners are generally replaced every 15 years resulting in the need to recoat several tanks per year to maintain the rehabilitation cycle. The budget and plan also includes exterior painting of steel tanks and any replacement of any interior components that may be corroded.

SCHEDULE: This is an ongoing annual project. It is anticipated that several tanks will need to be recoated approximately every year.

Potable Water Storage Improvements

Highland Reservoir Tank

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Customer Rates & Developer Fees	Highland Reservoir Tank	—	—	100	5,700	—	5,800

PROJECT DESCRIPTION: TMWA has two large finished water storage reservoirs, one at Hunter Creek and one at the Highland site just west of the intersection of Washington and College Drive. These reservoirs are lined and covered with flexible polyethylene or hypalon membranes. As such, they are more maintenance intensive and susceptible to damage than a conventional steel or concrete tank. To provide reliability during repairs or during extended outages for inspection and cleaning, it is proposed to construct a conventional 4 million gallon water storage tank at the reservoir site. Due to topography and proximity to residential areas the tank may need to be a buried pre-stressed concrete tank, which is reflected in the project budget. The tank will also provide additional storage capacity to meet future system requirements as required by the NAC regulations.

SCHEDULE: The tank is scheduled for construction in FY 2021-2022.

Potable Water Storage Improvements

STMGID Tank East (Zone 11 Tank)

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	STMGID Tank East (Zone 11 Tank)	50	3,075	—	—	—	3,125

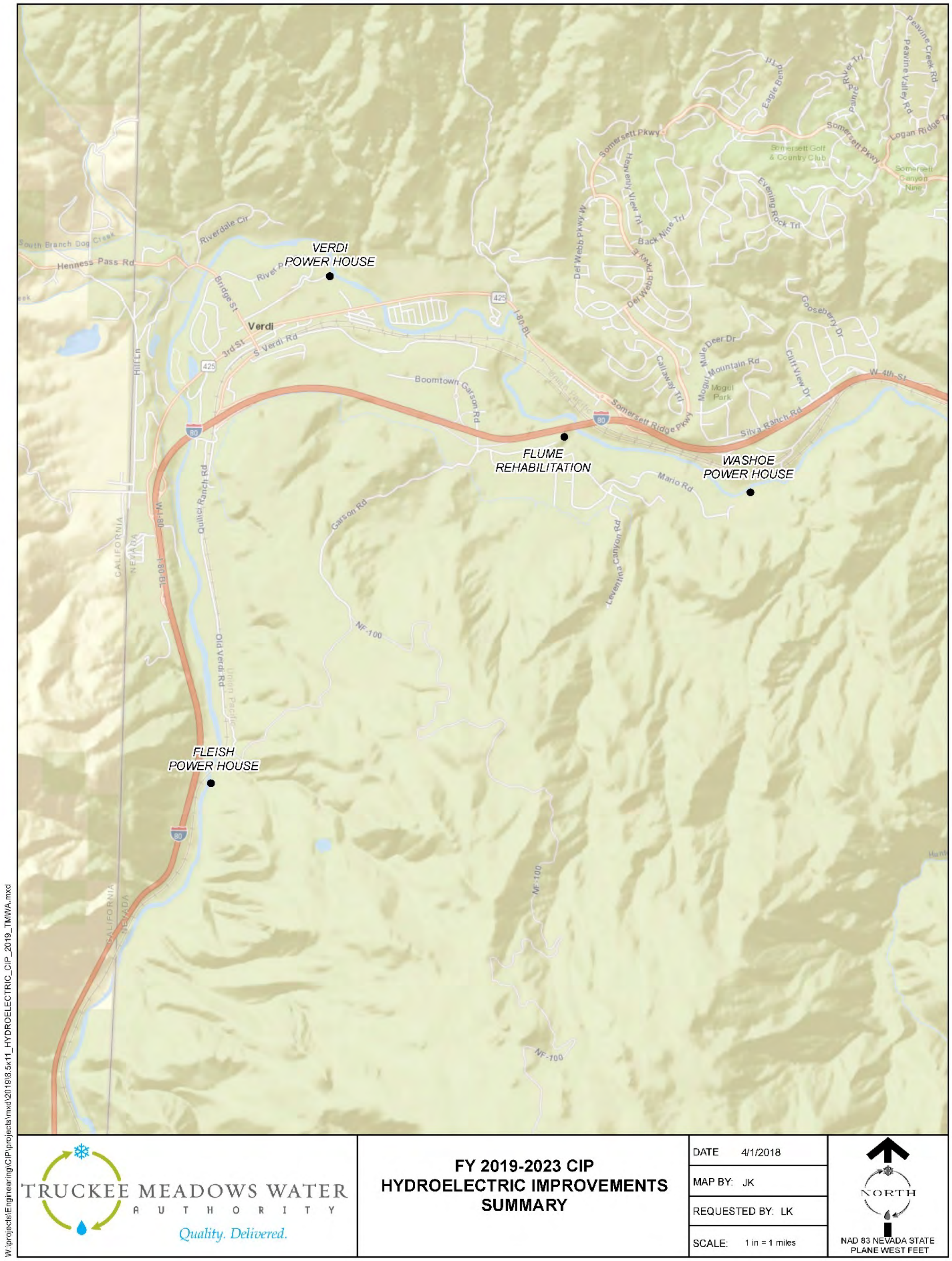
PROJECT DESCRIPTION: The project involves construction of a 2.5 MG above ground welded steel storage tank in Area 11 of the South Truckee Meadows formerly owned by STMGID. Due to growth in the area over the last several years, additional storage is required to meet the requirements of the NAC 445A regulations and TMWA standards.

SCHEDULE: The project is currently scheduled for design in FY 2019 and construction in FY 2020, subject to acquisition of the Special Use Permit and Bureau of Land Management (BLM) permitting.

HYDROELECTRIC IMPROVEMENTS
Summary

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Forebay, Diversion, and Canal Improvements	55	50	50	50	50	255
1	Customer Rates	Flume Rehabilitation	600	—	350	350	—	1,300
3	Customer Rates	Hydro Plant Generator Rewinds	650	650	650	—	—	1,950
1	Customer Rates	Washoe Flume Reconstruction	—	2,200	—	—	—	2,200
1	Customer Rates	Fleish Overflow Reconstruction Design	1,400	—	—	—	—	1,400
Subtotal Hydroelectric Improvements			**2,705**	**2,900**	**1,050**	**400**	**50**	**7,105**

Project Locations: Map of all *Hydroelectric Improvements* projects are highlighted in the following map.


VERDI
POWER HOUSE
FLUME
REHABILITATION
WASHOE
POWER HOUSE
FLEISH
POWER HOUSE
Verdi
Somersett Pkwy
Somersett Ridge Pkwy
Boomtown Garson Rd
Mario Rd
W 4th St
Silva Ranch Rd
Mogul Park
Quilici Ranch Rd
Old Verdi Rd
Garson Rd
NF-100
Hennes Pass Rd
Riverdale Cir
Bridge St
3rd St
S Verdi Rd
Hill Ln
Del Webb Pkwy W
Back Nine Trl
Mule Deer Dr
Mountain Rd
Cliff View Dr
Gooseberry Dr
Evening Rock Trl
Eagle Bend Trl
Somersett Golf & Country Club
Logan Ridge Trl
Peavine Valley Rd
Peavine Creek Rd
Leventina Canyon Rd
Callaway Trl
CALIFORNIA
NEVADA
W:\projects\Engineering\CIP\projects\mxd\2019\8.5x11_HYDROELECTRIC_CIP_2019_TMWA.mxd
TRUCKEE MEADOWS WATER
AUTHORITY
Quality. Delivered.
FY 2019-2023 CIP
HYDROELECTRIC IMPROVEMENTS
SUMMARY
DATE 4/1/2018
MAP BY: JK
REQUESTED BY: LK
SCALE: 1 in = 1 miles
NORTH
NAD 83 NEVADA STATE
PLANE WEST FEET

Hydroelectric Improvements

Forebay, Diversion, and Canal Improvements

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Forebay, Diversion, and Canal Improvements	55	50	50	50	50	255

PROJECT DESCRIPTION: Provision is made each year for hydroelectric flume reconstruction to mitigate damage from unexpected rock falls, landslides and/or flooding events. Diversion structures including gates, canals, flumes, forebays and all hydro-plant water conveyance structures are monitored and evaluated for reliable and safe operation.

SCHEDULE: Ongoing annual evaluation and prioritization of forebay and canal conditions in the early spring (winter weather can change priorities) to identify projects for fall construction when historically, river flows are lower.

Hydroelectric Improvements

Flume Rehabilitation

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Flume Rehabilitation	600	—	350	350	—	1,300

PROJECT DESCRIPTION: TMWA's three operating hydroelectric facilities have nearly 12,150 feet of flume. The average service life for flume structures is 35 years using treated timbers, at an average replacement cost of approximately $1,000 per lineal foot of flume. The present cost to replace a linear foot of flume depends on the location and height of the flume structure.

SCHEDULE: Ongoing annual evaluation and prioritization of flume condition in the early spring (winter weather can change priorities) to identify projects for fall construction when historically, river flows are lower.

Hydroelectric Improvements

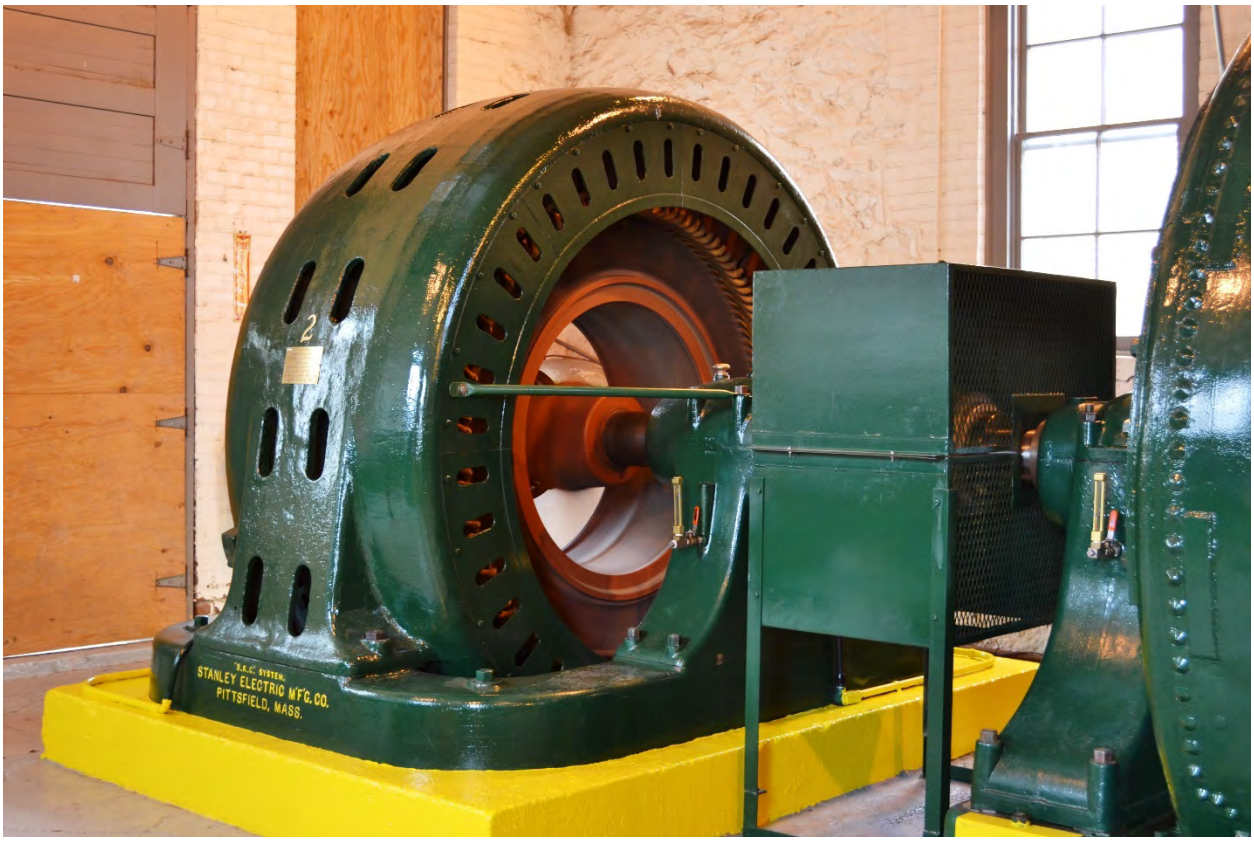
Hydro Plant Generator Rewinds

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Customer Rates	Hydro Plant Generator Rewinds	650	650	650	—	—	1,950

PROJECT DESCRIPTION: The Fleish generator was last rewound in 1958 and is still operational. The typical in-service life of this type of generator is about 50 years. The two Washoe generators were damaged in a flood in 2006. The units were cleaned and repaired but suffered damage to the core laminations that has shortened the operating life. Work would consist of rewinding the plant generators with spending in fiscal years 2019, 2020 & 2021.

SCHEDULE: Washoe Hydro Plant generators FY 2019 & FY 2020, Fleish Hydro Plant generator FY 2021. This schedule may be adjusted depending on river flows and generator condition evaluation.



Hydroelectric Improvements

Washoe Flume Reconstruction

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Washoe Flume Reconstruction	—	2,200	—	—	—	2,200

PROJECT DESCRIPTION: TMWA's three operating hydroelectric facilities have nearly 12,150 feet of flume. The average service life for flume structures is 35 years using treated timbers, at an average replacement cost of approximately $1,000 per lineal foot of flume. The present cost to replace a linear foot of flume depends on the location and height of the flume structure. Due to limited access of this project a larger section (84 box sections) of flume is scheduled to be replaced. This project requires us to use the flume alignment as access. We will demolish the old flume and build ourselves backwards out of the alignment. This section of flume is more than 30 years old.

SCHEDULE: This projected is projected for the fall of 2019 when river flows are dropping off for the winter months, this will minimize the loss of generation**.**

Hydroelectric Improvements

Fleish Overflow Reconstruction

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Fleish Overflow Reconstruction	1,400	—	—	—	—	1,400

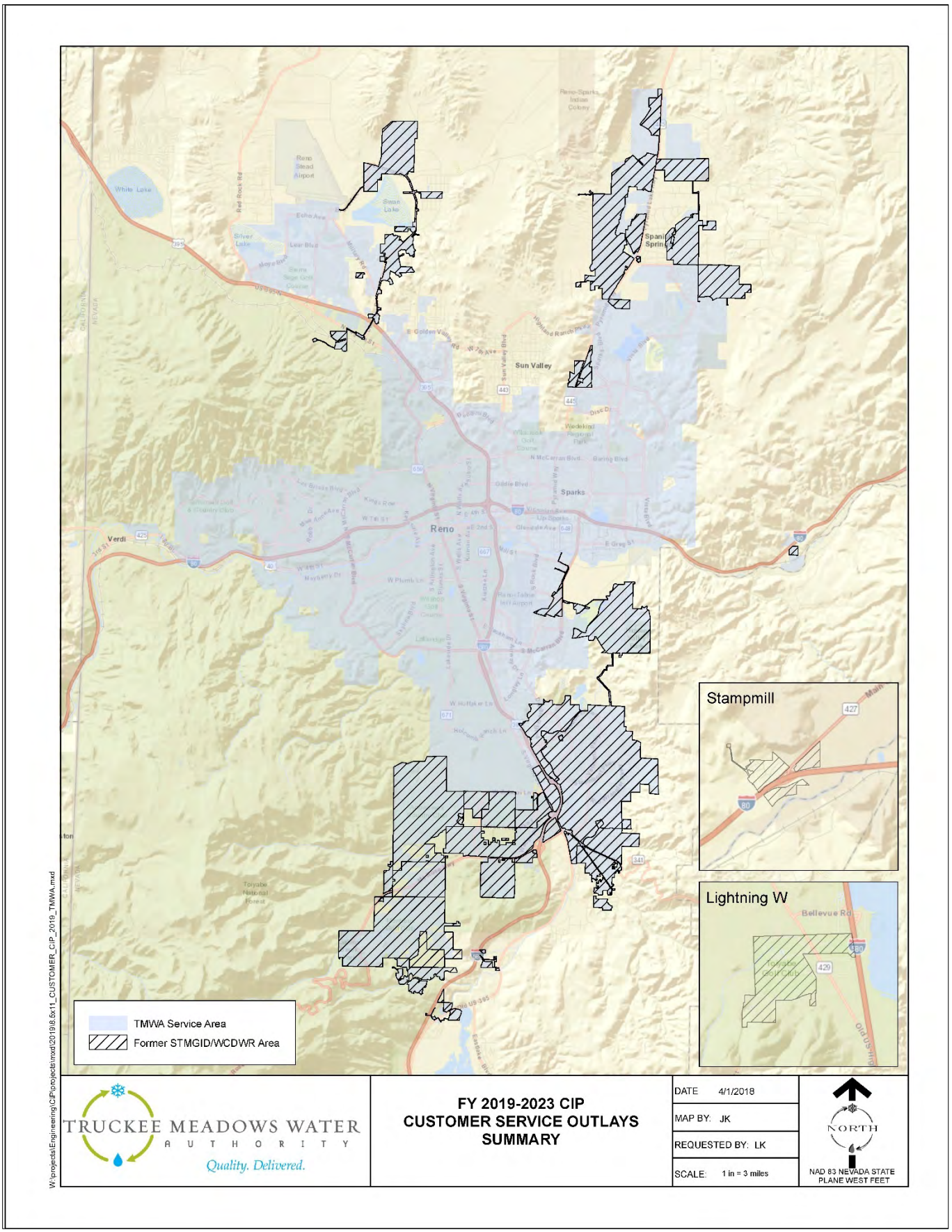
PROJECT DESCRIPTION: This spill structure is utilized in the operation of the Fleish Hydro-electric plant and carries excess water back to the Truckee river during normal plant operations. When the plant trips offline then the entire canal capacity spills from this structure at about 325 cubic feet per second(CFS). This structure was last rebuilt sometime in the 1970s and the footings have become undermined from weather and runoff. It is located on a steep slope with limited access and it currently has unsupported wooden footings that will require concrete footings with rock anchors when reconstructed.

SCHEDULE: This projected is projected for the fall of 2018 when river flows are dropping off for the winter months, this will minimize the loss of generation**.**

CUSTOMER SERVICE OUTLAYS
Summary

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Customer Rates	Meter Reading Equipment	—	60	—	60	—	120
2	Developer Fees	New Business Meters	350	175	100	100	—	725
1	Customer Rates	Mueller Pit Replacements former Washoe County	125	125	125	125	125	625
1	Customer Rates	Meter -ERT-RTR Replacements	1,250	1,250	1,250	1,250	1,250	6,250
2	Customer Rates	Galvanized/Poly Service Line Replacements	400	400	400	—	—	1,200
1	Customer Rates	AMI Automated Meter Infrastructure	750	750	750	750	—	3,000
Subtotal Customer Service			**2,875**	**2,760**	**2,625**	**2,285**	**1,375**	**11,920**

Project Locations: Map of all *Customer Service Outlays* projects are highlighted in the following map.


Stampmill
Lightning W
TMWA Service Area
Former STMGID/WCDWR Area
TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.
FY 2019-2023 CIP
CUSTOMER SERVICE OUTLAYS
SUMMARY
DATE 4/1/2018
MAP BY: JK
REQUESTED BY: LK
SCALE: 1 in = 3 miles
NORTH
NAD 83 NEVADA STATE PLANE WEST FEET
W:\projects\Engineering\CIP\projects\mxd\2019\8.5x11_CUSTOMER_CIP_2019_TMWA.mxd

Customer Service Outlays

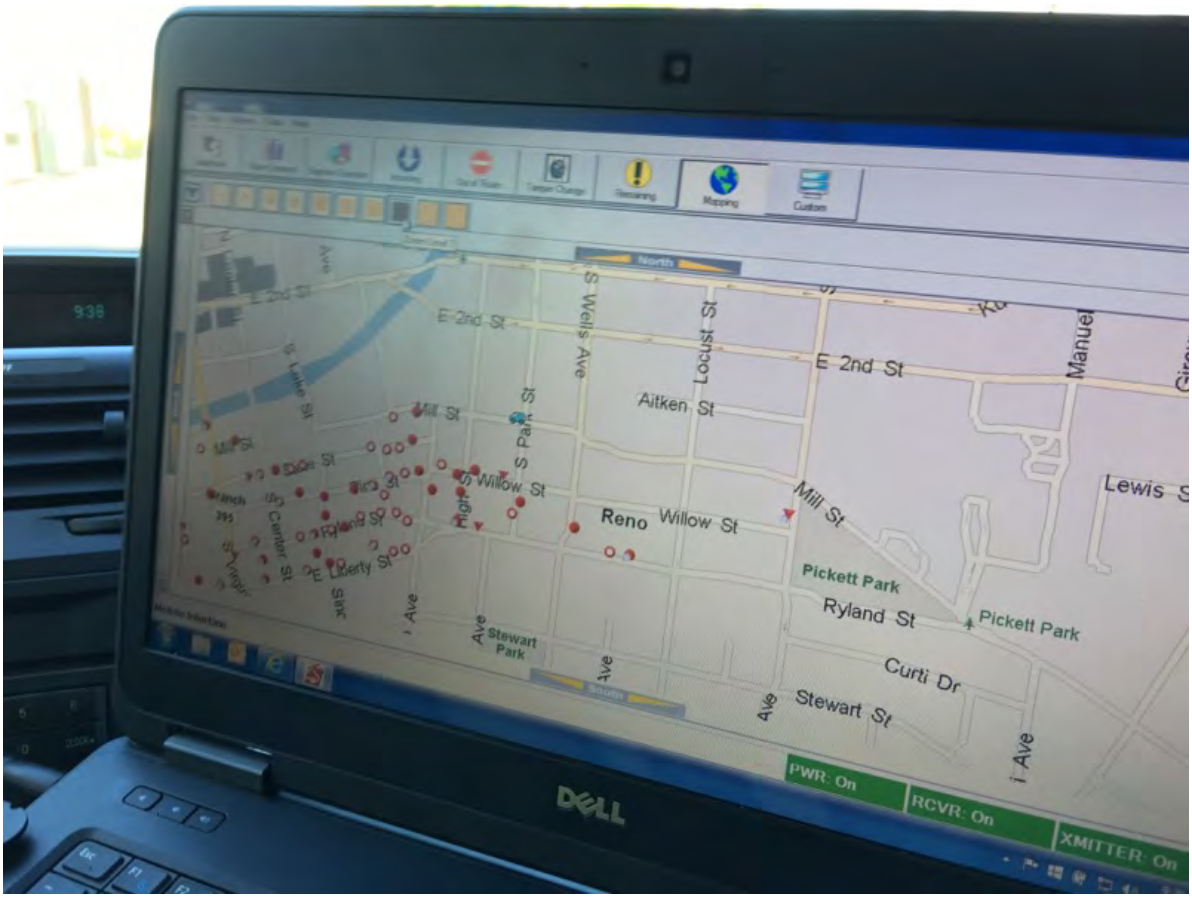
Meter Reading Equipment

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Customer Rates	Meter Reading Equipment	—	60	—	60	—	120

PROJECT DESCRIPTION: TMWA utilizes a multiple meter reading systems in which the transmitters attached to the meters send a signal out to be collected by data collectors. These collectors are mounted in the meter reading vehicles or on various mountain peaks surrounding the valley. TMWA is anticipating replacing units that have degraded.

SCHEDULE: Will need to purchase equipment on an as needed basis.



Customer Service Outlays

New Business Meters

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Developer Fees	New Business Meters	350	175	100	100	—	725

PROJECT DESCRIPTION: All new water services are required to be metered. Meters are purchased by TMWA and installed for new development. New business fees pay for these installations.

SCHEDULE: As development picks up, more meters will need to be purchased.

Customer Service Outlays

Mueller Pit Replacements Former Washoe County

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Mueller Pit Replacements former Washoe County	125	125	125	125	125	625

PROJECT DESCRIPTION: The Mueller metering pits are a very high maintenance metering facility and are prone to leaks and failures. TMWA plans to replace these facilities in response to leaks and or subsidence of these facilities.

SCHEDULE: Equipment and employee needs are evaluated and updated annually**.**

Customer Service Outlays

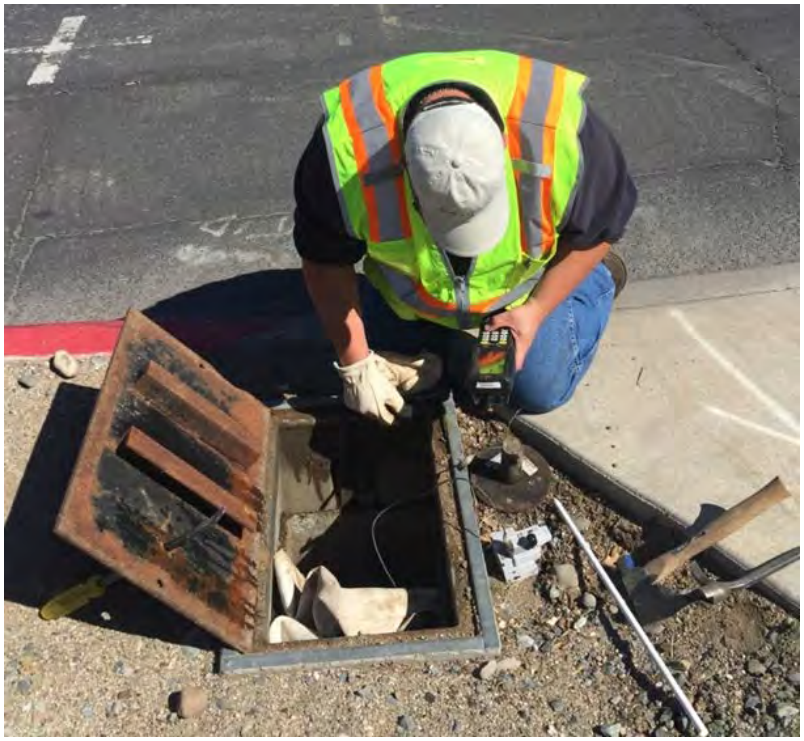
Meter-ERT-RTR Replacements

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Meter - ERT-RTR Replacements	1,250	1,250	1,250	1,250	1,250	6,250

PROJECT DESCRIPTION: Meter/ERT/RTR replacements are required annually for approximately 7% of TMWA's metered services. Meters have an expected service life of 20-25 years. ERTs and RTRs have an expected service life of at least 15 years. TMWA is upgrading these devices to the 100w class which will allow for fixed based meter readings and ability to read meters remotely for purposes of move-in and move-out meter reading cut-off without the need for a truck roll. In addition, we have taken on 23,000 Sensus meters of a varying age, as well as different meter reading systems.

SCHEDULE: These are both replaced systematically as well as on an as needed basis.



Customer Service Outlays

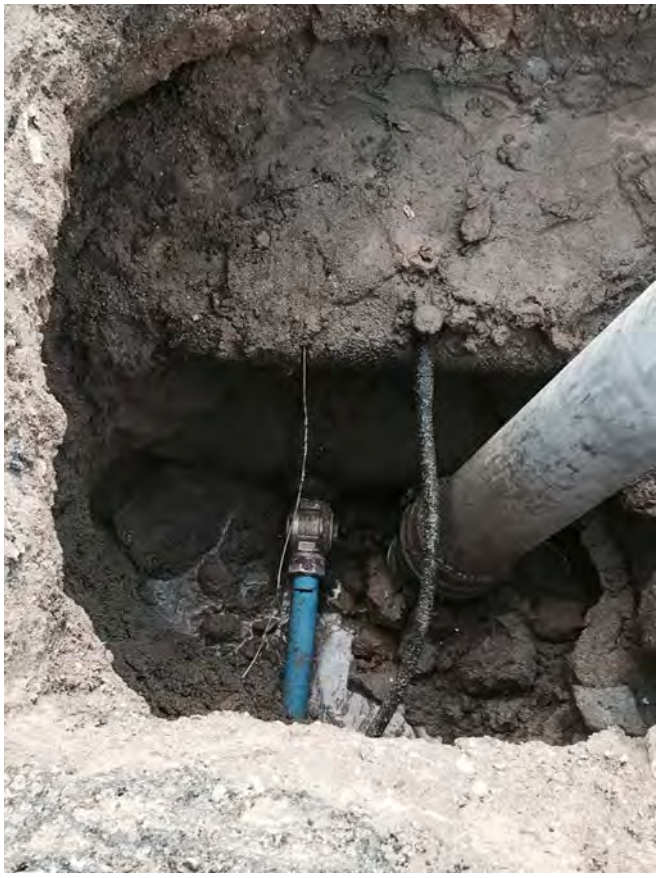
Galvanized / Poly Service Line Replacements

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Galvanized/Poly Service Line Replacements	400	400	400	—	—	1,200

PROJECT DESCRIPTION: TMWA has shifted from just repairing service lines from the street main to the curb valve or meter box to completely replacing service lines that are galvanized steel or polybutylene. These two materials are responsible for many after-hours call outs which escalate overtime expenses to repair leaks in the street because the galvanized lines are corroded, and polybutylene once thought very durable, becomes brittle and cracks or splits very easily. Just repairing these lines does not prevent them from leaking in the near future, escalating repair costs while further damaging city streets. Complete replacement provides a permanent repair in a cost effective manner and prevents further water system losses.

SCHEDULE: This is an ongoing annual project budget. Service lines will be replaced as they are identified.



Customer Service Outlays

AMI Automated Meter Infrastructure

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	AMI Automated Meter Infrastructure	750	750	750	750	—	3,000

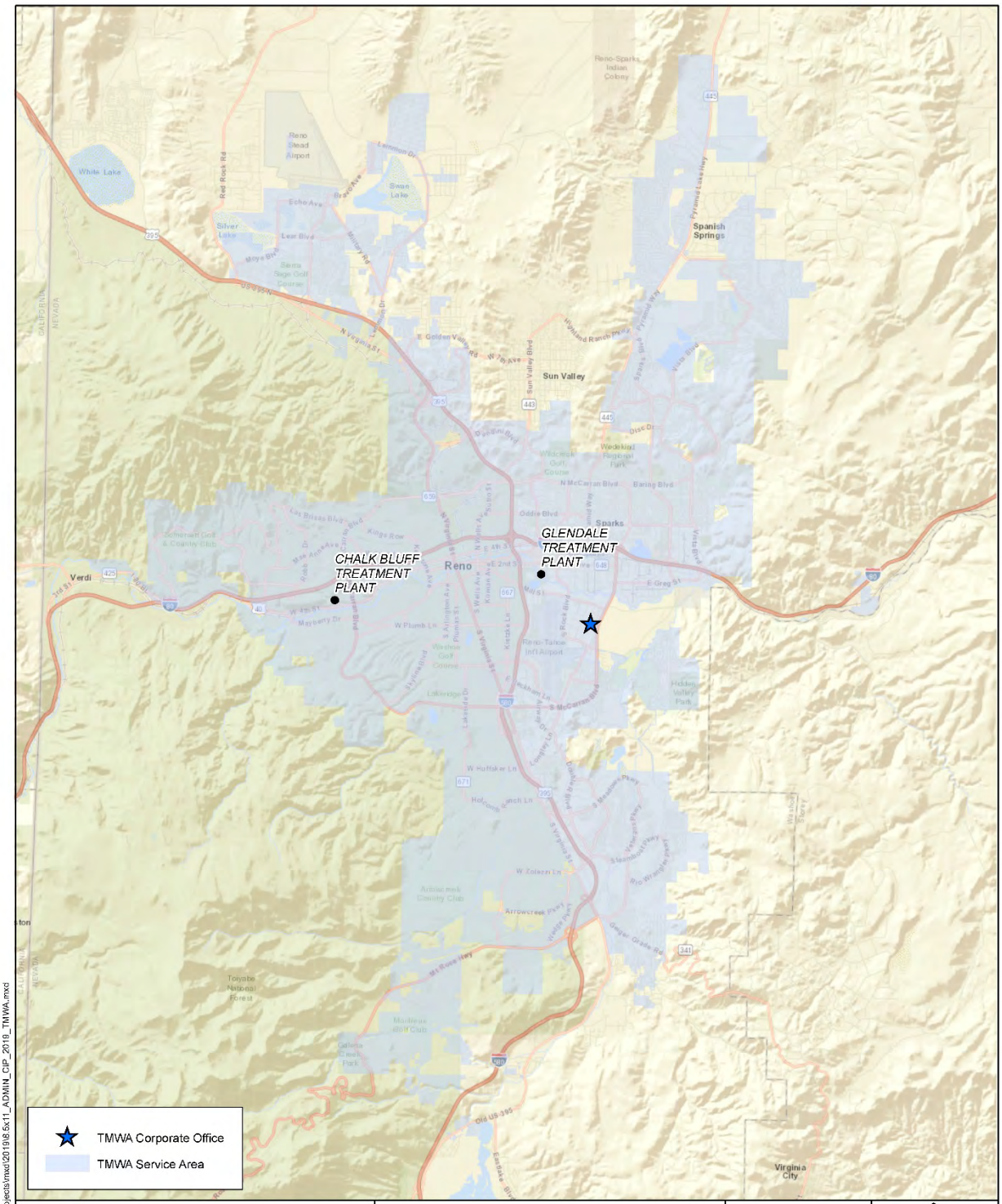
PROJECT DESCRIPTION: TMWA utilizes multiple meter reading systems in which the transmitters attached to the meters send a signal out to be collected by data collectors. We currently are utilizing two separate systems to collect this data. TMWA utilized a drive-by data collection system and Washoe County used a radio read system. The technology in these systems have improved vastly over the last couple of years and we are currently analyzing both systems, with the goal to move to one system. We are currently using a consultant to provide TMWA a cost and technology study to help guide us in the move to one data collection system.

SCHEDULE: Once identified this project would be staged and implemented over the next 4-5 years, the equipment to be replaced or upgraded in many instances is already scheduled for replacement in other budget items.

ADMINISTRATIVE OUTLAYS
Summary

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	GIS/GPS System Mapping Equipment	40	40	40	40	40	200
2	Customer Rates	Desktop Computer Upgrades	100	100	100	100	100	500
2	Customer Rates	Server/Storage upgrades	175	175	175	275	275	1,075
2	Customer Rates	Network Security Upgrades	150	150	150	150	150	750
3	Customer Rates	Crew Trucks / Vehicles	1,270	585	650	600	600	3,705
1	Customer Rates	Security-ER Projects	150	150	150	150	150	750
1	Customer Rates	CIS System Replacement	100	3,200	—	—	—	3,300
1	Customer Rates	Emergency Operations Annex-Design	250	250	1,500	—	—	2,000
2	Customer Rates	System Wide Asphalt Rehabilitation	200	200	200	200	200	1,000
Subtotal Administrative Outlays			**2,435**	**4,850**	**2,965**	**1,515**	**1,515**	**13,280**

Project Locations: Map of all *Administrative Outlays* projects are highlighted in the following map.


CHALK BLUFF TREATMENT PLANT
GLENDALE TREATMENT PLANT
Reno
Sparks
Sun Valley
Spanish Springs
Verdi
Virginia City
TMWA Corporate Office
TMWA Service Area
TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.
FY 2019-2023 CIP
ADMINISTRATIVE OUTLAYS
SUMMARY
DATE 4/1/2018
MAP BY: JK
REQUESTED BY: LK
SCALE: 1 in = 3 miles
NORTH
NAD 83 NEVADA STATE PLANE WEST FEET
W:\projects\Engineering\CIP\projects\mxd\2019\8.5x11_ADMIN_CIP_2019_TMWA.mxd

Administrative Outlays

GIS/GPS System Mapping Equipment

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	GIS/GPS System Mapping Equipment	40	40	40	40	40	200

PROJECT DESCRIPTION: TMWA will have to update mapping equipment on a periodic basis to keep up with changes in technology; and to replace existing equipment as it reaches obsolescence.

SCHEDULE: Equipment is replaced and/or purchase as needed.

Administrative Outlays

Desktop Computer Upgrades

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Desktop Computer Upgrades	100	100	100	100	100	500

PROJECT DESCRIPTION: TMWA utilizes a computer refresh program to ensure employees are provided with the latest technological tools to stay productive in their work. TMWA has over 250 desktop and laptop computing resources in service, with approximately one-quarter needing to be changed out each year due to warranty arrangements, asset age, or staffing needs. TMWA annually completes a full inventory of all IT assets to make an appropriate determination of the required resource replacement.

SCHEDULE: Spending would be determined on an as needed basis.

Administrative Outlays

Server/Storage/Operating System Software Upgrades

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Server/Storage/Operating System Software upgrades	175	175	175	275	275	1,075

PROJECT DESCRIPTION: TMWA currently has over 50 physical servers and 150 virtual servers, hosting a variety of enterprise software applications that support TMWA's daily business operations. All physical servers are typically purchased with a three year warranty, with the expectation that they will reach the end of their system life cycle in a three to five year time frame, requiring a replacement. TMWA annually reviews its server platforms and can option a strategy of warranty extension, if cost effective, rather than outright hardware replacement. All servers require an Operating System Software license to run. Operating System Software is upgraded only when the current release is obsolete or a newer version offers a significant advantage over the current iteration.

SCHEDULE: Spending occurs only on an as needed basis**.**

Administrative Outlays

Network Security Upgrades

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Network Security Upgrades	150	150	150	150	150	750

PROJECT DESCRIPTION: As a leading water purveyor for a major metropolitan area, TMWA is reliant on the internet for employee productivity enhancement and providing valuable customer information and outreach. Such dependency on the internet also carries a significant degree of risk, as it makes TMWA a major target for external security threats looming within globalized networks. To offset this risk and combat network threats, a variety of security specific hardware and software solutions are used, weaving them into a layered deployment strategy called Defense in Depth. In order to continually evolve and reinforce this Defense in Depth strategy and effectively fight new unforeseen threats, TMWA must continually acquire new security platforms that adapt to the continually changing security landscape.

SCHEDULE: The network security is constantly monitored and upgraded as needed.

Administrative Outlays

Crew Trucks/Vehicles

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
3	Customer Rates	Crew Trucks / Vehicles	1,270	585	650	600	600	3,705

PROJECT DESCRIPTION: TMWA's service fleet consists of light duty and heavy duty crew trucks. TMWA plans to cycle the light crew fleet over a period of seven to ten years. Spending is determined annually depending on vehicle availabilities and other factors. Spending only occurs if justified. TMWA's fleet cycles older vehicles to the treatment plants or other less demanding activities prior to disposal at auction. TMWA has scaled back spending on light vehicles for the past several years and a number of vehicles will be in excess of ten years old and greater than 120,000 miles of duty.

SCHEDULE: Equipment and employee needs are evaluated and updated annually**.**

Administrative Outlays

Security-ER Projects

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Security-ER Projects	150	150	150	150	150	750

PROJECT DESCRIPTION: Various ongoing improvements to security infrastructure are required to protect TMWA facilities. Perpetual upgrades to video surveillance and control access infrastructure are necessary in order to provide pertinent and real time information to TMWA in the event of unauthorized access to TMWA property. TMWA has performed vulnerability assessment studies in the past and reviews the applicability of the findings to continually improve physical security as needed. In addition, TMWA is preparing a new disaster recovery plan with procedures to recover and protect water system operations.

SCHEDULE: Upgrades to security projects is ongoing and the disaster recovery plan is scheduled for completion in FY 2019.

PROJECT LOCATION: Various locations at treatment plants, at well sites, storage area for water fill station manifolds.

Administrative Outlays

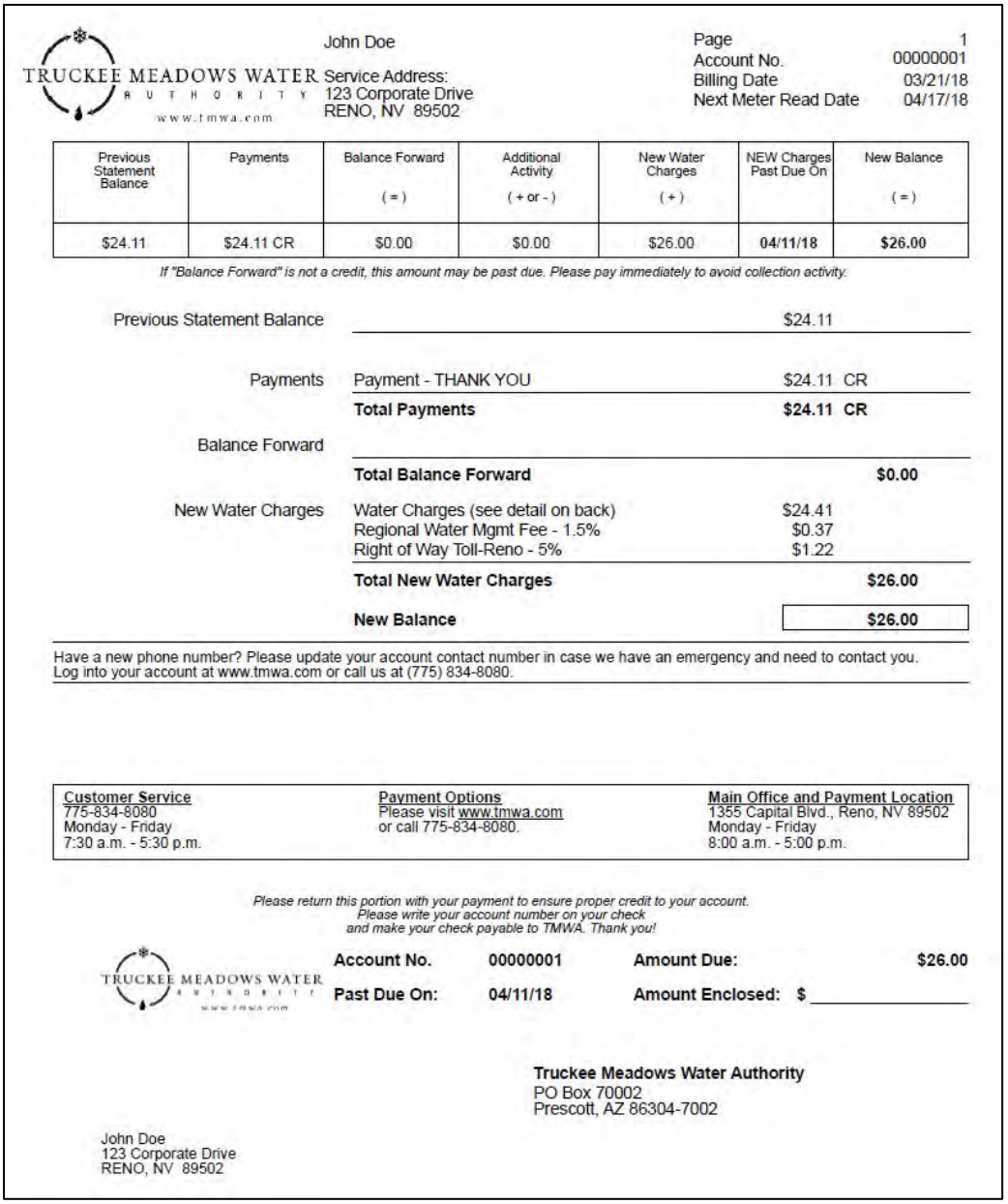
CIS System Replacement

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	CIS System Replacement	100	3,200	—	—	—	3,300

PROJECT DESCRIPTION: Software selection, consulting and purchase of new Customer Information (billing) system.

SCHEDULE: Project planning to begin FY19.



TRUCKEE MEADOWS WATER AUTHORITY
www.tmwa.com

John Doe
Service Address:
123 Corporate Drive
RENO, NV 89502

Page 1
Account No. 00000001
Billing Date 03/21/18
Next Meter Read Date 04/17/18

Previous Statement Balance	Payments	Balance Forward (=)	Additional Activity (+ or -)	New Water Charges (+)	NEW Charges Past Due On	New Balance (=)
$24.11	$24.11 CR	$0.00	$0.00	$26.00	04/11/18	$26.00

If "Balance Forward" is not a credit, this amount may be past due. Please pay immediately to avoid collection activity.

Previous Statement Balance		$24.11	
Payments	Payment - THANK YOU	$24.11 CR	
	Total Payments	**$24.11 CR**	
Balance Forward			
	Total Balance Forward		**$0.00**
New Water Charges	Water Charges (see detail on back)	$24.41	
	Regional Water Mgmt Fee - 1.5%	$0.37	
	Right of Way Toll-Reno - 5%	$1.22	
	Total New Water Charges		**$26.00**
	New Balance		**$26.00**

Have a new phone number? Please update your account contact number in case we have an emergency and need to contact you.
Log into your account at www.tmwa.com or call us at (775) 834-8080.

Customer Service
775-834-8080
Monday - Friday
7:30 a.m. - 5:30 p.m.

Payment Options
Please visit www.tmwa.com
or call 775-834-8080.

Main Office and Payment Location
1355 Capital Blvd., Reno, NV 89502
Monday - Friday
8:00 a.m. - 5:00 p.m.

Please return this portion with your payment to ensure proper credit to your account.
Please write your account number on your check
and make your check payable to TMWA. Thank you!

TRUCKEE MEADOWS WATER AUTHORITY

Account No. 00000001 **Amount Due:** $26.00
Past Due On: 04/11/18 **Amount Enclosed:** $ _____

Truckee Meadows Water Authority
PO Box 70002
Prescott, AZ 86304-7002

John Doe
123 Corporate Drive
RENO, NV 89502

Administrative Outlays

Emergency Operations Annex-Design

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Emergency Operations Annex-Design	250	250	1,500	—	—	2,000

PROJECT DESCRIPTION: TMWA is currently in the planning and conceptual design phase for a Primary Emergency Operations Center (EOC) including Disaster Recovery (DR) capacity. TMWA's EOC will relocate from the current location at the corporate office to the Chalk Bluff Water Treatment Plant. Which includes scope review, design, and contract bid packages, bid and award, construction, and testing. Potential emergency operations would include responding to earthquakes, floods, or other emergency related events.

SCHEDULE: DR improvements were completed in FY 2018. FY 2019 Project to include design, fabrication, installation of two construction water fill stations at Glendale and Chalk Bluff Water Treatment Plant, construction of water fill stations at four tank sites, standby power retrofits at four existing wells and ten portable water fill manifold stations. Design and permitting to be completed in FY 2018. Construction planned for FY 2019. EOC construction planned for FY 2021.

Administrative Outlays

System Wide Asphalt Rehabilitation

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	System Wide Asphalt Rehabilitation	200	200	200	200	200	1,000

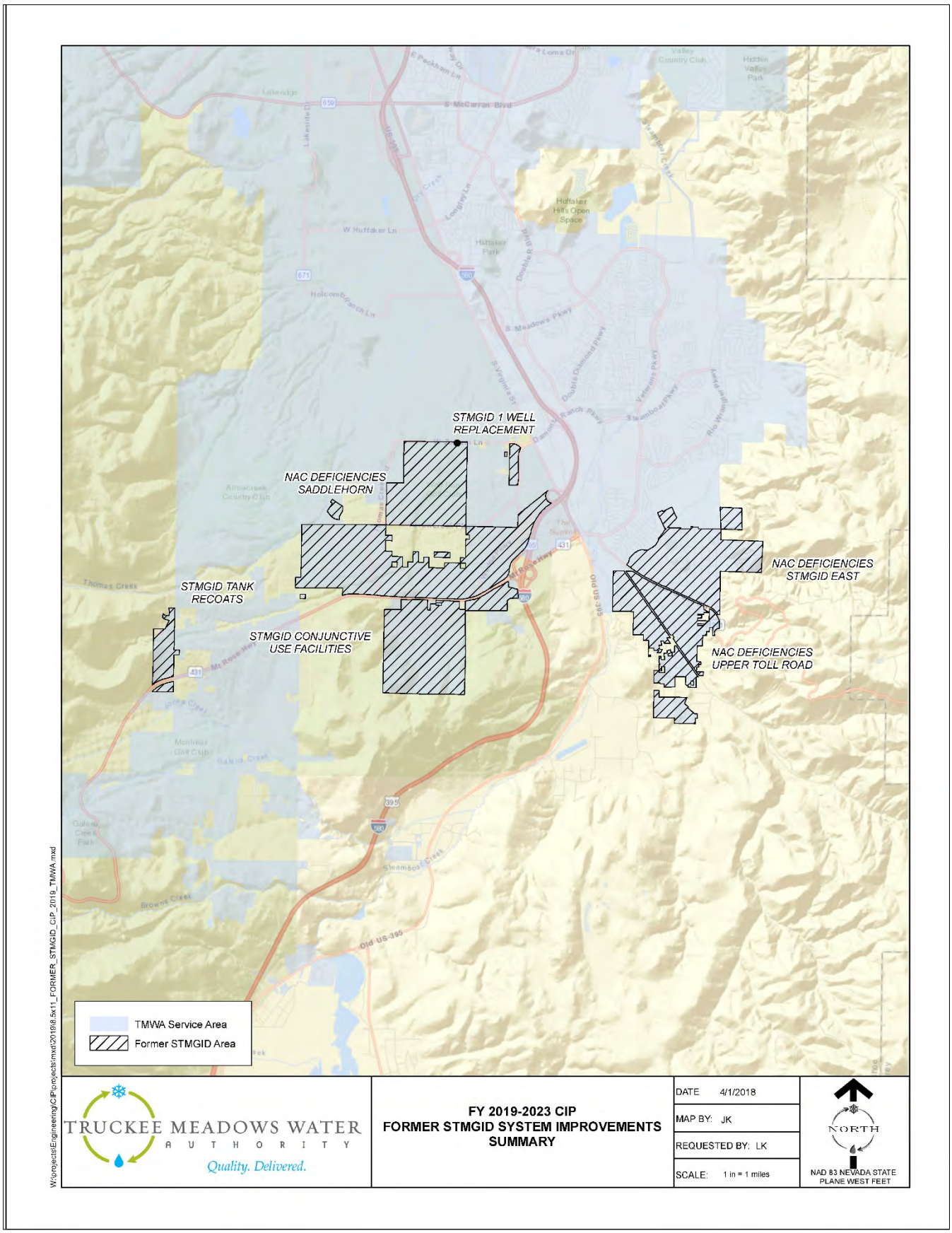
PROJECT DESCRIPTION: TMWA has 93 tanks, 90 wells, 113 pump stations, 2 storage reservoirs and 3 treatment plants, most of which have some asphalt pavement. It is much more economical to extend the life of existing pavement with routine maintenance such as repairing cracks and applying slurry seals than it is to prematurely replace the pavement.

SCHEDULE: This is a new reoccurring maintenance item. It is originally assumed that up to 15 sites per year will receive some sort of rehabilitation that may include patching, crack repair, slurry seal and/or partial replacement.

FORMER STMGID SYSTEM IMPROVEMENTS
Summary

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Reserve	Well Bypass & Chlorine Room Improvements (former STMGID wells)	300	—	—	—	—	300
2	Reserve	STMGID Well Fix & Finish	150	150	150	150	150	750
1	Reserve	STMGID Conjunctive Use Facilities	1,800	2,100	—	—	—	3,900
1	Reserve	STMGID Tank Recoats	220	—	300	—	—	520
1	Reserve	STMGID Mueller Pit Replacements	50	50	50	—	—	150
1	Reserve	NAC Deficiencies-Saddlehorn, Upper Toll Road, STMGID East	250	600	2,000	350	—	3,200
Subtotal STMGID System Improvements			**2,770**	**2,900**	**2,500**	**500**	**150**	**8,820**

Project Locations: Map of all *Former STMGID System Improvements* projects are highlighted in the following map.


STMGID 1 WELL REPLACEMENT
NAC DEFICIENCIES SADDLEHORN
STMGID TANK RECOATS
STMGID CONJUNCTIVE USE FACILITIES
NAC DEFICIENCIES STMGID EAST
NAC DEFICIENCIES UPPER TOLL ROAD
TMWA Service Area
Former STMGID Area
TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.
FY 2019-2023 CIP
FORMER STMGID SYSTEM IMPROVEMENTS
SUMMARY
DATE 4/1/2018
MAP BY: JK
REQUESTED BY: LK
SCALE: 1 in = 1 miles
NORTH
NAD 83 NEVADA STATE PLANE WEST FEET
W:\projects\Engineering\CIP\projects\mxd\2019\8.5x11_FORMER_STMGID_CIP_2019_TMWA.mxd

Ground Water Supply Improvements

Well Bypass & Chlorine Room Improvements (former STMGID wells)

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Reserves	Well Bypass & Chlorine Room Improvements (former STMGID wells)	300	—	—	—	—	300

PROJECT DESCRIPTION: During pre-merger facility assessments, it was determined that several former STMGID wells need to be retrofitted with bypass piping and valves to evacuate a certain amount of water prior to discharge to the distribution system. Other wells also require isolation of the chlorine rooms to reduce corrosion issues.

SCHEDULE: It is anticipated that all improvements will be completed in the next five years.

Ground Water Supply Improvements

STMGID Well Fix & Finish

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Reserves	STMGID Well Fix & Finish	150	150	150	150	150	750

PROJECT DESCRIPTION: Equipment improvements are expected to bring existing wells up to modern standards, including antiquated equipment replacements and improvements for water quality purposes. This project includes improvements to sodium hypochlorite rooms, electrical and instrumentation equipment, pump to waste lines and drainage improvements. It also includes retrofit for recharge where needed.

SCHEDULE: Improvements are planned to continue for the duration of this CIP funding plan.

Water Main-Distribution & Service Line Improvements

STMGID Conjunctive Use Facilities

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Reserve	STMGID Conjunctive Use Facilities	1,800	2,100	—	—	—	3,900

PROJECT DESCRIPTION: The project involves construction of a new booster pump station on the reclaim water reservoir site on Arrowcreek Parkway and approximately 8,100 feet of 14-inch discharge pipe on Arrowcreek Parkway to the STMGID Tank 4/5 pressure zone. Approximately $0.5 million of the $3.6 million will be used for pipeline oversizing which will be allocated to new development. The facilities will provide off-peak supply which will allow TMWA to implement conjunctive use in the STMGID West system.

SCHEDULE: Construction is scheduled to begin in FY 2019 and 2020.

Potable Water Storage Improvements

STMGID Tank Recoats

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Reserve	Former STMGID Tank Recoats	220	—	300	—	—	520

PROJECT DESCRIPTION: The former STMGID system included a total of seven water storage tanks providing a total storage capacity of about 6.2 million gallons. A number of these tanks will be inspected annually on a rotating basis. Based upon these inspection observations, a determination is made as to whether interior or exterior tank coatings or other fix and finish work is required. Tank interior coating/liners and exterior paint are generally replaced every 15 years.

SCHEDULE: This is an ongoing annual project. It is anticipated that two tanks will need to be recoated approximately every 2-3 years.

Customer Service Outlays

Mueller Pit Replacements Former STMGID

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Reserve	Mueller Pit Replacements former STMGID	50	50	50	—	—	150

PROJECT DESCRIPTION: The Mueller metering pits are a very high maintenance metering facility and are prone to leaks and failures. TMWA plans to replace these facilities to leaks and or subsidence of these facilities.

SCHEDULE: Equipment and employee needs are evaluated and updated annually**.**

Distribution System Pressure Improvements

NAC Deficiencies-Saddlehorn, Upper Toll Road, STMGID East

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Reserve	NAC Deficiencies-Saddlehorn, Upper Toll Road, STMGID East	250	600	2,000	350	—	3,200

PROJECT DESCRIPTION: The project consists of main ties, hydrant installations and individual booster pump systems to be constructed in multiple locations in former STMGID service areas to correct NAC pressure and fire flow deficiencies. In order to correct deficiencies in the upper Toll Road area, it will be necessary to create a new higher pressure zone by constructing a new tank, booster pump station and approximately 6,300 feet of 12-inch main.

SCHEDULE: The deficiencies on Sioux Trail, on Geiger Grade, on Westwind Circle and Terry Way will be addressed in FY 2019. The new pressure zone on upper Toll Road will be constructed in FY 2021 subject to acquisition of the tank site property which may be private or on BLM property.

TRUCKEE MEADOWS WATER AUTHORITY

STAFF REPORT

TO: TMWA Board of Directors
THRU: Mark Foree, General Manager
FROM: Michele Sullivan, Chief Financial Officer
DATE: May 15, 2018
SUBJECT: **Report and discussion on the results on TMWA's 2018 Refunding Bond Issue and Financial Update**

SUMMARY

TMWA successfully priced the 2018 Series Bonds on April 25, 2018 to issue $38,835,000 in Senior Lien debt with a premium of $5,762,597 for total proceeds of $44,597,597. Proceeds were used on May 15, 2018 to pay down outstanding commercial paper by $44,200,000 and cover the expenses of the bond issuance. TMWA will have remaining commercial paper of $30,000,000.

BACKGROUND

At the April 18, 2018 BOD meeting, a plan was presented to replace $44.2 M of commercial paper with fixed rate senior lien bonds to mature in 2035-2042. This structure was proposed to keep the annual increase in senior lien debt service to a minimum to protect TMWA's debt service coverage (DSC) ratios, and effectually TMWA's credit ratings. Also, rates for long term debt in the 20-year range are still at historical lows, with short terms rates rising faster than long term.

TMWA priced the bonds with underwriter RBC Capital, financial advisors PFM, and attorneys Sherman and Howard on April 25, 2018. There was excellent interest in the offering, with current bondholders State Farm buying, as well as new investors like Travelers Insurance and Blackrock; however, the interest was all in the 2035-39 series bonds while the 2040-42 term bond remained unsold.

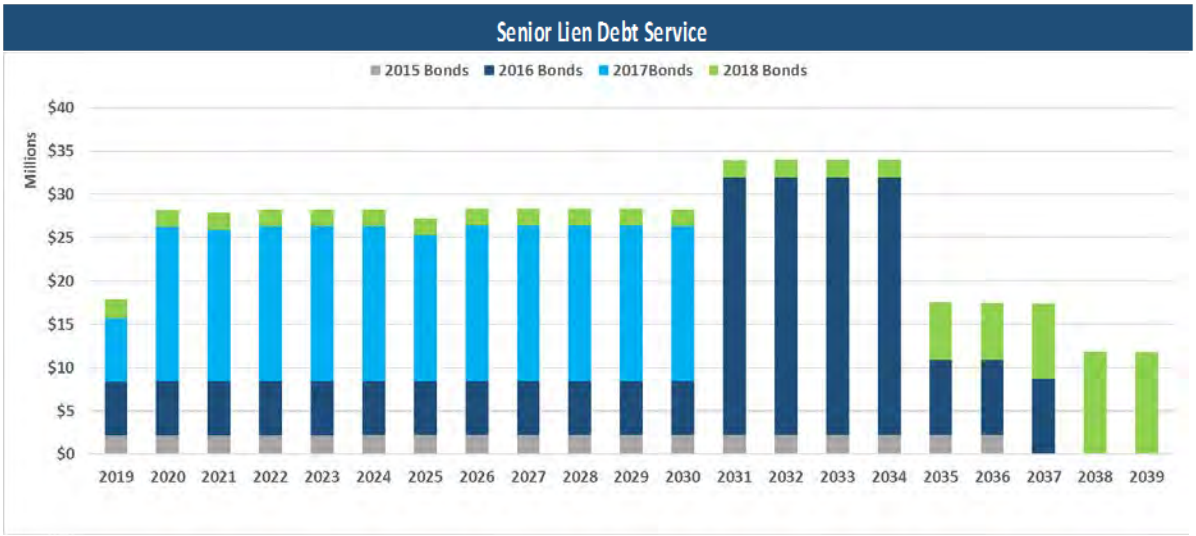
RBC underwriters asked State Farm if they had interest in buying the 2040-42 bonds as a serial offering, and they were willing to pick them up but at a higher return. The day of the offering, the 10-year treasury rate increased to the 3.0% level (a new high), which caused volatility in the market. After much discussion and recalculation of DSC ratios, it was determined that the best pricing could be obtained for TMWA by restructuring the deal to sell all the bonds in the 2035-39 timeframe since the bonds were oversold for those years. After restructuring the deal, RBC also agreed to better pricing for the 2035-36 bonds. Overall, the bonds were 2.4x oversold in 2035-39, with Travelers Insurance offering to buy the entire offering.

A schedule of the bond maturities and the yield to the investor is shown below:

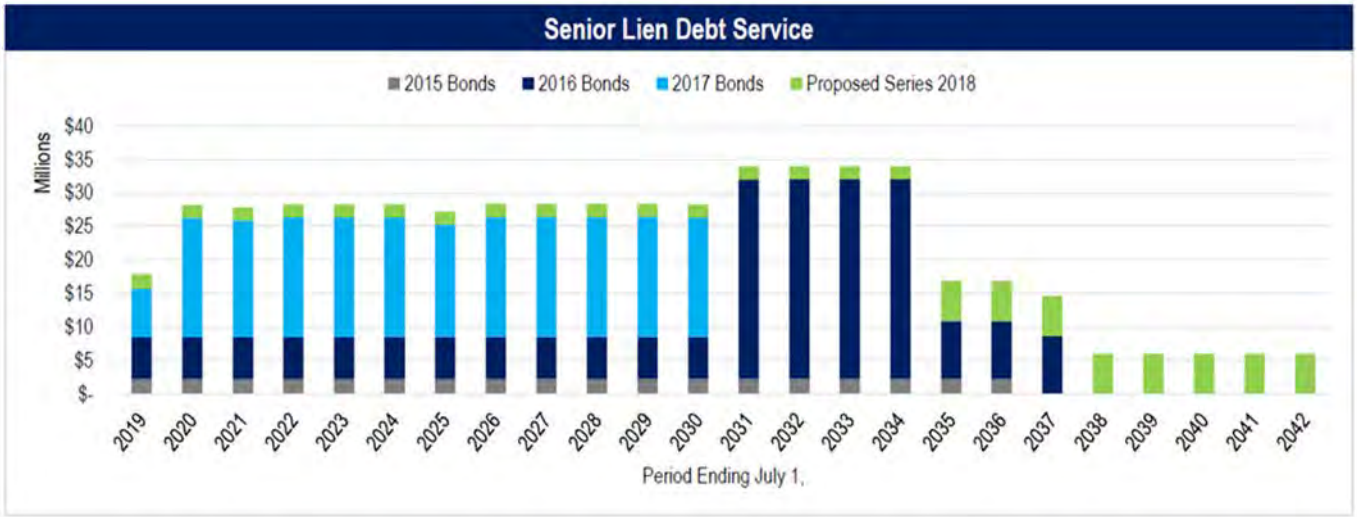
Maturity Date	Amount	Rate	Yield
07/01/2035	4,660,000	5.000%	3.170%
07/01/2036	4,890,000	5.000%	3.210%
07/01/2037	7,285,000	5.000%	3.260%
07/01/2038	10,750,000	5.000%	3.290%
07/01/2039	11,250,000	5.000%	3.310%
	38,835,000		

Comparisons of the final vs original proposed annual senior lien debt service totals, and calculations of DSC are shown in the following graphs. DSC estimates remain the same with the final (vs proposed) structure, which was important for TMWA to maintain its credit ratings.

Final Senior Lien Annual Debt Service:



Proposed Senior Lien Annual Debt Service:



Comparison of DSC ratios:

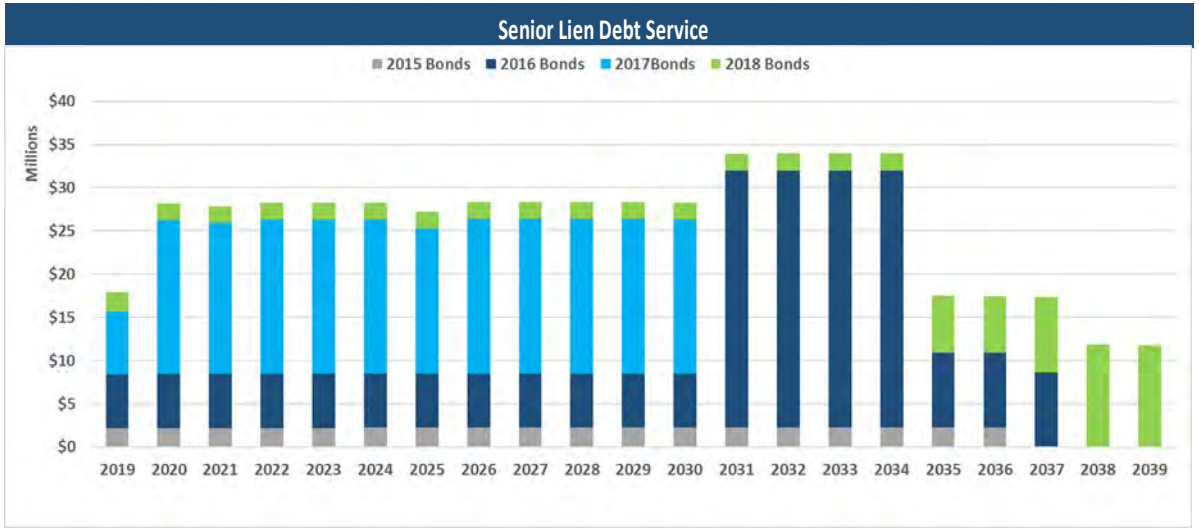
		TMWA 2018-2022 Funding Plan				
		FY 2018	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**
	Water Sales	$96,257,822	$100,491,309	$103,514,259	$106,447,040	$109,424,371
	Other Operating Revenues	6,121,891	5,896,254	5,061,714	5,036,794	5,087,162
	Investment Income	1,342,692	1,536,900	1,706,360	1,883,277	2,063,774
	Total Gross Revenues	103,722,405	107,924,463	110,282,333	113,367,111	116,575,307
	Operation & Maintenance Expenses	54,576,379	57,611,474	59,926,899	61,920,554	63,688,345
	Net Revenues	49,146,026	50,312,989	50,355,434	51,446,557	52,886,962
Before 2018 Series Bonds	Senior Lien Annual Debt Service	15,696,200	15,700,800	26,243,800	25,888,000	26,333,500
	Senior Lien DSC	**3.13x**	**3.20x**	**1.92x**	**1.99x**	**2.01x**
	Net Revenue Change from FY18 for 1.5x [1]	**-52.09%**	**-52.08%**	**-19.90%**	**-20.99%**	**-19.63%**
	Maximum Annual Debt Serivce	32,014,250				
	MADS DSC for ABT (FY18 Revs) [2]	**1.54x**				
With 2018 Series Bonds	Senior Lien Annual Debt Service	15,696,200	17,890,663	28,185,550	27,829,750	28,275,250
	Senior Lien DSC	**3.13x**	**2.81x**	**1.79x**	**1.85x**	**1.87x**
	Net Revenue Change from FY18 for 1.5x [1]	**-52.09%**	**-45.40%**	**-13.97%**	**-15.06%**	**-13.70%**
	Maximum Annual Debt Serivce	33,956,000				
	MADS DSC for ABT (FY18 Revs) [2]	**1.45x**				
Original Proposed metrics pre-pricing	Senior Lien Annual Debt Service	15,696,200	17,879,644	28,180,550	27,824,750	28,270,250
	Senior Lien DSC	**3.13x**	**2.81x**	**1.79x**	**1.85x**	**1.87x**
	Net Revenue Change from FY18 for 1.5x [1]	**-52.09%**	**-45.43%**	**-13.99%**	**-15.08%**	**-13.72%**
	Maximum Annual Debt Serivce	33,951,000				
	MADS DSC for ABT (FY18 Revs) [2]	**1.45x**				

* Revenues are net of System Development Charges

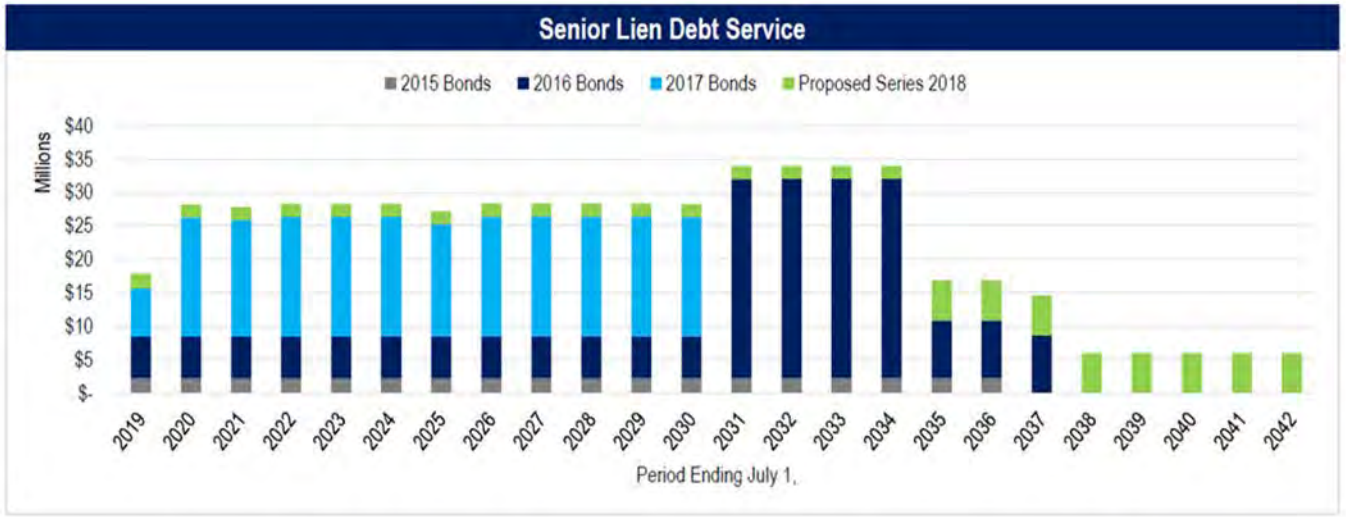
[1] Assumes change from FY18 Net Revenues needed to reach 1.5x coverage

[2] Debt Service Coverage in Maximum Annual Debt Service Year (2032) using 2018 Net Revenues

Senior Lien Debt Service after pricing



Proposed debt service before pricing



Debt Service Coverage Comparison

		TMWA 2018-2022 Funding Plan				
		FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
	Water Sales	$96,257,822	$100,491,309	$103,514,259	$106,447,040	$109,424,371
	Other Operating Revenues	6,121,891	5,896,254	5,061,714	5,036,794	5,087,162
	Investment Income	1,342,692	1,536,900	1,706,360	1,883,277	2,063,774
	Total Gross Revenues	103,722,405	107,924,463	110,282,333	113,367,111	116,575,307
	Operation & Maintenance Expenses	54,576,379	57,611,474	59,926,899	61,920,554	63,688,345
	Net Revenues	49,146,026	50,312,989	50,355,434	51,446,557	52,886,962
Before 2018 Series Bonds	Senior Lien Annual Debt Service	15,696,200	15,700,800	26,243,800	25,888,000	26,333,500
	Senior Lien DSC	**3.13x**	**3.20x**	**1.92x**	**1.99x**	**2.01x**
	Net Revenue Change from FY18 for 1.5x (1)	**-52.09%**	**-52.08%**	**-19.90%**	**-20.99%**	**-19.63%**
	Maximum Annual Debt Serivce	32,014,250				
	MADS DSC for ABT (FY18 Revs) (2)	**1.54x**				
With 2018 Series Bonds	Senior Lien Annual Debt Service	15,696,200	17,890,663	28,185,550	27,829,750	28,275,250
	Senior Lien DSC	**3.13x**	**2.81x**	**1.79x**	**1.85x**	**1.87x**
	Net Revenue Change from FY18 for 1.5x (1)	**-52.09%**	**-45.40%**	**-13.97%**	**-15.06%**	**-13.70%**
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	Maximum Annual Debt Serivce	33,951,000				
	MADS DSC for ABT (FY18 Revs) (2)	**1.45x**				

* Revenues are net of System Development Charges

(1) Assumes change from FY18 Net Revenues needed to reach 1.5x coverage

(2) Debt Service Coverage in Maximum Annual Debt Service Year (2032) using 2018 revenues

TRUCKEE MEADOWS WATER AUTHORITY

TO: Board of Directors
THRU: Mark Foree, General Manager
FROM: Michele Sullivan, Chief Financial Officer
Matt Bowman, Financial Controller
DATE: May 04, 2018
SUBJECT: **Presentation of financial performance for the quarter ended March 31, 2018**

Summary

Budget to Actual

	Actual YTD 2018	Budget YTD 2018	Variance $	Variance %
CHANGE IN NET POSITION	22,915,135	8,052,126	14,863,009	185%

Change in net position (or overall P&L) for the nine months ended March 31, 2018 (3Q YTD 2018) continued to reflect positive financial performance compared to budget. Of the $14.9m variance from budget, $10.0m came in the first half of 2018 (1H 2018). Slightly higher revenue, lower operating expenses, higher non-operating revenue and higher developer contributions led to an additional $4.9m increase from budget in the third quarter of 2018 (3Q 2018). Please refer to **Attachment A-1** for the full Statements of Revenues, Expenses and Changes in Net Position with budget to actual comparisons.

Year over Year

	Actual YTD 2018	Actual YTD 2017	Variance $	Variance %
CHANGE IN NET POSITION	22,915,135	30,541,091	(7,625,956)	-25%

Change in net position for 3Q YTD 2018 was lower than 3Q YTD 2017 due to the second of two payments for the Farad settlement in Q3 2017 of $11.8m which was recorded as a capital contribution. This was offset by higher operating and non-operating income in 3Q YTD 2018 than the same period in the prior year. Please refer to **Attachment A-2** for the full Statements of Revenues, Expenses and Changes in Net Position with year over year comparisons.

Cash Position

At March 31, 2018 total cash on hand was $182.8m or approximately $8.8m higher than at the beginning of the fiscal year but $6.3m lower than the end of Q2 2018. Of the total cash on hand, $137.3m was unrestricted to be used to meet upcoming and future operating/maintenance expenses, principal/interest payments, and construction project payments. The remaining $45.5m

was restricted to pay for scheduled bond principal and interest payments as well as maintaining required reserves as stipulated in our bond indentures.

Revenue

Budget to Actual

	Actual YTD 2018	Budget YTD 2018	Variance $	Variance %
OPERATING REVENUES				
Charges for water sales	$ 72,626,813	$ 70,540,254	$ 2,086,559	3%
Hydroelectric sales	2,801,075	2,058,513	742,562	36%
Other operating sales	2,239,413	2,338,000	(98,587)	-4%
Total Operating Revenues	77,667,301	74,936,767	2,730,534	4%

The principal driver in the higher-than-budgeted 3Q YTD 2018 operating revenue was strong 1H 2018 Irrigation and Residential Metered sales (as discussed in the February 2018 Financial Performance Staff Report). Operating revenue in 3Q 2018 was principally in line with expectations coming in approximately 2.8% higher than budget. Water sales in 3Q 2018 (Jan-Mar) were less than 1% over budget, while hydroelectric generation continued to be strong ending up 250% over budget, or $0.7m higher in the same period.

We expect Q4 2018 water sales to be less than budget due to a record month of precipitation in March and a continued mild and wet spring season which has impacted water use in April (Q4 2018) by 15% or $0.9m.

Year over Year

	Actual YTD 2018	Actual YTD 2017	Variance $	Variance %
OPERATING REVENUES				
Charges for water sales	$ 72,626,813	$ 70,708,051	$ 1,918,762	3%
Hydroelectric sales	2,801,075	1,060,088	1,740,987	164%
Other operating sales	2,239,413	1,971,047	268,366	14%
Total Operating Revenues	77,667,301	73,739,186	3,928,115	5%

Driven by higher water sales and hydroelectric revenue, operating revenue continues to be higher than prior year. The 3% rate increase in Q4 2017 drove the increase in water sales, while the Fleish hydro facility was down for maintenance on the penstock in FY 2017, leading to higher revenue in FY 2018.

Operating Expenses

Budget to Actual

	Actual YTD 2018	Budget YTD 2018	Variance $	Variance %
OPERATING EXPENSES				
Salaries and wages	13,569,619	14,240,409	(670,790)	-5%
Employee benefits	6,312,501	7,352,454	(1,039,953)	-14%
Services and supplies	17,642,851	21,755,923	(4,113,072)	-19%
Total operating expenses before depreciation	37,524,971	43,348,786	(5,823,815)	-13%
Depreciation	24,572,691	25,545,861	(973,170)	-4%
Total operating expenses	62,097,662	68,894,647	(6,796,985)	-10%

Approximately $4.8m of the $6.8m variance from budget in total operating expenses came from 1H 2018. As discussed in the previous staff report, this was due to decreased services and supplies costs and employees' salaries and wages. Driving the continued decrease was a reduction in depreciation expense in the quarter of $1.0m due to expiration of asset lives. Also driving the decrease was continued savings in employee salaries and benefits and services and supplies. Comparing 3Q 2018 actual to budget, salaries and wages, employee benefits and services and supplies were down $0.4m, $0.3m and $0.2m, respectively. Historically and in FY 2018, Q3 is the lowest cost quarter for all operating expenses due in part to less service requirements. The budget is generally developed using monthly averages, so a decrease here is expected.

Year over Year

	Actual YTD 2018	Actual YTD 2017	Variance $	Variance %
OPERATING EXPENSES				
Salaries and wages	13,569,619	13,016,649	552,970	4%
Employee benefits	6,312,501	6,128,272	184,229	3%
Services and supplies	17,642,851	17,753,334	(110,483)	-1%
Total operating expenses before depreciation	37,524,971	36,898,255	626,716	2%
Depreciation	24,572,691	24,242,118	330,573	1%
Total operating expenses	62,097,662	61,140,373	957,289	2%

Operating expenses are slightly higher in FY 2018 compared to the prior year. This is due primarily to the wage increases that went into effect in January 2018.

Non-Operating Expenses

Budget to Actual

	Actual YTD 2018	Budget YTD 2018	Variance $	Variance %
NONOPERATING REVENUES (EXPENSES)				
Investment earnings	1,578,519	1,007,019	571,500	57%
Net increase (decrease) in FV of investments	(787,620)	-	(787,620)	-
Gain (loss) on disposal of assets	657,795	-	657,795	-
Amortization of bond/note issuance costs	(344,970)	(351,468)	6,498	-2%
Interest expense	(8,392,127)	(10,036,521)	1,644,394	-16%
Other nonoperating revenue	-	-	-	-
Other nonoperating expense	-	-	-	-
Total nonoperating revenues (expenses)	(7,288,403)	(9,380,970)	2,092,567	-22%

Non-operating expenses continued to be less than budget in 3Q YTD 2018. Investment earnings are better than budget due to higher principal amounts as well as an increase in interest rates. Fair value of investments is down due to rising interest rates which lowers the fair value of fixed rate investments (non-cash expense). Gain on disposal of assets reflects the sale of water rights for $1.1m (sold to Pyramid Lake Paiute Tribe) offset by $0.5m of loss due to the demolition of the Peavine Storage Tank. Interest expense is lower due to interest costs accelerated to FY 2017 as part of the Series 2017 refunding (Q4 2017) and the recognition of effective interest (accelerated) bond premium amortization in FY 2018.

Year over Year

	Actual YTD 2018	Actual YTD 2017	Variance $	Variance %
NONOPERATING REVENUES (EXPENSES)				
Investment earnings	1,578,519	1,966,545	(388,026)	-20%
Net increase (decrease) in FV of investments	(787,620)	(260,868)	(526,752)	202%
Gain (loss) on disposal of assets	657,795	305	657,490	215570%
Amortization of bond/note issuance costs	(344,970)	(411,341)	66,371	-16%
Interest expense	(8,392,127)	(12,403,460)	4,011,333	-32%
Other nonoperating revenue	-	-	-	-
Other nonoperating expense	-	(243,000)	243,000	-100%
Total nonoperating revenues (expenses)	(7,288,403)	(11,351,819)	4,063,416	-36%

Non-operating expenses continued to be less than the prior year principally due to lower interest expense due to the Series 2017 bond refunding in closed in FY 2017. Other increases include the net gain on asset disposal (discussed above) offset by decreases in investment earnings due to the release of forward delivery agreements paying higher rates on some cash reserves in 2017.

Capital Contributions

Budget to Actual

	Actual YTD 2018	Budget YTD 2018	Variance $	Variance %
CAPITAL CONTRIBUTIONS				
Grants	217,994	150,003	67,991	45%
Water meter retrofit program	1,590,967	586,116	1,004,851	171%
Developer infrastructure contributions	-	-	-	-
Developer will-serve contributions (net of refunds)	4,152,543	3,776,058	376,485	10%
Developer capital contributions-other	4,125,855	3,258,972	866,883	27%
Developer facility charges (net of refunds)	4,546,540	3,619,827	926,713	26%
Contributions from others	-	-	-	-
Net capital contributions	14,633,899	11,390,976	3,242,923	28%

Capital contributions continue to be higher than budget in 3Q YTD 2018. Driven almost exclusively by significant development in the service area, we expect this increase to carry through the end of the fiscal year.

Year over Year

	Actual YTD 2018	Actual YTD 2017	Variance $	Variance %
CAPITAL CONTRIBUTIONS				
Grants	217,994	1,191,168	(973,174)	-82%
Water meter retrofit program	1,590,967	171,041	1,419,926	830%
Developer infrastructure contributions	-	-	-	-
Developer will-serve contributions (net of refunds)	4,152,543	7,019,685	(2,867,142)	-41%
Developer capital contributions-other	4,125,855	5,180,851	(1,054,996)	-20%
Developer facility charges (net of refunds)	4,546,540	3,925,841	620,699	16%
Contributions from others	-	11,805,511	(11,805,511)	-100%
Net capital contributions	14,633,899	29,294,097	(14,660,198)	-50%

Capital contributions are down significantly from prior year due mostly to the Farad settlement payment received in FY 2017 of $11.8m. This was the final payment of the settlement. Additionally, there was more development activity (will serves, engineering charges, etc.) in 3Q 2017 compared to 3Q 2018. This activity reduced in 4Q 2017.

Capital Spending

Spending on capital outlays and construction projects during 3Q YTD 2018 was approximately $23.1m. Major project spend during the period included distribution main replacements at 4th and Prater ($2.1m), SCADA (Control System) upgrades ($1.5m), Mt Rose Water Treatment Facility ($1.0m), Highland Canal upgrades ($1.4m) and the Capital Boulevard Office Expansion ($1.8m).

Cash Flow

	Actual YTD 2018	Budget YTD 2018	Variance $	Variance %
Net cash from operating activities	41,285,678	34,196,127	7,089,551	21%
Net cash used for capital and relating financing activities	(33,380,311)	(50,078,916)	16,698,605	-33%
Net cash from investing activities	872,722	1,007,019	(134,297)	-13%
NET CHANGE IN CASH AND CASH EQUIVALENTS	8,778,089	(14,875,770)	23,653,859	-159%
CASH AND CASH EQUIVALENTS, END OF PERIOD	$ 182,814,719	$ 159,160,860	$ 23,653,859	15%

Change in cash in 3Q YTD 2018 was significantly higher than buget due primarily to higher cash from operations and capital and related financing activities (for full Statement of Cash Flows, see **Attachment A-3**).

Cash from operations has been higher due mostly to more operating income (as discussed previously in the report). Further, in addition to increased revenue, cash from customers increased $3.5m due to timing of accounts receivable and billing from fiscal year end 2017.

Cash used for capital and related financing was down from budget due mostly to less capital spend than budget ($9.2m), less interest costs paid ($3.0m), cash received from water right sales ($1.1m) and more developer contributions ($3.2m).

Cash from investing activities remained relatively flat during the period.

Attachments
A-1 Statements of Revenues, Expenses and Changes in Net Position (budget to actual)
A-2 Statements of Revenues, Expenses and Changes in Net Position (year over year)
A-3 Statement of Cash Flows
A-4 Statements of Net Position

TRUCKEE MEADOWS WATER AUTHORITY

Comparative Statements of Revenues, Expenses and Changes in Net Position
For the nine months ended March 31, 2018

	Actual YTD 2018	Budget YTD 2018	Variance $	Variance %
OPERATING REVENUES				
Charges for water sales	$ 72,626,813	$ 70,540,254	$ 2,086,559	3%
Hydroelectric sales	2,801,075	2,058,513	742,562	36%
Other operating sales	2,239,413	2,338,000	(98,587)	-4%
Total Operating Revenues	77,667,301	74,936,767	2,730,534	4%
OPERATING EXPENSES				
Salaries and wages	13,569,619	14,240,409	(670,790)	-5%
Employee benefits	6,312,501	7,352,454	(1,039,953)	-14%
Services and supplies	17,642,851	21,755,923	(4,113,072)	-19%
Total operating expenses before depreciation	37,524,971	43,348,786	(5,823,815)	-13%
Depreciation	24,572,691	25,545,861	(973,170)	-4%
Total operating expenses	62,097,662	68,894,647	(6,796,985)	-10%
OPERATING INCOME	15,569,639	6,042,120	9,527,519	158%
NONOPERATING REVENUES (EXPENSES)				
Investment earnings	1,578,519	1,007,019	571,500	57%
Net increase (decrease) in FV of investments	(787,620)	-	(787,620)	-
Gain (loss) on disposal of assets	657,795	-	657,795	-
Amortization of bond/note issuance costs	(344,970)	(351,468)	6,498	-2%
Interest expense	(8,392,127)	(10,036,521)	1,644,394	-16%
Other nonoperating revenue	-	-	-	-
Other nonoperating expense	-	-	-	-
Total nonoperating revenues (expenses)	(7,288,403)	(9,380,970)	2,092,567	-22%
Gain (Loss) before capital contributions	8,281,236	(3,338,850)	11,620,086	-348%
CAPITAL CONTRIBUTIONS				
Grants	217,994	150,003	67,991	45%
Water meter retrofit program	1,590,967	586,116	1,004,851	171%
Developer infrastructure contributions	-	-	-	-
Developer will-serve contributions (net of refunds)	4,152,543	3,776,058	376,485	10%
Developer capital contributions-other	4,125,855	3,258,972	866,883	27%
Developer facility charges (net of refunds)	4,546,540	3,619,827	926,713	26%
Contributions from others	-	-	-	-
Net capital contributions	14,633,899	11,390,976	3,242,923	28%
CHANGE IN NET POSITION	22,915,135	8,052,126	14,863,009	185%
NET POSITION, BEGINNING OF PERIOD	631,462,629	605,764,318	25,698,311	4%
NET POSITION, END OF PERIOD	$ 654,377,764	$ 613,816,444	$ 40,561,320	7%

TRUCKEE MEADOWS WATER AUTHORITY

Comparative Statements of Revenues, Expenses and Changes in Net Position
For the nine months ended March 31, 2018

	Actual YTD 2018	Actual YTD 2017	Variance $	Variance %
OPERATING REVENUES				
Charges for water sales	$ 72,626,813	$ 70,708,051	$ 1,918,762	3%
Hydroelectric sales	2,801,075	1,060,088	1,740,987	164%
Other operating sales	2,239,413	1,971,047	268,366	14%
Total Operating Revenues	77,667,301	73,739,186	3,928,115	5%
OPERATING EXPENSES				
Salaries and wages	13,569,619	13,016,649	552,970	4%
Employee benefits	6,312,501	6,128,272	184,229	3%
Services and supplies	17,642,851	17,753,334	(110,483)	-1%
Total operating expenses before depreciation	37,524,971	36,898,255	626,716	2%
Depreciation	24,572,691	24,242,118	330,573	1%
Total operating expenses	62,097,662	61,140,373	957,289	2%
OPERATING INCOME	15,569,639	12,598,813	2,970,826	24%
NONOPERATING REVENUES (EXPENSES)				
Investment earnings	1,578,519	1,966,545	(388,026)	-20%
Net increase (decrease) in FV of investments	(787,620)	(260,868)	(526,752)	202%
Gain (loss) on disposal of assets	657,795	305	657,490	215570%
Amortization of bond/note issuance costs	(344,970)	(411,341)	66,371	-16%
Interest expense	(8,392,127)	(12,403,460)	4,011,333	-32%
Other nonoperating revenue	-	-	-	-
Other nonoperating expense	-	(243,000)	243,000	-100%
Total nonoperating revenues (expenses)	(7,288,403)	(11,351,819)	4,063,416	-36%
Gain (Loss) before capital contributions	8,281,236	1,246,994	7,034,242	564%
CAPITAL CONTRIBUTIONS				
Grants	217,994	1,191,168	(973,174)	-82%
Water meter retrofit program	1,590,967	171,041	1,419,926	830%
Developer infrastructure contributions	-	-	-	-
Developer will-serve contributions (net of refunds)	4,152,543	7,019,685	(2,867,142)	-41%
Developer capital contributions-other	4,125,855	5,180,851	(1,054,996)	-20%
Developer facility charges (net of refunds)	4,546,540	3,925,841	620,699	16%
Contributions from others	-	11,805,511	(11,805,511)	-100%
Net capital contributions	14,633,899	29,294,097	(14,660,198)	-50%
CHANGE IN NET POSITION	22,915,135	30,541,091	(7,625,956)	-25%
NET POSITION, BEGINNING OF PERIOD	631,462,629	584,982,314	46,480,315	8%
NET POSITION, END OF PERIOD	$ 654,377,764	$ 615,523,405	$ 38,854,359	6%

TRUCKEE MEADOWS WATER AUTHORITY

Statements of Cash Flows
For the nine months ended March 31, 2018

	Actual YTD 2018	Budget YTD 2018	Variance $	Variance %
OPERATING ACTIVITIES				
Cash received from customers	$ 81,449,878	$ 74,936,767	$ 6,513,111	9%
Cash paid to employees	(19,833,740)	(21,592,863)	1,759,123	-8%
Cash paid to suppliers	(20,330,460)	(19,147,777)	(1,182,683)	6%
Net cash from operating activities	41,285,678	34,196,127	7,089,551	21%
CAPITAL AND RELATED FINANCING ACTIVITIES				
Acquisition and construction of capital assets	(23,098,599)	(32,274,000)	9,175,401	-28%
Interest paid on financing	(13,958,071)	(17,007,136)	3,049,065	-18%
Principal paid on financing	(2,654,898)	(2,637,285)	(17,613)	1%
Proceeds from refunding bonds	-	-	-	-
Issuance of commerical paper notes	-	-	-	-
Redemption of commercial paper notes	(9,200,000)	(9,200,000)	-	0%
Proceeds transferred to refunding escrow	-	-	-	-
Proceeds from capital debt issuance	-	-	-	-
Proceeds from capital asset disposal	1,142,860	-	1,142,860	-
Contributions for water meter retrofit program	1,590,967	586,116	1,004,851	171%
Contributions from developers-will-serve letters	4,152,543	3,776,058	376,485	10%
Contributions from developers-other	4,125,855	3,258,972	866,883	27%
Contributions from developers-facility charges	4,546,540	3,619,827	926,713	26%
Contributions from others	-	-	-	-
Grants	217,994	150,000	67,994	45%
Bond/Note issuance costs	(245,502)	(351,468)	105,966	-30%
Net cash used for capital and relating financing activities	(33,380,311)	(50,078,916)	16,698,605	-33%
INVESTING ACTIVITIES				
Cash received in connection with WCWU transfer of operations	-	-	-	-
Cash received from STMGID subsequent to merger	-	-	-	-
Verdi Business Park receivable	-	-	-	-
Payments received on Verdi Business Park receivable	18,238	-	18,238	-
Interest received	854,484	1,007,019	(152,535)	-15%
Net cash from investing activities	872,722	1,007,019	(134,297)	-13%
NET CHANGE IN CASH AND CASH EQUIVALENTS	8,778,089	(14,875,770)	23,653,859	-159%
CASH AND CASH EQUIVALENTS, BEGINNING OF PERIOD	174,036,630	174,036,630	-	0%
CASH AND CASH EQUIVALENTS, END OF PERIOD	$ 182,814,719	$ 159,160,860	$ 23,653,859	15%

TRUCKEE MEADOWS WATER AUTHORITY

Statements of Net Position
For the nine months ended March 31, 2018

	Actual Mar-18	Actual Jun-17	Variance $	Variance %
ASSETS				
CURRENT ASSETS				
Cash and investments	$ 137,314,680	$ 132,203,954	$ 5,110,726	4%
Accounts receivable, net	10,945,457	14,803,390	(3,857,933)	-26%
Due from others	316,451	333,417	(16,966)	-5%
Due from other governments	198,617	9,559	189,058	1978%
Interest receivable	531,576	595,161	(63,585)	-11%
Prepaid assets and other assets	983,394	1,222,604	(239,210)	-20%
	150,290,175	149,168,085	1,122,090	1%
RESTRICTED CURRENT ASSETS				
Cash and investments				
Water meter retrofit program	3,757,797	2,369,793	1,388,004	59%
Current bond debt service	8,290,600	6,250,183	2,040,417	33%
	12,048,397	8,619,976	3,428,421	40%
Total current assets	162,338,572	157,788,061	4,550,511	3%
RESTRICTED NONCURRENT ASSETS				
Cash and investments				
Future bond debt service	3,272,078	3,242,632	29,446	1%
Operations and maintenance	9,440,056	8,797,778	642,278	7%
Renewal and replacement	20,239,508	20,672,290	(432,782)	-2%
Water rate stabilization	500,000	500,000	-	0%
Hydro asset purchase	-	-	-	-
	33,451,642	33,212,700	238,942	1%
NONCURRENT ASSETS				
Capital assets, not depreciated	169,381,562	150,655,018	18,726,544	12%
Capital assets, depreciated	767,296,326	791,037,884	(23,741,558)	-3%
Prepaid bond insurance and other assets	512,420	510,360	2,060	0%
	937,190,308	942,203,262	(5,012,954)	-1%
Total noncurrent assets	970,641,950	975,415,962	(4,774,012)	0%
Totals assets	1,132,980,522	1,133,204,023	(223,501)	0%
DEFERRED OUTFLOW OF RESOURCES				
Deferred amount on bond refundings	2,993,290	3,154,276	(160,986)	-5%
Deferred amount on net pension liability	14,239,295	14,239,295	-	0%
Total deferred outflow of resources	17,232,585	17,393,571	(160,986)	-1%
TOTAL ASSETS AND DEF OUTFLOW OF RES	$ 1,150,213,107	$ 1,150,597,594	$ (384,487)	0%
LIABILITIES				
CURRENT LIABILITIES PAYABLE FROM UNRESTRICTED CURRENT ASSETS				
Accounts payable	$ 2,713,115	$ 3,028,060	$ (314,945)	-10%
Contracts and retention payable	249,549	3,305,406	(3,055,857)	-92%
Accrued liabilities	3,944,184	3,912,374	31,810	1%
Due to other governments	1,279,592	3,738,649	(2,459,057)	-66%
Accrued interest payable	265,416	384,147	(118,731)	-31%
Current portion of long-term debt	76,053,799	85,205,701	(9,151,902)	-11%
Customer deposits and amounts due to developers	2,826,698	2,729,962	96,736	4%
	87,332,353	102,304,299	(14,971,946)	-15%
CURRENT LIABILITIES PAYABLE FROM RESTRICTED CURRENT ASSETS				
Current portion of long-term debt	885,000	850,000	35,000	4%
Interest payable	3,539,513	5,400,183	(1,860,670)	-34%
	4,424,513	6,250,183	(1,825,670)	-29%
Total current liabilities	91,756,866	108,554,482	(16,797,616)	-15%
NONCURRENT LIABILITIES				
Net pension liability	35,783,246	35,783,246	-	0%
Long-term debt, net of current portion	365,772,612	372,259,981	(6,487,369)	-2%
Total noncurrent liabilities	401,555,858	408,043,227	(6,487,369)	-2%
Total liabilities	493,312,724	516,597,709	(23,284,985)	-5%
DEFERRED INFLOW OF RESOURCES				
Deferred amount on net pension liability	2,410,007	2,410,007	-	0%
Deferred amount on bond refundings	112,613	127,250	(14,637)	-12%
Total deferred inflow of resources	2,522,620	2,537,257	(14,637)	-1%
Total liabilities and deferred inflow of resources	495,835,344	519,134,966	(23,299,622)	-4%
NET POSITION				
Net investment in capital assets	506,700,472	506,700,472	-	0%
Restricted for water meter retrofit program	2,369,793	2,369,793	-	0%
Restricted for debt service	850,000	850,000	-	0%
Restricted for operations and maintenance reserve	4,197,778	4,197,778	-	0%
Restricted for renewal and replacement reserve	20,672,290	20,672,290	-	0%
Restricted for water rate stabilization	500,000	500,000	-	0%
Unrestricted	119,087,430	96,172,295	22,915,135	24%
Total net position	654,377,763	631,462,628	22,915,135	4%
TOTAL LIABILITIES, DEF INFLOW OF RES, AND NET POSITION	$ 1,150,213,107	$ 1,150,597,594	$ (384,487)	0%

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STAFF REPORT

TO: Board of Directors
FROM: Mark Foree, General Manager
DATE: May 14, 2018
SUBJECT: **General Manager's Report**

Attached please find the written reports from the Management team including the Operations Report ***(Attachment A)***, the Water Resource and the Annexation Activity Report ***(Attachment B)***, the Customer Services Report ***(Attachment C)***, and the Monthly Conservation Report ***(Attachment D).***

Included in your agenda packet are press clippings from April 12, 2018 through May 16, 2018. Also, a *Tell the Board Submission* was received from a customer regarding their water being shut off. The customer's water was turned back on within a short period of time.

Water Project Review Update: Meetings regarding changes to NAC 445A regulations (governing the design and construction of water system facilities) are ongoing. We also had our first meeting between TMWA, NDEP and WCHD leadership regarding an interlocal agreement that would give TMWA (engineering staff) the responsibility of reviewing and approving water plans designed by others for distribution projects such as subdivisions and commercial and industrial main extensions and services in accordance with NAC 445A regulations. We expect to have this agreement completed and ready to present to our Boards for approval this summer.

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STAFF REPORT

TO: Board of Directors
THRU: Mark Foree, General Manager
FROM: Scott Estes, Director of Engineering
BY: Bill Hauck, Senior Hydrologist
DATE: May 14, 2018
SUBJECT: **May 2018 Operations Report**

Summary

- Snowpack got a tremendous boost during the month of March
- This salvaged the winter of 2017-2018 which started out exceptionally dry (Dec-Feb)
- Snowpack in both the Tahoe and Truckee basins still ended the season at 75% normal
- Normal streamflow runoff is projected for the spring of 2018
- All Truckee River reservoirs including Lake Tahoe will fill once again (2 years in a row)
- This means normal river flows for the remainder of this year and beyond
- TMWA is positioned extremely well from a water supply perspective
- Hydro revenue for April 2018 was an estimated $300,365

(A) Water Supply

1. **River Flows** - Truckee River flows at the CA/NV state line were approximately 1,200 cubic feet per second (CFS) this morning. The median flow for May 14th based on 109 years of record is 1,440 CFS.

- **Reservoir Storage** - The elevation of Lake Tahoe is currently 6228.77 feet. This is 0.33 feet below its legal maximum storage elevation of 6229.10 feet. In addition to Donner and Independence lakes, all federally-owned and operated reservoirs are currently in the process of filling. Storage values as of 5/14 are as follows:

Reservoir	Current Storage (Acre-Feet)	% of Capacity (Percent)
Tahoe	704,000	95%
Boca	39,617	97%
Donner	8,617	91%
Independence	16,169	92%
Prosser	16,704	56%
Stampede	219,663	97%

Besides the storage in Donner and Independence lakes, TMWA has 9,500 acre-feet of water stored between Boca and Stampede Reservoirs under the terms of TROA. TMWA's combined back-up reservoir storage between Donner and Independence lakes and TROA is approximately 34,300 acre-feet as of this morning.

- **Outlook** - The dry start to the region's winter was salvaged by the month of March which brought precipitation in excess of 200% of normal to the Sierra, boosting snowpack levels two to three times where they were at the end of February. This was a significant turn-around for our water supply. While the official NRCS snowpack numbers still ended up below-average (75% normal in the Tahoe Basin and 75% of normal in the Truckee Basin respectfully), the runoff forecast is projected to be close to normal as far as streamflow runoff for the Truckee River is concerned. With normal runoff once again and full reservoir storage upstream (now two years back to back) this region is positioned extremely well from a water supply perspective for 2018 and beyond.

(B) Water Production

Demand - Customer demands are close to average for this time of the year. Consumption averaged 94 MGD last week. Surface water between the Chalk Bluff and Glendale treatment plants made up approximately 83% of TMWA's raw water supply, and groundwater the other 17% from production wells located throughout TMWA's service territory.

(C) Hydro Production

Generation - Average Truckee River flow at Farad (CA/NV state line) for the month of April was approximately 2,863 cubic feet per second (CFS). All three of TMWA's plants were negatively impacted by exceedingly high river flows between 4/6 and 4/9. Both the Verdi and Washoe plants were taken off-line on 4/7. All three power plants experienced reduced generation over that three-day period. Statistics for the month are as follows:

Hydro Plant	Days On-Line	Generation (Megawatt hours)	Revenue (Dollars)	Revenue (Dollars/Day)
Fleish	30	1,444	$ 104,679	$ 3,489
Verdi	29	1,428	$ 102,525	$ 3,535
Washoe	29	1,283	$ 93,161	$ 3,212
Totals	**88**	**4,155**	**$ 300,365**	**$ 10,236**

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STAFF REPORT

TO: Chairman and Board Members
THRU: Mark Foree, General Manager
FROM: John Zimmerman, Manager, Water Resources
DATE: 15 May 2018
SUBJECT: **Report Water Resources and Annexation Activity**

RULE 7

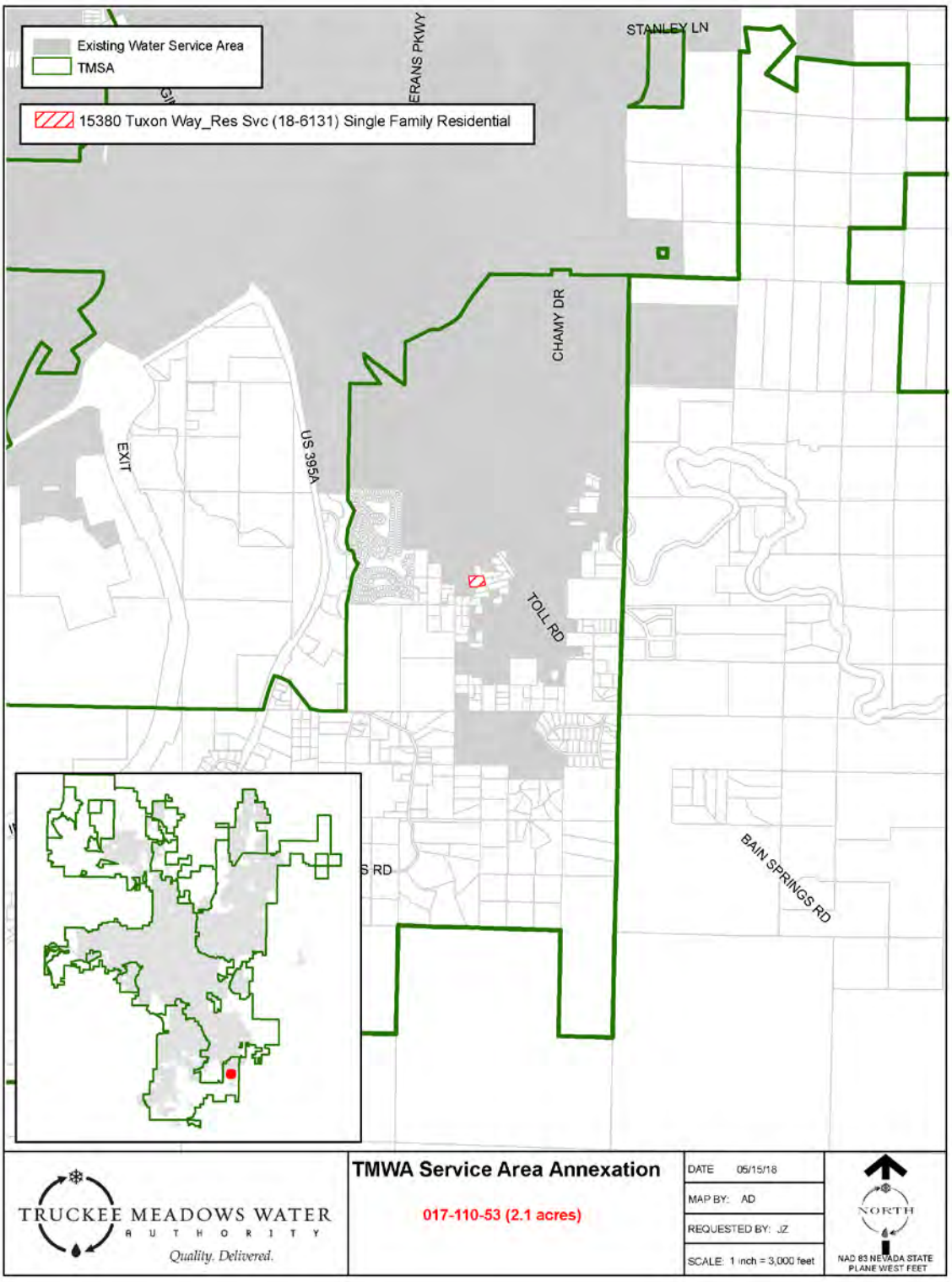
Rule 7 water resource purchases and will-serve commitment sales against purchased water resources through this reporting period:

Beginning Balance		5,242.87 AF
Purchases of water rights	0.00 AF	
Refunds	1.32 AF	
Sales	− 25.95 AF	
Adjustments	0.00 AF	
Ending Balance		5,218.24 AF

Price per acre foot at report date: $7,600

WATER SERVICE AREA ANNEXATIONS

A 2.1-acre single-family residential development (see attached map).


Existing Water Service Area
TMSA
15380 Tuxon Way_Res Svc (18-6131) Single Family Residential
STANLEY LN
ERANS PKWY
CHAMY DR
US 395A
EXIT
TOLL RD
S RD
BAIN SPRINGS RD
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TMWA Service Area Annexation
017-110-53 (2.1 acres)
DATE 05/15/18
MAP BY: AD
REQUESTED BY: JZ
SCALE: 1 inch = 3,000 feet
NORTH
NAD 83 NEVADA STATE PLANE WEST FEET

TRUCKEE MEADOWS WATER AUTHORITY
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STAFF REPORT

TO: Board of Directors
THRU: Mark Foree, General Manager
FROM: Marci Westlake, Manager Customer Service
DATE: May 23, 2018
SUBJECT: **April Customer Service Report**

The following is a summary of Customer Service activity for April 2018

Ombudsman

Customer called and had a leak was unhappy with the leak adjustment, called customer and adjusted accordingly. He was pleased with the outcome.
Customer called for a Move In, advised to call customer service to complete the transaction.
Customer called regarding damage to drive way due to a leak in the meter box, sent to claims department and it was handled.

Communications

Customer outreach in April included:

- James Weingart had a UNR Treatment design class at Chalk Bluff and 24 attended.
- Kara Steeland did a Water Treatment Conservation presentation for Girl Scout Troop 142 at Double Diamond Elementary and 15 attended.
- Kara Steeland did a Watershed Health and Municipal Water Supply workshop at the Humboldt-Toiyabe Supervisor's office and 50 attended.
- Kara Steeland and Lauren Roaldson did a Water Supply, Treatment and Conservation presentation for Turning Point School and 8 attended.
- Chuck Swegles and Lauren Kunin had an Irrigation Start-up Workshop and 15 attended.
- Chuck Swegles did a Landscape Planning and Design workshop and 25 attended.
- Chuck Swegles and Lauren Kunin had an Irrigation Start up Workshop and 5 attended.

- Laine Christman and Lauren Kunin participated in the JCPenney Earth Day Celebration and 50 attended.
- Robert Charpentier, Chuck Swegles and Lauren Kunin participated in Earth Day at Idlewild Park and approximately 2,000 attended.
- Sonia Folsom and Katherine Perkins participated in the IGT Earth Day Celebration and 66 people attended.
- Lauren Kunin and Katherine Perkins participated in the Renown Earth day Celebration and 260 people attended.
- Laine Christman did a Conservation presentation for Green Reno and 30 people attended.
- John Enloe had a presentation for Future Water Supply Opportunities at UNR and 50 people attended.

Conservation (January 1 – April 30)

- 21 Water Watcher Contacts
- 332 Water Usage Reviews

Customer Calls – April

- 7,416 phone calls handled
- Average handling time – 4 minutes, 9 seconds per call
- Average speed of answer – 18 seconds per call

Billing – April

- 127,585 bills issued
- 7 *(<.1%)* corrected bills
- 16,753 (13.0%) customers have signed up for paperless billing to date.

Service Orders –April (% is rounded)

- 6,986 service orders taken
- 3,905 *(*56%) move-ins / move-outs
- 435 (6%) cut-out-for-non-payment and cut-in after receiving payments, including deposits and checks for tamper
- 695 (10%) zero consumption meter checks
- 233 (4%) re-read meters
- 590 (8%) new meter sets and meter/register/ERT exchanges and equipment checks
- 494 (7%) problems / emergencies, including cut-out for customer repairs, dirty water, no water, leaks, pressure complaints, safety issues, installing water meter blankets, etc.

- 62 (1%) high-bill complaints / audit and water usage review requests
- 572 (8%) various other service orders

Remittance – April

- 23,678 mailed-in payments
- 24,400 electronic payments
- 27,828 payments via RapidPay (EFT)
- 16,693 one-time bank account payments
- 5,745 credit card payments
- 3,256 store payments
- 1,799 payments via drop box or at front desk

Collections -April

- 12,310 accounts received a late charge
- Mailed 6,641 10-day delinquent notices, 5.9% of accounts
- Mailed 928 48-hour delinquent notices, 0.7% of accounts
- 142 accounts eligible for disconnect
- 153 accounts actually disconnected (including accounts that had been disconnected-for-non-payment that presented NSF checks for their reconnection)
- 0.07% write-off to revenue

Meter Statistics – Fiscal Year to April 30

- 0 meter retrofits completed
- 1,132 meter exchanges completed
- 1,801 new business meter sets completed
- 124,613 meters currently installed

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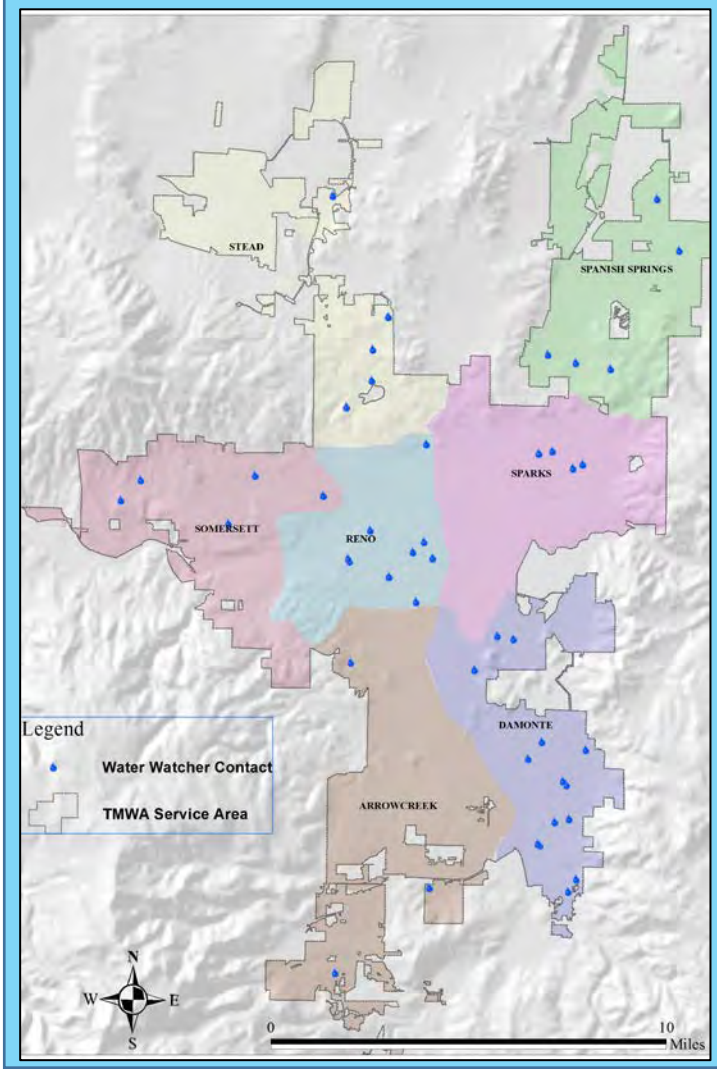
MONTHLY CONSERVATION REPORT – APRIL 2018

SUMMARY – Here we are again, another conservation season. Despite a dismal start to the Sierra snowpack, Miracle March delivered and we are all geared up for a standard irrigation season. This year, we simply ask everyone to be smart about their water and use it responsibly. **– Conservation Dept.**

CONSERVATION CONTACT LOCATION MAP



Water Watcher Contact Initiation Type	
Drive-bys	35
Deliveries	1
Hotline Reports	8
Email Reports	1
Total	**45**

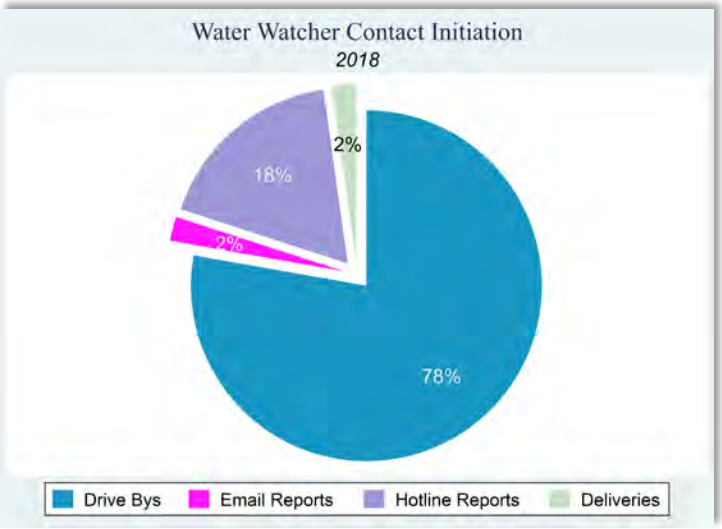
Watering Violations Observed	
Waste	11
Wrong Day	31
Wrong Time	0
Total	**42**

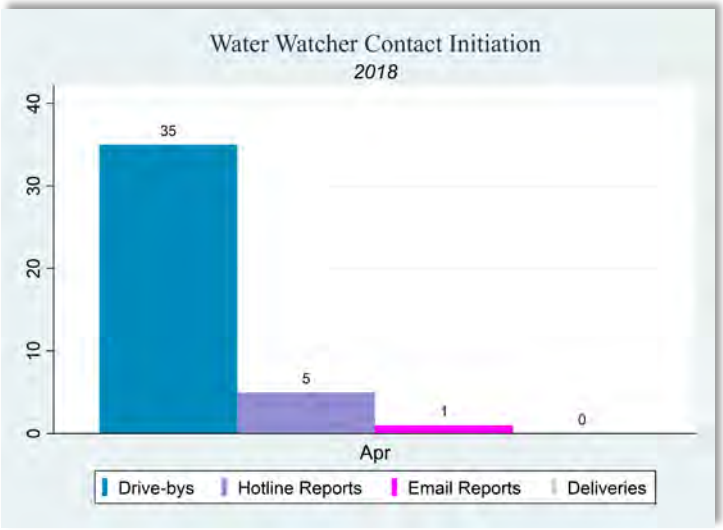
Water Watcher Actions Taken	
Educational Visits	33
A.M. Letters	6
Courtesy Calls	4
No Actions	2
Total	**45**

Efficiency Devices Supplied	
Faucet Aerators	0
Hose Timers	0
Nozzles	0
Low-flow Shower heads	0
Tree Root Feeder	0
Total	**0**

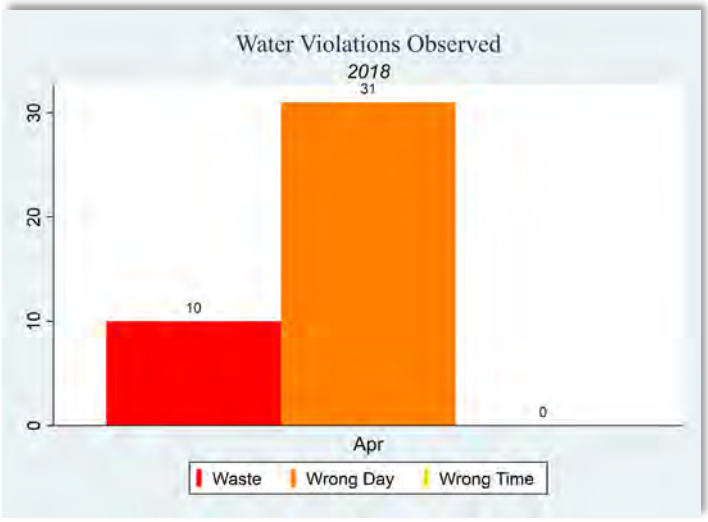
Other Conservation Actions	
Water Usage Reviews	323
Tree Care Visits	13
Total	**336**

Attendees at Workshops /Tours	
Irrigation System Start-up Workshop #1	8
Irrigation System Start-up Workshop #2	5
Landscape Planning & Design Workshop	30
Tree Care Workshop	18
Drip System Maintenance Workshop	N/A
Sprinkler System Maintenance Workshop	N/A
Walking Tour, Part 1 - University Ridge Park	N/A
Walking Tour, Part 1 - River School Farm	N/A
Walking Tour, Part 2 - Valley Wood Park #1	N/A
Walking Tour, Part 2 - Valley Wood Park #2	N/A
Winterize Your Irrigation System Workshop #1	N/A
Winterize Your Irrigation System Workshop #2	N/A
Winterize Your Irrigation System Workshop #3	N/A
Winterize Your Irrigation System Workshop #4	N/A
Total	**61**

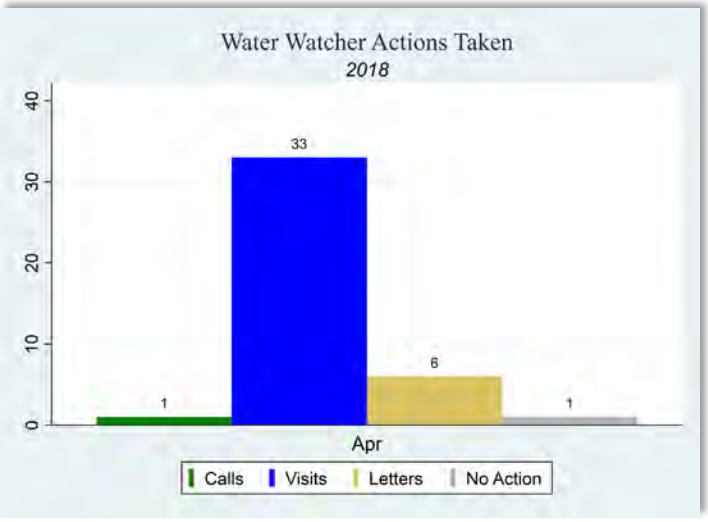

Water Watcher Contact Initiation
2018
2%
18%
2%
78%
Drive Bys
Email Reports
Hotline Reports
Deliveries


Water Watcher Contact Initiation
2018
40
30
20
10
0
35
5
1
0
Apr
Drive-bys
Hotline Reports
Email Reports
Deliveries


Water Violations Observed
2018
26%
74%
Waste
Wrong Day
Wrong Time


Water Violations Observed
2018
30
20
10
0
31
10
0
Apr
Waste
Wrong Day
Wrong Time


Water Watcher Actions Taken
2018
4%
9%
13%
73%
Calls
Visits
Letters
No Action


Water Watcher Actions Taken
2018
40
30
20
10
0
33
6
1
1
Apr
Calls
Visits
Letters
No Action

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TMWA Board Meeting

Wednesday, May 23, 2018

Press Clippings

April 12, 2018 – May 16, 2018

Test. Test. Re-test.

'Affordable rentals' for Tesla and Google employees planned for Reno Greyhound station

Mike Higdon, mhigdon@rgj.com Published 2:01 p.m. PT May 2, 2018 | Updated 3:42 p.m. PT May 2, 2018

CLOSE

After going through the toughest recession in its history, Northern Nevada has seen its fair share of economic development victories. Here's a list of some of the major developments for the region in recent years. Wochit

Google Street View image of Greyhound bus station in Reno.(Photo: Google Maps Image 2018)

CONNECTTWEETLINKEDIN 1 COMMENTEMAILMORE

The father of a Tesla co-founder is the new owner of the Greyhound bus station near Wingfield Park in downtown Reno. He plans to convert the 1.3-acre parcel on the Truckee River into affordable rentals. Greyhound sold the station for $3.75 million to Greenway Reno at the end of March.

“Our plans are to create housing for the likes of Google and technology employees that are accumulating in the area at a rapid pace," said Greenway owner Jeff Straubel of Wisconsin. "We wish to have affordable, non-luxury rents with as many amenities as we can afford."

Straubel, 74, is the father of Tesla Motors co-founder and Chief Technology Officer Jeffrey B. Straubel. Straubel said neither his son nor Tesla are involved in the project. A Tesla spokesperson confirmed the company has no plans with the station.

The area's growth precipitated Straubel Sr.'s interest in Reno development. He said he likes Reno and Tesla and started working with University of Nevada, Reno's real estate department for his plan.

More: Reno Greyhound bus station sold for $3.75 million

More: While UNR seeks buyer for Nelson Building; West 2nd developer says project is still alive

Tesla Motors model S cars are charged at the new Tesla Gigafactory, Tuesday, July 26, 2016, east of Sparks Rich Pedroncelli, AP
Fullscreen

"We just love the area that is developing, especially if we can do some good for the development and the future employees," Straubel said.

Troy Miller, UNR director of real estate, said Straubel is one of many buyers interested in the university-owned Nelson Building. The Nelson Building is across the street from the bus station on Second Street. Miller said the official listing should go live with Colliers International in the next two weeks and they'll consider offers at that time.

Straubel has developed housing and office properties in the Midwest since 1986. This would be his first development project on the West Coast.

Straubel said he's interested in west downtown Reno because of other activity going on in the area.

Two years ago, architect Don Clark presented plans to the city of Reno to convert the surrounding area, including the bus station, into a large housing and commercial area called West 2nd District. His Don J Clark Group was not able to secure new properties or break ground and the concept has since faded from view.

A few blocks north, Jacobs Entertainment has been buying up property on Fourth and Fifth streets between Keystone Avenue and West Street with plans to make an area called the Fountain District.

"We love it because of the location and gentrification that’s going on," Straubel said. "We believe this is the 50-yard line of that endeavor. It’s the center of where the new residential in Reno redevelopment district should start."

Straubel wants to buy surrounding parcels to expand the footprint of his plan, but said those acquisitions have been difficult. Most of the surrounding blocks are either empty lots, parking lots or low-income apartments.

More: Jacobs Entertainment tearing down ‘heroin hotel’ and two other downtown Reno motels

More: Jacobs Entertainment demolishes another motel west of downtown Reno

"The prices are astronomical," he said. "It’s out of control, but it has to start somewhere. Sooner or later reality will set in."

In the past, property owners have said their land prices will increase in relation to the intended development plans. The Siegel Group owns a parking lot across the street from the bus station, for example, and Senior Vice President Michael Crandall told the RGJ two years ago the price would go up once he learned that Don Clark wanted to build a hotel on the lot.

The Nelson Building owned by UNR was appraised at $3.7 million three years ago, but the Don J Clark Group offered $7 million. After the sale to Clark failed, the Nevada System of Higher Education Board approved a new listing and future sale price above that appraised value.

More: Siegel Group says West 2nd District 'Absolutely never happening'

Jacobs Entertainment recently purchased parcels north of the railroad tracks and similar in size to the bus station for millions of dollars. Some weekly motels have sold for a little under $1 million, but others have sold for more, according to Washoe County Assessor records.

"We've been designing for some time and it’s hard to say where we’ll settle because we have to work with the city," Straubel said. "Hopefully everyone will be supportive."

Straubel did not reveal a timeline or scope of the development plan.

Greyhound bus services plan to relocate to either the Amtrak station near Harrah's Casino or the RTC bus station on Fourth and Lake streets.

Mike Higdon is the city life reporter at the RGJ and can be found on Instagram @MillennialMike, on Facebook at Mike Higdon, Reno Life and on Twitter @MikeHigdon.

Volunteers needed for May 5 community cleanup

By KOLOCares |
Posted: Thu 1:57 PM, Apr 12, 2018

RENO, Nev. (KOLO) - Volunteers are needed to clean up illegal dump sites, remove invasive weeds and beautify community neighborhoods during the Keep Truckee Meadows Beautiful Great Community Cleanup Saturday May 5, 2018 from 8am – noon.

There are already 22 cleanup sites throughout the Truckee Meadows for which volunteers can sign up.

This event is made possible by the generosity and hard work of volunteers. Last year, 780 volunteers removed more than 67 tons of illegally dumped trash and invasive weeds.

"Cleanup events are costly and labor-intensive," says Christi Cakiroglu, KTMB's Executive Director. "For example, it costs $2 to recycle a tire properly, but for KTMB to come out to an open space area and clean it up, it is $50-$60. And that is with the help of volunteers and many community partners who give of their time for free. We work to connect our community with important resources and education, such as KTMB's Recycling Guide, to help mitigate these problems. There are a lot of free and inexpensive ways to get rid of many of the items we find illegally dumped in the open spaces."

"Illegal dumping is a complex issue, but we are making progress on addressing it in our community through increased patrolling, cleanups and education", says Cakiroglu. "For the last 12 years, KTMB has coordinated the Illegal Dumping Task Force – a group of over 50 vested partners including the Washoe County Sheriff's Office, municipalities, recreating groups, and private citizens. This group meets regularly to discuss current illegal dumping sites, to support KTMB's Great Community Cleanup and work on long-term solutions to prevent illegal dumping."

KTMB's Great Community Cleanup is made possible thanks to the Truckee River Fund through the Community Foundation of Western Nevada, Washoe County Health District, NV Energy Foundation, Sun Valley General Improvement District, Washoe County Regional Parks and Open Spaces, Washoe County Sheriff's Office, City of Reno, City of Sparks, Bureau of Land Management, Reno-Sparks Indian Colony, Nevada Department of Wildlife, SaveMart, Great Basin Brewery, Home Depot, RT Donovan, Waste Management, RAD, Friends of Nevada Wilderness, The Nature Conservancy, Pepsi, Tahoe Trail Bars and Tires Plus

High water level damages Lake Tahoe beachfront properties

by Claire Cudahy
ccudahy@tahoedailytribune.com

April 13, 2018

Claire Cudahy / Tahoe Daily Tribune

Erosion from a high water year has damaged a number of beachfront properties in Marla Bay.

After last winter's big snowfall and this year's "Miracle March," which pounded the basin with feet of much-needed snow, Lake Tahoe's water level has remained high and the Tahoe City dam has been releasing more water down the Truckee River. But for one lakefront community, it's not happening fast enough.

In the Zephyr Cove neighborhood Marla Bay, beachfront properties have suffered from two years of water levels well above the lake's natural rim, which sits at an elevation of 6,223 feet.

"We've had sea walls falling down. We don't have any beach. All of the sand is sucked out into the lake. It's not been pretty," said Scott Smith, president of the Marla Bay Protective Association. "It has happened in the past, but this has been the worst because it's two years in a row."

Last spring, following years of drought, the U.S. District Court Water Master Chad Blanchard increased water flow from the Tahoe City dam for the first time since 2006. Blanchard is required by law to keep the water below the surface elevation of 6,229.1 feet, the federal legal limit set to protect lakefront development from damage.

"I've pleaded with the water master to drop the lake, and he said he can't — he's bound by law," said Smith.

Blanchard determines how much water to release from the dam when it nears the federal legal limit based off current lake level, snowpack and the upcoming weather forecast. There are strict regulations that govern when and how much water he can release.

This year, after a dry December, January and February, Blanchard did not need to release excess water until March 22.

From March 1 to March 25, the Sierra snowpack grew from 25 percent of normal to 73 percent.

"We were to the point after a gigantic March — one of the biggest Marches ever — where the lake rose dramatically and the forecast rose and on the 22nd we received a forecast for inflow and that's when we started increasing releases," explained Blanchard.

As of Thursday, the lake's surface elevation is 6,228.74 — about 4 inches from the legal limit — and the dam is continuing to let out additional water.

"We are probably one of the only communities to really have this big problem with the lake level because of the way the wind blows right at us," said Smith. "But that's just part of the life of being in Lake Tahoe with high water."

Invest in water reuse infrastructure for a strong American economy

BY PAUL D. JONES AND PATRICIA SINICROPI, OPINION CONTRIBUTORS — 04/14/18 02:30 PM EDT 34
THE VIEWS EXPRESSED BY CONTRIBUTORS ARE THEIR OWN AND NOT THE VIEW OF THE HILL

66

It's Water Week in Washington, shining a spotlight on all things water — including the national movement toward water reuse.

Increasingly, communities are turning to water reuse as a proven method for ensuring a safe, reliable, locally controlled water supply that is essential for livable communities with healthy environments, robust economies, and a high quality of life.

Water reuse, also known as water recycling, is the process of intentionally capturing wastewater, stormwater, saltwater, or graywater and cleaning it as needed for a beneficial freshwater purpose such as drinking, industrial processes, surface or ground water replenishment, or environmental restoration and enhancement.

Investment in water reuse builds communities that are modern, sustainable and stable —ready for families to flourish and businesses to grow. In some communities, recycled water can create a resilient and drought-proof water supply. In other communities, water recycling protects sensitive waterways and alleviates over-burdened centralized treatment facilities. Communities and businesses that invest in water reuse ensure that residents have safe drinking water supplies, industries have water to expand and create jobs, farmers have water to grow food, our environment is protected, and our economic future remains strong and secure.

Examples of how water reuse is at work sustaining and growing local economies include:

- The Orange County Water District in California purifies enough wastewater each day to meet the drinking water needs of 850,000 local residents.
- Recycled water cools Loudoun County, Virginia's "Data Center Alley" which processes more than two-thirds of the world's Internet traffic.
- A planned 13-mile pipeline will provide 1.3 billion gallons of recycled water annually to Nevada's Tahoe Reno Industrial Center, home of Tesla, Switch, and Google — and 20,000 new jobs.
- Hilton Head, South Carolina recycles water to irrigate eleven destination golf courses — sustaining $600 million annually in recreational tourism.

- By 2027, the volume of recycled water produced in the United States is projected to increase by 37 percent from 4.8 billion gallons per day to 6.6 billion gallons per day, according to a recent survey by Bluefield Research. The versatility of recycled water as a resource creates great opportunity. Recycled water allows communities to address water supply resiliency, population growth, environmental enhancement and habitat creation, extreme wet weather events and combined sewer overflow, and saltwater intrusion, among other issues. We have seen tremendous growth in water recycling in our traditional recycling centers of the arid west and south. This has largely been attributed to water supply challenges and the need for drought-resilient, sustainable supplies such as recycled water.
  However, there is new and exciting growth in more water-rich areas in the Pacific Northwest, and in cities such as Chicago, Atlanta, New York and others that are now looking toward water recycling to help manage stormwater and receiving water quality challenges. In addition, other areas on the eastern seaboard such as Hampton Roads, Virginia are incorporating water reuse strategies to support their region's resiliency and sustainability goals.

The concept of wastewater is quickly becoming obsolete. Instead of using water just once and discharging it back into the environment, more and more communities are cleaning the water so that it can be used safely and effectively for many other beneficial purposes. What we once thought of as wastewater is simply water that we are wasting — the good news is that we no longer have to.

Paul D. Jones II, P.E., is president of the WateReuse Association and general manager of the Eastern Municipal Water District, which is one of the largest producers of recycled water in California. jones has more than 20 years' experience managing water utilities.

Patricia Sinicropi is the executive director of the WateReuse Association and has nearly two decades of experience as a policy expert and advocate on water-related issues in Washington, DC.

The WateReuse Association is the nation's only trade association solely dedicated to advancing laws, policy, funding, and public acceptance of recycled water. WateReuse represents a coalition of utilities that recycle water, businesses that support the development of recycled water projects, and consumers of recycled water.

Trash Island' is Now Empty Thanks to Community Activism

Posted: Apr 14, 2018 8:48 PM PDT
Updated: Apr 14, 2018 9:09 PM PDT
By Brandon Fuhs

On April 3, Chastity Townsend showed Channel 2 a stretch of trash dumped on an island in the middle of the Truckee River along the bike path east of Rock Park.

After a couple weeks of planning and a minor flood, Chastity finally got her group together to clean up Trash Island.

"Battle Born Pool and Spa is here, Scheel's is here, Keep Truckee Meadows Beautiful is here," Chastity says. "It's been a wonderful turnout I'm just so stoked by the turnout."

Along with local businesses and organizations, every day citizens joined in the clean up, including Cynthia Couch from Reno. After seeing the Trash Island story and watching much of the garbage get swept away on April 7, she had to help Chastity any way she could.

"Trash Island was just a disaster," Couch says. "I saw it and I was actually horrified and actually sickened by it, how much trash was in this river. But when I saw her I said 'Yea, go girl.'"

A total of 80 bags and two trailers full of trash was collected today over about six and a half hours of work. Most people walked along the bank of the river and the bike path picking up trash, but Battle Born Pool and Spa set up a safety line and crossed the river to get the island. They picked up all the trash on the actual island including grocery carts, mattresses, scooters and snowboards to name a small amount of junk. Chastity says they are the big heroes."

"I can't begin to tell you how thankful I am for those heavy lifters here," Chastity says. "Because I definitely couldn't get out in the river."

Chastity says she does it not only because the Truckee River is a water source for the community, but it's a beautiful, recreational asset that shouldn't be taken for granted. Today she helped make at least part of the Truckee River a better place to be.

"I can't imagine not wanting to keep it beautiful," Chastity says. "And with the efforts of everyone here involved today, we've been able to keep the Truckee river that much cleaner, that much more beautiful, and that much more safe for the children and for families."

Chastity says she plans on covering all of Rock Park, and eventually working down to the Lockwood area. Even that is just the start she says.

Jordan Thomas, owner of Battle Born Pool and Spa, says they're in their busiest time of the year and could still find the time to help out. He says frankly, businesses like his are better equipped to help out with bigger projects like this. Thomas says you haven't seen the last of them either.

"She's going to be out there probably spotting more trash," Thomas says about Chastity. "And we're going to be right behind her."

Truckee River Flood Management Authority Working With Army Corps of Engineers

Posted on April 16, 2018

The Truckee River Flood Management Authority has entered into a $6.5 million flood damage reduction design agreement, with the Department of the Army. The Army Corps of Engineers will perform preconstruction engineering and design of terracing and revegetation features along the Truckee River from Greg Street to McCarran Boulevard. The planned improvements along this portion of river bank will work with other flood project elements, to confine flood flows to the riverbed under the Rock Boulevard and McCarran Boulevard Bridges during periods of high water flow. The feds will cover 65 percent of the cost, with the rest being funded by a 1/8 cent Washoe County sales tax.

Filed Under: KOH Local News

Making water-smart energy choices

17 Apr 2018|**Brahma Chellaney**

Climate change undoubtedly poses a potent—even existential—threat to the planet. But the current approach to mitigating it, which reflects a single-minded focus on cutting carbon dioxide emissions, may end up doing serious harm, as it fails to account for the energy sector's depletion of water resources—another major contributor to climate change.

'Water is at the heart of both the causes and effects of climate change,' a National Resource Council report declares. And, indeed, the water cycle—the processes of precipitation, evaporation, freezing, melting and condensation that circulate water from clouds to land to the ocean and back—is inextricably linked to the energy exchanges among the land, ocean and atmosphere that determine Earth's climate. Just as the accumulation of carbon in the atmosphere contributes to climate change, so does the degradation and depletion of water resources. And these processes are mutually reinforcing, with each propelling and intensifying the other.

Energy extraction, processing (including refining) and production is highly water-intensive. The energy sector is the largest consumer of water in every developed country except Australia, where, like in most developing countries, agriculture comes out on top. In the European Union, electricity-generating plants alone account for 44% of all freshwater consumed each year; in the United States, that figure is 41%.

The more stressed water resources become, the more energy the water sector demands, as groundwater must be pumped from greater depths, and surface water must be transported across longer distances. In India, for example, energy now comprises about 90% of the cost of groundwater.

As these processes fuel climate variability, they reduce water availability and boost energy demand even further, producing a vicious cycle that will be hard to break. In fact, meeting higher electricity demand and achieving national targets for production of biofuels and other alternative fuels would require a more than twofold increase in global water use for energy production over the next quarter-century.

The only way to break this cycle—and thus to mitigate climate change effectively—is to manage the nexus between water and energy (as well as food, production of which depends on water and energy). In other words, countries must make energy choices that are not only less carbon-intensive, but also less water-intensive.

With global water supplies already strained, the shift to a water-smart approach to energy could not be more urgent. Two-thirds of the world's people—especially in Central and South Asia, the Middle East and North Africa—confront serious water shortages. Asia—the biggest driver of increased global energy demand—is also the world's driest continent, measured by water availability per capita.

In these water-stressed regions, shortages have already begun to constrain the expansion of energy infrastructure. One important reason why China has failed to develop its shale hydrocarbon industry is inadequate water in the areas where its deposits are located. (To extract energy from shale, millions of gallons of water must be shot into it.)

Increasing water stress has also driven up costs for existing power-generation projects, possibly jeopardising their viability. Australia's Millennium drought, which lasted from the late 1990s until 2012, undermined energy production, causing prices to rise.

With energy shortages usually most severe in water-stressed areas, what are affected countries to do? For starters, they must recognise that energy that is 'clean' in terms of carbon can be 'dirty' from a water-resource perspective. For example, 'clean' coal involving carbon capture and sequestration ranks, along with nuclear power, at the top of the water-intensity chart.

Some renewables, such as solar thermal power and geothermal energy, are also notoriously water-intensive. By contrast, solar photovoltaic and wind power—two renewable technologies gaining traction globally—require no water for their normal operations. Encouraging the development of such sources should thus be a high priority.

But the type of energy that is used is not the only issue. It is also important to select the right types of plants at the planning stage. Alternative cooling technologies for power generation, including dry or hybrid cooling, can reduce water consumption (though the use of such technologies currently is constrained by efficiency losses and higher costs).

Power plants should also be located in places where they will rely not on freshwater resources, but instead on saline, brackish, degraded or reclaimed water. In Asia, which now leads the world in terms of adding nuclear power capacity, most new plants are located along coastlines, so that these thirsty facilities can draw more on seawater.

Yet here, too, there are serious risks. Rising sea levels, as a result of climate change, could pose a much more potent threat than natural disasters, such as the tsunami that caused the 2011 Fukushima catastrophe in Japan. Moreover, with coastal areas often densely populated and economically valuable, finding suitable seaside sites for new nuclear plants is no longer easy. Despite having more than 4,500 miles (7,200 kilometres) of coastline, India has struggled to implement its planned expansion of nuclear power through seaside plants, owing to strong grassroots opposition.

True energy security is possible only in the context of resource, climate and environmental sustainability. The global focus solely on carbon reduction not only obscures these critical linkages, but also encourages measures that adversely impact resource stability. It is time to adopt a more comprehensive, integrated and long-term approach to the management and planning of energy, water, and other resources, with a view toward broader environmental protection. Otherwise, we will fail to meet the sustainable-development challenges we face, with devastating consequences, beginning with the world's most water-stressed regions.

AUTHOR

Brahma Chellaney, professor of strategic studies at the New Delhi-based Center for Policy Research and fellow at the Robert Bosch Academy in Berlin, is the author of nine books, including *Asian juggernaut*, *Water: Asia's new battleground* and *Water, peace, and war: confronting the global water crisis*. This article is presented in partnership with Project Syndicate © 2018. Image courtesy of Flickr user Inf-Lite Teacher.

TAGS

What Is 'Raw' Water, and Should You Drink It?

By Bernadette Young
Medically Reviewed by Kareem Sassi, MD

Raw water enthusiasts say that drinking water that is untreated and unfiltered is safe and healthier than tap water. Find out what the research says.

Raeff Miles/Getty Images

It's important to know the source of your drinking water and if and how it's been treated.

"I'm going to give you two choices," says Bryan Pullen, CEO of Summit Spring Water in Maine. "A glass of natural, untreated water that meets every state and federal standard for drinking safety and is free of man-madecontamination, or a glass of river water from New York mixed with chlorine, fluoride, anti-corrosives, nitrate, and pharmaceuticals. Which would you prefer?"

If you drink from the tap, then glass number two describes the components of your water. To ensure that your water is safe to drink by federal standards, it is treated with chemicals, such as chlorine to eliminate harmful microorganisms, and anti-corrosives that protect against infrastructure contamination while the water travels through pipes to your home.

Without sterilization, untreated or unfiltered water could be swarming with dangerous microorganisms, such as Giardia lamblia, cryptosporidium,and Vibrio cholerae, which could lead to hazardous health issues, such as diarrhea, sepsis, cholera, and potentially death.

But raw water enthusiasts, such as Bryan Pullen and his customers, have been drinking untreated and unfiltered water for years and say they have never fallen ill.

"In Summit Spring's 150-year history, I was astounded to learn that no one has ever been sick, nor have they ever filed a single complaint," says Pullen.

"That's how pure the water is."

"Raw water" is a general term for unfiltered or unsterilized spring water that includes naturally occuring minerals and lacks chemical additives that are put into tap water to remove potential contaminants. Not only is raw water jugged, bottled, and sold in modern grocery stores across the United States, it's flying off the shelves. At Rainbow Grocery, a worker-owned cooperative located in San Francisco, glass containers of raw water marketed by Live Water are rarely in stock — despite selling for $39.99 per 2.5 gallon jug.

The water at Summit Springs has a strict testing protocol to ensure that every bottle meets state and federal regulations, but not all raw water is pure and safe to drink.

"Source matters," says Pullen. "I'm not suggesting to go to your local stream and drink the water. That's dangerous."

Whether you're choosing water from the tap, a bottle, or a raw source, knowing where your water comes from, what's in it, and if it's safe to drink is important in the prevention of waterborne illness and to maintain health and wellness.

A Case for Raw Water

"You're drinking toilet water with birth control drugs in them," says Live Water founder Mukhande Singh when reflecting on the tap water that we drink. He's not entirely wrong. According to an Associated Press investigation on drinking water supplies for 24 major metropolitan areas, traces of prescription medication, antibiotics, anticonvulsants, sex hormones, over-the-counter drugs, and additives from shampoos and lotions do exist in our tap water.

Filters and sterilizing agents such as chlorine are used to clear tap water of harmful microorganisms and prevent it from surface-level contaminants as it travels from the water source to your spigot.

"Filters remove minerals, parasites, and bacteria — good and bad," says Pullen. "Pharmaceutical drugs and chemicals get past filters, so chlorine is there to sterilize the water while it is transported through the pipes to your home."

Sometimes those pipes can be dangerous — especially if they're old and made of iron, and especially if your state government is trying to get by with spending the least amount of money as possible. Remember Flint, Michigan?

Live Water and Summit Springs bottle their water right at the covered, natural spring because they say it eliminates the need for chemical sterilizing agents and the possibility for surface-level contamination from air pollution, animal feces, and man-made pollutants residing in lakes, streams, and rivers.

According to Singh, whose water comes from Madras, Oregon, "our tests have never shown any industrial age contamination or potentially harmful components."

Pullen adds that they perform “continuous tests every time they bottle for harmful contaminants, quarterly tests of their containers and filtration systems, and state and federal tests annually for 200 different chemicals.”

The Dangers of Drinking Raw Water

According to the The Environmental Protection Agency (EPA), drinking water comes from groundwater, streams, rivers, and lakes, which are subject to contamination by animal byproducts, microbials, chemicals and pharmaceuticals, and pollution. To ensure your drinking water is safe, the EPA sets regulations for over 90 contaminants for drinking water, including:

- Chemical contaminants: arsenic, chemical, lead, copper, radionuclides, lead, and other chemicals
- Microbial contaminants: coliform, disinfection byproducts, bacteria, parasites, and other pathogens

Even though untreated water appears clean, drinking it can be extremely dangerous to your health. “Even though the water looked pristine, there are all kinds of wildlife in the mountains that poop in the fields, and when it rains or the snow melts, the pathogens in their feces end up in the water,” says Alan Roberson, the executive director of the Association of State Drinking Water Administrators (ASDWA).

Consuming raw water from surface-level sources put us at risk for a number of hazardous health issues caused by pathogens, such as:

- *Giardia lamblia* is a parasite found in soil, food, or water that colonizes in our small intestines. According to previous research published in the journal *American Society for Biology*, *G. lamblia* results in a diarrhea-inducing disease called giardiasis and is the most common cause of waterborne outbreaks of diarrhea in the United States.
- Cryptosporidium is a microorganism derived from feces that causes diarrhea, abdominal cramping, nausea, and potential death.
- *Vibrio cholerae* is another aquatic microorganism, which when ingested can lead to cholera, an acute diarrheal intestinal infection. Symptoms of cholera range from nausea, abdominal cramping, and lethargy to severe dehydration, septic shock, and even death.

Ensure That Your Drinking Water Is Safe

"The basic benefit of drinking water is hydration to keep our bodies healthy and functioning properly," says Kathy Benedict, PhD, epidemiologist in the Waterborne and Disease Prevention Branch of the CDC. "It's important for people to know where their water comes from, what's in it, how it's delivered, and whether it's safe for them to drink."

According to EPA Press Officer Enesta Jones, water safety requirements are often met in the United States. "Over 91 percent of the community water systems meet all health-based standards all of the time," says Jones.

Despite small levels of contamination from pharmaceuticals and chemical additives residing in U.S. tap water, our tap water is safe to consume unfiltered. "The United States has one of the safest public drinking water supplies in the world," says Dr. Benedict.

"Tap water is very safe to drink in the United States," adds Amy Pickering, PhD, an assistant professor in the department of civil and environmental engineering at Tufts University in Medford, Massachusetts. "It isn't necessary [to filter tap water] 99 percent of the time, but many people think it tastes better filtered."

To ensure the safety of your water supply, you can:

- Have your tap water tested.
- Read the Consumer Confidence Report on your local drinking water.
- Filter your tap water.
- Drink bottled water that meets the Food and Drug Administration's federal standards.
- Boil your water.

Additional reporting by Nicol Natale

Reno Fire Department Surveying Truckee River for New Hazards and Obstacles

Posted: Apr 18, 2018 7:27 PM PDTUpdated: Apr 18, 2018 8:43 PM PDT
By Ryan Canaday
CONNECT

Every year a lot can change within the Truckee River, like the depth, speed and temperature of the water. Since there are so many unknowns, the experts with the Reno Fire Department like to test the waters before the public starts to use the river more often.

All it takes is a quick change into a wetsuit and a safety briefing, and Reno Fire's Water Rescue Team is ready to go. On Wednesday, their trip into the frigid Truckee River waters kicked-off their first ride and training exercise for the 2018 season.

"Familiarizing ourselves with the current conditions of the river since they change year to year," said Captain Dan Tilzey with the Reno Fire Department.

He says their objective is to survey the Truckee, and make note of any new obstacles that might exist above and below the surface.

"A lot of debris will be in the river, gets pushed up against the shore," said Tilzey. "New islands form, different channels form, and rocks can get moved."

The team needs to experience these dangers first hand not just to warn the public ahead of time, but also so they can avoid the trouble spots themselves. Even the experts want to take the safest route when a real rescue mission takes place.

"One of the things you just saw us doing was going over a low head dam, which are very hazardous and it's not for the untrained to do," said Tilzey.

In fact, while the river flows are up, these small dams create a dip in pressure at the bottom that's just strong enough to suck people under.

"It recirculates on itself, and it creates a wave or a hole right there that can hold a boat or a swimmer and not let you go," said Tilzey.

Even if a swimmer can escape its hold, another danger the water team couldn't avoid during their ride was the temperature of the water. Saying if you aren't dressed in the proper gear, it's best to stay out of the river.

"You'd probably be able to have purposeful movement for about ten minutes, before you got too cold to really be able to do anything to help yourself," said Tilzey.

The fire department is still encouraging people to enjoy the river later this summer, but they'd like for people to wait until the flows decrease and conditions warm up.

‘Miracle’ March not a cure for snowpack

Water policy expert warns of ‘new normal’ as snow drought continues in the Sierra

Benjamin Spillman Reno Gazette Journal USA TODAY NETWORK

The series of March storms that slammed the Sierra Nevada made skiers and snowboarders rejoice and provided a much-needed boost to water storage reservoirs in California and Nevada.

But even a one-month snow total that rivaled the “Miracle March” of 1991 isn’t enough to erase the snow drought that lingered through winter 2017-18.

“The takeaway is we had another snow drought year,” said Dan McEvoy, regional climatologist for the Western Regional Climate Center in Reno. “We are still below average this year and we are going to lose our snowpack earlier than average.”

It’s not surprising the conversation about snow drought got buried in the excitement of the rare series of late-season storms. The fact it endured despite the near historic level of snow in winter’s finishing kick shows just how drastically dry conditions were during the first half of winter.

It’s difficult to blame human-induced climate change for one warm month or even a single warm and dry season but research shows that as the planet warms conditions that create snow drought in the Sierra are increasingly likely.

“What climate models tell you is that the chances of warmer winters in California and drier winters in California are higher,” said Gonzalo Cortés, a hydrologist and mountain water researcher at University of California Los Angeles. That’s important because systems of capturing, storing and delivering water throughout the west are optimized for the cooler, snowier conditions of winters past.

“It complicates the water management problem we have, which is storing water for the dry spring and summer period,” said Peter Gleick, co-founder and president emeritus of the Pacific Institute, a nonprofit think tank that focuses on international water policy. “There has been a lot of hand waving and not much on the ground preparation.”

The concept of snow drought is one example of something that isn’t a household term even though has big implications for people who depend on the Sierra Nevada for water. Snow drought is essentially a scenario in which there is a less-than-usual amount of snow. There are two types of snow drought:

- A dry snow drought is due to lack of storms delivering precipitation in the form of snow.
- A warm snow drought occurs when warm temperatures cause precipitation to fall as rain instead of snow and can happen even when there is above normal precipitation.

In the Lake Tahoe area, measuring stations show overall precipitation at 90 to 110 percent of normal for the water year. But snow water equivalent, which measures water held in the snowpack, is only at about 50 to 70 percent of normal. Across Nevada, river basins finished winter between 55 and 84 percent of normal in terms of snow. In California, regional surveys showed snow levels ranging from 35 to 72 percent of normal with the state as a whole at 58 percent.

Just how unusual was March?

That mountain areas even got within shouting distance of normal snow levels is due to the unusual conditions in March. Not only was it the third-snowiest March on record at Tahoe City, California., with 102.5 inches. With an average temperature of 30.6 degrees, it was nearly 4 degrees colder than a typical March. “That definitely stands out as out of the normal,” Cortés said.

When March isn’t included in the totals, the average temperature during winter at Tahoe City was 32.8 degrees, nearly two degrees warmer than normal. Temperatures in the Sierra Nevada as a whole from December to March were in the top ten percent of all winters on record. “The temperatures in the first couple months were definitely hotter than normal,” Cortés said.

The unusual March, which pushed snowpack from 29 to 78 percent of normal at Lake Tahoe, essentially served to mask how abnormally warm and snowless the majority of winter really was. “When you look at the details of what happened during the winter it is very different from a traditional winter,” Cortés said.

The ‘new normal’

Gleick said that due to climate change, winter conditions once considered warmer and less snowy than average for the 20th century have become the norm for the 21st. “Part of the new normal is this change in snowfall and snowmelt dynamics,” Gleick said. One example, he said, is the change in the timing of runoff that’s needed to recharge reservoirs for drinking water and irrigation. Since the beginning of the 20th century the percentage of overall runoff coming during the traditional April to July snow period has steadily decreased while overall annual runoff has held steady.

“The shift from spring months to winter months is completely consistent with what’s expected from a changing climate,” Gleick said. Peter Gleick, co-founder and president emeritus of the Pacific Institute It means more water is coming off the mountains during a period in which reservoir managers are reserving space for flood control, forcing them to pass it along instead of storing it. And by the time they shift from winter flood control to spring and summer storage management there’s not as much snow left to capture.

“Everything we knew 30 years ago about climate change said it’s the snow, it is all about the snow,” Gleick said.

Gleick said water managers aren’t moving fast enough to adjust to changing conditions. More flexible rules to govern the timing of reservoir releases and in an increase in underground storage would help, he said.

“With a few exceptions the warnings that climate change was going to change California’s water have been ignored,” he said.

People take advantage of the snow that still exists up at Sky Tavern Ski Area on Mt. Rose Highway south of Reno on Feb. 10. JASON BEAN/RGJ

TMWA Mulls Future of Farad Hydroelectric Plant (Updated)

Update: This story has been updated to correct TMWA staff source.

April 18, 2018 Carla O'Day

The Farad Hydroelectric Plant, and a recently-constructed footbridge that's part of the Tahoe-Pyramid Bikeway. Photo: Tahoe Pyramid Bikeway

The future of the Farad Hydroelectric property is still unknown but the Truckee Meadows Water Authority (TMWA) board on Wednesday agreed to get appraisal costs and to meet with its California neighbors to learn about types of zoning available in the area.

TMWA staff is also planning to explore types of easements that might apply to all and portions of the property, said TMWA director of operations and water quality Andy Gebhardt. A report is due back to the board in about four months.

The plant was built alongside the Truckee River in Nevada County, California in 1899. It was the first electric generating plant on the eastern slope of the Sierra Nevada. Mining interests bankrolled the project so water could be pumped out of the Virginia City silver mines as the mine shafts were sunk deeper into the ground.

The approximately 70-acre property was successfully transferred to TMWA in December 2017. TMWA has determined that it is not economically feasible to rebuild and rehabilitate the necessary components to create an operational hydro generation facility. During the October 2017 Board meeting, TMWA staff was directed to investigate the potential uses for the property and facility.

TMWA is still soliciting letters of interest concerning ideas for the property. Letters have already come in from people who want it to remain part of the Tahoe Pyramid Bikeway and for recreational use. Others want to demolish parts of it for salvage material or to repair it and get it functioning again.

TMWA purchased the hydroelectric facility and some of its assets, according to an agreement in January 2001 between TMWA and Sierra Pacific Power Co., now known as NV Energy. As a result of damages from a 1997 flood, the Farad facility wasn't operational then and Sierra Pacific was involved in litigation with insurance companies over coverage disputes.

Insurance litigation delayed delivery of the Farad facility but TMWA and Sierra Pacific entered into a settlement agreement in June 2014. The agreement stated Sierra Pacific would assign TMWA 100 percent of all future insurance proceeds related to Farad and all claims for interest due for delayed payment.

RELATED: TMWA to Help Fund Water Innovation Campus

Volunteers needed for May 5 community cleanup

By KOLOCares |
Posted: Thu 1:57 PM, Apr 12, 2018

RENO, Nev. (KOLO) - Volunteers are needed to clean up illegal dump sites, remove invasive weeds and beautify community neighborhoods during the Keep Truckee Meadows Beautiful Great Community Cleanup Saturday May 5, 2018 from 8am – noon.

There are already 22 cleanup sites throughout the Truckee Meadows for which volunteers can sign up.

This event is made possible by the generosity and hard work of volunteers. Last year, 780 volunteers removed more than 67 tons of illegally dumped trash and invasive weeds.

"Cleanup events are costly and labor-intensive," says Christi Cakiroglu, KTMB's Executive Director. "For example, it costs $2 to recycle a tire properly, but for KTMB to come out to an open space area and clean it up, it is $50-$60. And that is with the help of volunteers and many community partners who give of their time for free. We work to connect our community with important resources and education, such as KTMB's Recycling Guide, to help mitigate these problems. There are a lot of free and inexpensive ways to get rid of many of the items we find illegally dumped in the open spaces."

"Illegal dumping is a complex issue, but we are making progress on addressing it in our community through increased patrolling, cleanups and education", says Cakiroglu. "For the last 12 years, KTMB has coordinated the Illegal Dumping Task Force – a group of over 50 vested partners including the Washoe County Sheriff's Office, municipalities, recreating groups, and private citizens. This group meets regularly to discuss current illegal dumping sites, to support KTMB's Great Community Cleanup and work on long-term solutions to prevent illegal dumping."

KTMB's Great Community Cleanup is made possible thanks to the Truckee River Fund through the Community Foundation of Western Nevada, Washoe County Health District, NV Energy Foundation, Sun Valley General Improvement District, Washoe County Regional Parks and Open Spaces, Washoe County Sheriff's Office, City of Reno, City of Sparks, Bureau of Land Management, Reno-Sparks Indian Colony, Nevada Department of Wildlife, SaveMart, Great Basin Brewery, Home Depot, RT Donovan, Waste Management, RAD, Friends of Nevada Wilderness, The Nature Conservancy, Pepsi, Tahoe Trail Bars and Tires Plus.

Saving Nevada's water from the impacts of climate change

Your Turn

Nadia Eldemerdash Guest columnist

Living in the desert, water is always on our minds — how to stay hydrated, how to manage it and how to conserve it. But when we talk about our water supply, we often overlook the biggest threat: climate change.

It doesn't help that we have a president who flatly denies its existence. When President Trump took office over a year ago, one of the first things he did was erase all mentions of climate change from the websites of government agencies, including the White House, Environmental Protection Agency and the Bureau of Land Management. Since then, this administration has continued with its mass erasure of climate change concerns, undoing years of progress in the process.

Here in Nevada, where climate change is happening right in front of us, the stakes have never been higher. Temperatures have been rising in our state for a century, but the effects have become most visible in the last 50 years. The impact on water availability is one of the most significant and most foreboding problems: In the last two decades, rising temperatures have aggravated drought conditions. As a result, the water level of Lake Mead — which represents 70 percent of Nevada's water supply and 90 percent of Southern Nevada's supply — has dropped to 40 percent of its capacity, according to a report released by the EPA in 2016.

Rising temperatures also have decreased the accumulation of snow in the winter, causing this vital source of water to rapidly diminish. Rainfall is down as well: According to U.S. Climate Data, in March 2018 we got an average of 0.26 inches of rain compared to 0.43 inches we normally expect. In February, we received just 0.01 inches, compared to the 0.75 inches we should have. Last year we fared just as poorly, with 0.01 inches in March and 0.56 inches in February.

The implications are clear. A diminishing water supply combined with a growing population mean that not only is there less water for drinking and landscaping, there is also less available for agriculture and ranching. What's more, drier conditions make our communities more vulnerable to pests and forest fires.

The March for Science this past weekend reminded us that with the 2018 elections fast approaching, Nevadans can't afford to stay on the sidelines. We need to elect leaders who not only accept the reality of climate change, but will also do what's necessary to protect our resources.

Unfortunately, not all our current representatives meet that basic criteria. Sen. Dean Heller, who is up for reelection this November, has consistently voted against environmental interests. He voted to confirm climate change denier Scott Pruitt as

administrator of the EPA, which is no surprise, given that Heller himself told Politico in 2015 that climate change is still "up for debate."

And it gets worse: in February 2017, Heller voted to block the Stream Protection Rule that requires coal mining operations to protect surface and groundwater supplies from toxic mining waste. In 2016, he voted to block funding for the Clean Water Rule, endangering the drinking water of over 100 million Americans., and voted to strip funding from the Land and Water Conservation Fund. This past weekend people all over the country participated in the March for Science to call on candidates and elected officials to take a firm stance on climate change. Nevadans need to show up at the polls and vote for candidates who will commit to reducing our state's carbon emissions, investing in clean energy, and conserving water in Lake Mead.

Our desert is beautiful. We must stand up to protect it.

Eldemerdash is a writer and editor based in Las Vegas.

All that remains of the Humboldt River is seen below the dam at the Rye Patch Reservoir northeast of Lovelock on Aug. 6, 2015.

JASON BEAN/RGJ FILE

Boulders protrude from a drought-ravaged Truckee River, as seen from under the Sutro Street overpass facing east, in June. MARK ROBISON/RGJ

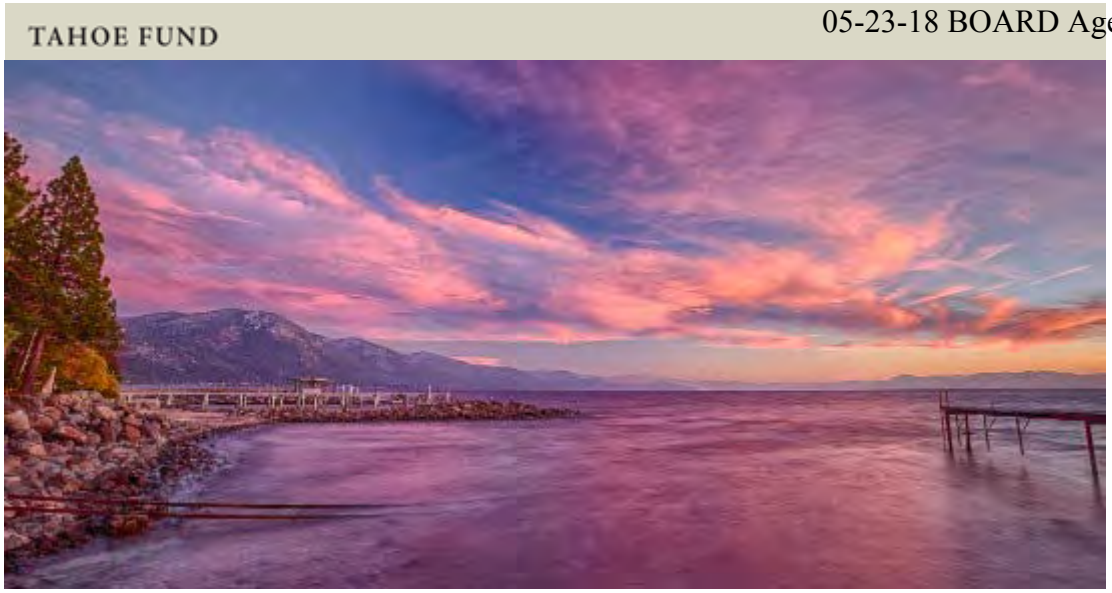

Photo courtesy of Eleanor Preger

Tahoe Fund Expands Advisory Council

INCLINE VILLAGE, Nev. and TAHOE CITY, Calif. – April 19, 2018 – The Tahoe Fund has expanded its Advisory Council to include the Forest Supervisor of the Lake Tahoe Basin Management Unit, Jeff Marsolais, and the Executive Director of the Tahoe Regional Planning Agency, Joanne Marchetta. Marsolais and Marchetta add federal and regional agency representation to the council that already includes Patrick Wright, Executive Director of the California Tahoe Conservancy and Jim Lawrence, Deputy Director of Nevada's Department of Conservation and Natural Resources.

"The role of the Advisory Council is to provide counsel and advice to the Tahoe Fund Board as we develop and prioritize our initiatives," said Board Chair, Art Chapman. "By adding these representatives to the council, we are rounding out the breadth of advice we receive from our important public agency partners."

"With the ecological challenges we face around the Basin, the Tahoe Fund is a model in bringing together the public-private partnerships that can address those challenges," said Marsolais. "The Tahoe Fund has been a wonderful partner and I look forward to serving on the Advisory Council."

"The Tahoe Fund plays an important role in the work everyone is doing to help improve the Tahoe environment," said Marchetta. "It is an honor to serve in advisory capacity to help the organization as it continues to grow into a major source of funding for critical environmental improvement projects around Lake Tahoe."

About the Tahoe Fund

The Tahoe Fund was founded in 2010 to work with the private community to support environmental improvement projects that restore lake clarity, enhance outdoor recreation, promote healthier forests, improve transportation and inspire greater stewardship of the region. Through the generous support of private donors, the Tahoe Fund has leveraged more than $2 million in private funds to secure more than $40 million in public funds for more than 25 environmental projects. The projects include new sections of the Lake Tahoe Bikeway, restoration of watersheds, removal of aquatic invasive species, forest health projects, public beach improvements, and stewardship programs.

TAHOE FUND
Together Creating a Legacy

Council approves community land trust to create affordable housing complex in Reno

Mike Higdon, mhigdon@rgj.com Published 4:06 p.m. PT April 25, 2018 | Updated 4:18 p.m. PT April 25, 2018

A rendering of a possible community land trust dorm housing project for low-income residents. The project is proposed for 250 Sage St.(Photo: Provided to the RGJ)

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The Community Foundation of Western Nevada will partner with the city of Reno and a housing builder to create affordable housing for minimum wage workers, homeless teens and seniors displaced from motels.

Jim Pfrommer, a board member for the foundation, and developers presented the concept to the Reno City Council on Wednesday. The foundation asked the council to sell a city-owned empty lot at 250 Sage St. for $1. The council unanimously voted to sell the land to the Community Foundation and allow development of the housing complex.

The Community Foundation is a nonprofit that helps people direct their money and assets toward charitable causes. For example, if a person wants to donate to "nutrition" generally, the foundation will help them find a local nonprofit that aligns with that mission.

Sometimes the foundation receives property or stocks as donations instead of money. They realized that with land donations, they could assist developers in building housing at a lower cost than usual since a large portion of housing costs come from land prices.

The foundation created a company called the Community Housing Land Trust LLC to manage the new project.

Related: Nevada is still housing mentally ill clients in filthy conditions despite promise to fix

A community land trust allows the city to donate land to a nonprofit managing entity that is required to build affordable housing on it. In a community land trust, the tenants of the property pay toward owning it in conjunction with the nonprofit manager who maintains the property.

“This is a new type of affordable housing, one that we hope is a model for the nation,” said Chris Askin, president and CEO of Community Foundation of Western Nevada. “This is a very non-traditional project. However, because of this we will need to find significant funding, as well as contributed services and contributed materials form local contractors and suppliers.”

Developers Par Tolles and Allison Gorelick found the company Afognak Native Corp., which builds pre-fabricated dormitory-style housing for mining workers in Wyoming. Afognak would sell the dorms to the land trust for $1.9 million financed over 10 years at 1 percent interest.

Related: Pre-fab micro-houses visit Reno to attract corporate buyers

More: Reno's tiny house village for the homeless seeks donations

The complex would include 200 small dorm units that include a desk, bed, closet, air conditioning and private locking door. The dorms include indoor co-ed bathrooms separate from the rooms. Kitchens, a gym, meeting rooms and laundry are in separate buildings in the complex. Outdoor fences, picnic and fire pit areas would also be added.

Pfrommer and Askin talked about charging no more than $390 a month in rent to pay for the complex and maintenance. The foundation also wants to hire the Volunteers of America to manage the dorms and provide life coaching for residents.

The VOA currently operates three similar projects in Reno.

Residents must be a qualified full-time worker, receiving services from The Eddy House if they are teens, a senior living in a motel or waiting for affordable housing.

The foundation wants to start quickly to secure the dorms and build out the complex. They also want to prove this model could help people before expanding to two more locations in the future.

The city of Reno wouldn't contribute money or staff outside of the initial research and land donation. The staff and council want an option to revert the land back to the city if the foundation fails to build or maintain affordable housing in a timely manner.

Council member Oscar Delgado said he sees this project as a type of bridge housing between a shelter and full housing. He also said that he likes that it will be run like a private housing project so that it'll be more properly maintained than government housing.

"This is very exciting," said Councilwoman Neoma Jardon. "I've worked a long time on a tiny home concept, and while this looks different, it offers more. It gets trucked in and can get operated before snow next winter. It's the second rung on the housing continuum. We have the shelter and then rare single-room occupancy apartments."

Jardon will continue pursuing the tiny house village on the same land, but said her project will take longer to get moving than this one.

Council Member Paul McKenzie was also supportive while being critical of the council's inability to follow through on a government solution.

"The community land trust is an idea I feel we could truly move forward on because we're taking these seven personalities out of the mixture," he said nodding at the council. "And you're going to get something accomplished a lot faster than we can."

Mike Higdon is the city life reporter at the RGJ and can be found on Instagram @MillennialMike, on Facebook at Mike Higdon, Reno Life and on Twitter @MikeHigdon.

AP: Water Delivery Suspended in Nevada Mine Battle

Posted: Apr 28, 2018 10:29 AM PDTUpdated: Apr 28, 2018 10:29 AM PDT

Courtesy: Office of Nevada Governor Brian Sandoval

RENO, Nev. (AP) **-** The owner of an abandoned Nevada mine has suspended the normal bottled water deliveries it's been providing neighbors since tests in 2004 confirmed a plume of groundwater contaminated area wells.

The move outlined in emails obtained by The Associated Press comes two months after federal regulators backed off plans to add the mine to a list of the most toxic U.S. Superfund sites.

A Native American tribe suing the mine's owner, Atlantic Richfield, says its decision underscores fears that scuttling the proposed listing will slow cleanup efforts at the former Anaconda copper mine site.

Atlantic Richfield stopped its free home delivery of bottled water to Yerington Paiute tribal members this month. It's instead delivering the water to a site off the reservation for tribal members to pick up.

Both sides blame each other for failing to reach an agreement to resume normal deliveries.

How nanotechnology could be used to clean water in Nevada

By Ray Hagar, Nevada Newsmakers

Saturday, April 28, 2018 | 2 a.m.

Nanotechnology could soon help clean up almost all of the dirty water in Northern Nevada, making it safe to drink, Lance Gilman, the partner broker of the Tahoe-Reno Industrial Complex, said this week on "Nevada Newsmakers."

“Think in terms, for a minute, of being able to take all the water that is here and literally, effectively and competitively, clean it to drinking water standards,” Gilman said, adding the new technology could also clean wastewater from households.

“Everything,” he said, “including salt water.”

Gilman sees many benefits for Northern Nevada water systems from nanotechnology, an engineering science that deals with matter on the atomic, molecular and supramolecular scale. Nanomembranes can neutralize bacteria and impurities in water.

Nanotechnology could help Gilman’s top tenants at the industrial complex, including Tesla, Switch, Apple and Google, which use large amounts of water. A nanotechnology campus also is planned at the complex.

“If you take Switch, if you take Google, or Apple, for example, they have a lot of water that has been exhausted and that they use a number of times,” Gilman said. “And it needs to be cleaned up in an efficient and competitive way. Now all of a sudden, here comes nanotechnology.”

Lake Tahoe roadside boat inspection stations open for season

EDITOR

POSTED ON SATURDAY, 28 APRIL 2018 02:30

LAKE TAHOE – Roadside stations for inspections and decontaminations of motorized boats and watercraft are officially opening for the 2018 boating season.

Locations, hours of operation and opening dates are as follows.

Opening Tuesday, May 1, 8:30 a.m. to 5:30 p.m., seven days a week:

– Meyers: at the junction of US Highway 50 and Highway 89;
– Spooner Summit: at the junction of US Highway 50 and Highway 28 in Nevada;
– Alpine Meadows: Highway 89, off Alpine Meadows Road north of Tahoe City.

Opening Thursday, May 17, 8:30 a.m. to 5:30 p.m., seven days a week:

– Truckee-Tahoe: Highway 267, off Truckee Airport Road.

The agency is celebrating the success of fighting aquatic invasive species for the past 10 years. A huge part of this success is due to the boat inspection program that has allowed us to prevent new species from entering Lake Tahoe.

“The fact that we are entering our 10th season with no new invasions, proves that boat inspections are doing what they are intended to do – protect Lake Tahoe,” said Dennis Zabaglo, Tahoe Regional Planning Agency’s aquatic resources program manager. “The Tahoe RCD boat inspectors have allowed us to be ready for any invasive species that could potentially enter the lake.”

All motorized watercraft require an inspection for aquatic invasive species prior to launching into Lake Tahoe, Fallen Leaf Lake, Echo Lake and Donner Lake.

Invasive species, such as quagga mussels, New Zealand mudsnails, and hydrilla, are known to multiply quickly and colonize underwater surfaces, including docks and piers, water supply and filtration systems, buoys, moored boats, and even the beautiful rocky shoreline. They destroy fish habitat, ruin boat engines, and can negatively impact water quality and the local economy, recreation, and ecosystem.

Boats and other watercraft are the largest transporters of AIS, and the inspection program is critical to preventing their spread into Lake Tahoe and other waterbodies. Knowingly transporting aquatic invasive species into Lake Tahoe is against the law, and violators may be subject to monetary penalties.

Since 2008, Tahoe RCD inspectors have performed more than 70,000 vessel inspections and decontaminated 32,576 of them using hot water. Throughout the past 10 seasons inspectors have found hundreds of vessels containing foreign species such as mussels, snails and plant material.

“Boaters are encouraged to visit the website or call the hotline to learn how to clean, drain, and dry their boats prior to arriving at inspection stations,” said Chris Kilian, aquatic invasive species program manager for the Tahoe Resource Conservation District. “Save time and money by making sure to drain all water from the intake systems, clean out your vessel, and make sure it is dry. Taking these three simple steps will get you on the water faster.”

Annual watercraft inspection fees remain unchanged from last year. The “Tahoe In & Out” inspection ranges from $35 for personal watercraft and vessels under 17 feet and up to $121 for vessels over 39 feet.

The “Tahoe Only” inspection sticker is $30. If your vessel is not Clean, Drain, and Dry, decontaminations are available for $35. There is an additional $10 fee for the decontamination of ballast tanks or bags.

Invasive species are highly opportunistic and can be transported by non-motorized water recreation equipment as well. The Tahoe Keeper program was created to inform the paddling community about the importance of inspecting equipment, including: kayaks, paddleboards, fishing equipment, inflatable water toys, and life jackets.

For more information visit www.TahoeBoatInspections.com/tahoe-keepers.

One Truckee River Celebrates River for Month of May

May 1, 2018 ThisIsReno Website Facebook Twitter YouTubeLinkedIn

The local non-profit, One Truckee River, is hosting events throughout May to celebrate the Truckee River.

Events include yoga, education, arts, history talks, and a river clean-up.

“We wanted to provide more events on and about the Truckee River to show people what an incredible piece of nature we have running through our front yard,” said Alex Hoeft of One Truckee River. “What better way to do that than dedicate an entire month to celebrating the river?”

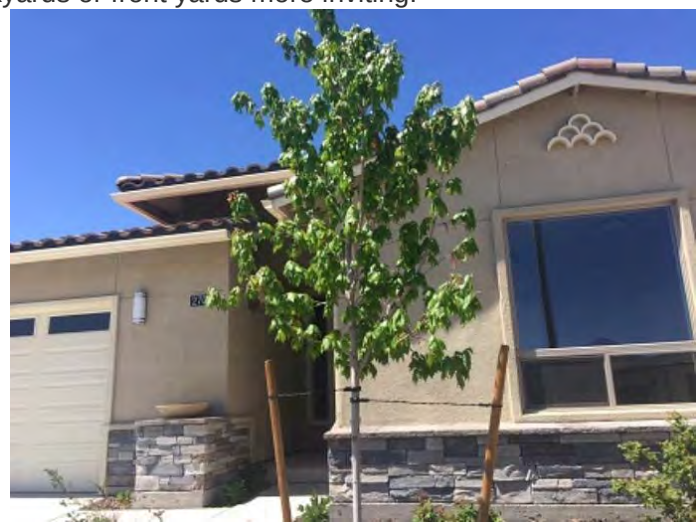
A kick-off event is tonight, May 1, 2018, starting at 5 p.m. at The Eddy, 98 South Sierra Street.

Information: **www.onetruckeeriver.org**.

Free tree workshop helps locals with landscaping

By Terri Russell |
Posted: Mon 3:53 PM, May 07, 2018 |
Updated: Mon 8:28 PM, May 07, 2018

RENO, Nev. (KOLO) - Many homeowners try to make their homes as attractive as possible. They want to make their backyards or front yards more inviting.



Arborist Dale Carlon is in the businesses of helping homeowners and others make the best choices when it comes to landscaping. He says many people turn to trees and bushes for shade and privacy. But he says they often select the kind of tree or bush for the space they have right now.

He points to an immature tree in a small section of the backyard, right next to a dividing fence.

“This is Silver Maple,” he says, “And this species gets very, very large. Very invasive root system as well. So this is going to be a real potential problem.”

Carlon points to the trees in the yard as good examples of what not to do. While the evergreen and maple are able to take on the elements Northern Nevada can throw at them, the problem is these trees do so well here, it takes no time for them to grow out of their designated spots.

That's not only bad for the health of three, but consider neighbor relations, underground utilities, and sidewalks.

“These branches are going over into the neighboring yard. And so sometimes these can cause a whole number of serious problems,” says Carlon.

Carlon shows off another tree, placed in the front of a residence, that was planted just about right. There is plenty of space to let it grow. It is irrigated properly. And its branches stand no chance of making their way into the neighbor’s backyard.

“When this tree gets to maturity, it is going to provide great afternoon shade for this home and reduce the cooling costs in the summer. Conversely in the winter time, when it loses its branches, it is going to allowed for passive heat to heat the home as well,” says Carlon.

Rayburn Ash trees fit perfectly in that area next to the house. But what happens when they mature? Go along Sparks Boulevard near O’Callaghan Drive and you’ll see Rayburn Ash Trees 30 feet high along the roadway. Carlon says he planted them about 30 years ago. And that’s the beauty of the tree.

However, Carlon says it is not uncommon for him to get a call from a homeowner who has just purchased a home with mature landscaping. He says often that homeowner is not happy, as the mature trees have overstayed their welcome.

If you would like more information on a free tree workshop offered by TMWA May 9, click here.

LETTER TO THE EDITOR

Growth adds compound effect to Lemmon Valley water woes

As a resident of Lemmon Valley for more than 30 years, I've seen a lot of change. That includes the recent and continuing severe flooding of homes bordering Swan Lake. The explanation given was that all the new growth increased runoff, due to less available soil absorption.

This made sense to me until this year. Surprisingly, the lake level hasn't gone down — despite a warm summer and subsequent average precipitation.

Then, I realized it's not just runoff. Growth has also brought imported water into the valley. Much of this goes to the water treatment plant adjacent to Swan Lake.

This, in turn, ends up in the lake, as well. Growth has had a compound effect. Pretty obvious, but I haven't heard anything about it.

This raises added questions about our county's growth, planning, openness, and subsequent decision- making. It appears there's cause for concern — especially for the residents out here.

Tim King, Reno

California voters might send $127 million to Lake Tahoe

Benjamin Spillman, bspillman@rgj.comPublished 6:05 a.m. PT May 15, 2018 | Updated 6:24 a.m. PT May 15, 2018

California voters could approve spending $127 million for projects at Lake Tahoe in a series of ballot measures this year.

The Tahoe money would be just a small part of two bond measures that would total $13 billion, including $492 million in spending on projects in the Sierra Nevada.

“This is an unprecedented amount of potential funding for projects in the Sierra Nevada,” said Chris Mertens, government affairs director for the Sierra Business Council in Truckee.

Mertens said money would represent a huge investment by California voters in efforts to make Lake Tahoe and the Sierra Nevada in general more resilient to climate change and other environmental stressors.

“It starts to recognize the importance this region has in statewide water discussions and also the state economy,” he said, noting that 60 percent of Californians get water from the Sierra.

The two ballot measures are the California Clean Water and Safe Parks Act, also known as Prop 68, and the Water Supply and Water Quality Act.

The California Clean Water and Safe Parks act, for $4.1 billion, is on the June 5 primary ballot. The Water Supply and Water Quality Act, for $8.9 billion, is scheduled for the November 6 election.

The California Tahoe Conservancy would get $27 million under Prop 68 and $100 million under the Water Supply and Quality Act.

Founded in 1984, the Tahoe Conservancy is one of ten California state conservancies.

It works with state, federal and local groups to secure funding for projects on the California side of the Tahoe Basin. Its recent projects include a project to restore the Upper Truckee Marsh near South Lake Tahoe, working with CalFire to conduct pile burning that reduces potential fuel for wildfires and working on a climate change adaptation plan for the basin.

“The parks bond will give us momentum moving forward, the water bond would definitely take them to the next level,” said Patrick Wright, executive director of the conservancy.

Wright said that, if approved, the bond measures would be “transformative” for the agency, which he said operates on about $6 million or $7 million annually along with funding from statewide bonds.

“It would provide a significant boost to a broad range of projects in the basin,” he said.

Projects eligible for funding would include items like bike trails, forest health improvement projects and restoration projects on the Upper Truckee River.

The river project is important because, Wright said, it’s “Tahoe’s largest and most impaired watershed,” and the top source of the lake’s fine sediment, which acts as a detriment to Tahoe’s renown clarity.

“This will provide a significant down payment toward getting that done,” Wright said.

Prop 68-Bond Indebtedness 1 Pager (1) by Benjamin Spillman on Scribd

Fishing Report for May 10

Jim Krajewski, jkrajewski@rgj.comPublished 10:07 a.m. PT May 9, 2018 | Updated 1:41 p.m. PT May 9, 2018

(Photo: RGJ file)

FRENCHMAN LAKE: Best lake in the area to fish. Trollers going 12-15 feet down across from the main boat ramp and north of the narrows to Turkey point. Turkey point and Lunker cove best for shore fisherman. Mountain Hardware, Truckee 530-587-4844.

LAKE DAVIS: Fish are done with spawn mode and are moving into main body of lake. Trolling Dicknite's and needlefish 15-20-feet north of island producing fish in the 2-4 pound range. Mallard and Camp 5 for bankers floating crawlers catching oe or two fish per rod. Mountain Hardware, Truckee 530-587-4844.

More: Check it out: Current water levels at Boca and Stampede reservoirs

More: Boca Reservoir

TRUCKEE RIVER: California: Flows range from 658 cfs above the town of Truckee to 1170 cfs down in the canyon. Flows are high, but the water is running clear and the fishing has been good. Look for soft water along the banks and big runs to hold fish. There are still some BWOs and March browns hatching as well as midges and a few caddis are starting to show. Best flies have been Stoneflys, San Juan worms, Pheasant Tails, and Midges.

Nevada: Flows are ranging from 961 cfs west of Reno to 1100 cfs through sparks. Fishing has been good in Reno and west of town. There are still a few March Browns hatching. The major hatch now is midges, but the fish are looking for larger meals. Stoneflies and a Baetis pattern has been the go-to for this side of the Truckee River. Best Flies: Stoneflies, San Juan Worms, and Baetis patterns like the Pheasant Tail or Copper John. Reno Fly Fishing Outfitters, 775-742-1754.

LITTLE TRUCKEE RIVER: Flows are looking great at 103 cfs. Usually this time of year the flows are a lot higher. Fishing has been good with some March Browns hanging around. Best flies have been March Browns, Midges, BWO's and San Juan Worms. Reno Fly Fishing Outfitters, 775-742-1754.

PYRAMID LAKE: Water temps are near 50 degrees and the fish are full into the spawn. The fishing has been weather related with it being best on the cloudy, windy days.

This is a tough year to fish Pyramid Lake. Popular beaches are still closed to the public and the shelves are buried around the hatchery, due to the rapid rise in the lake levels last year. The last time Pyramid had conditions like this was 2006-07. Going back to fishing reports from that year, anglers were doing a lot more fishing from the lake. Boats, float tubes and pontoon boats were being used to get anglers out over the shelves and a lot of the best fishing was in 10-13-feet of water. April is shaping up to resemble that same pattern. On less windy days, this could be the ticket to catch more fish.

On windy, stormy days, the fish will start to come up over the shelves into shallow water. As crowded as the lake is this year due to the closures and no shelves, this will also give anglers more room to spread out and fish. Maholo Midges fished under an indicator have been the most effective as always in the spring. Other flies to have for a floating line set-up are Pyramid Lake Balanced Leeches in size 8 and Maholo Nymphs in size 12. If you are fishing in deeper water, a deep-water indicator leader is also good to have. For shooting head set-ups, Martini Olive Wooly's, Midnight Cowboy's and Loco Tadpoles are all good choices. Reno Fly Fishing Outfitters, 775-742-1754.

EAST WALKER RIVER: Flows are prime and fishing continues to be good on the East Walker from Rosachi Ranch to Sportsmen's Beach. Flows have been pretty consistently around 150-200 cfs, making for prime spring conditions. As we slide into late spring conditions, the skwala stonefly hatch should continue to slow down. As water temperatures rise, the caddis will likely be out in full force. Streamer fishing has slowed slightly, but nymph fishing has gotten better with the recent bump in flows. Those indicator-fishing or high-sticking small golden stone nymphs, worm patterns, and pheasant tails are doing very well. For the spin anglers, aggressive fish are eager to hit small Kastmasters, Rapalas and Panther Martins. NDOW

SPARKS MARINA: The Nevada Department of Wildlife stocked 5,000 trout (3,500 rainbows and 1,500 browns) in the Sparks Marina on March 30. That was the first visit of the NDOW fish truck to the Marina or any urban pond this year. NDOW trucks also stocked the following urban ponds with about 500 rainbow trout: Paradise Ponds (Reno), Bailey Fishing Pond (Carson City) and Mitch Park Pond (Gardnerville).

LAKE ALMANOR: Surface temps about 57 degrees by mid-day. Clarity is good in both basins, about 11 feet and improving. Lake levels are high and water quality excellent. Aquatic insect hatches are erupting all across Lake Almanor. Getting more bites in the Almanor West area than anywhere else. Red and Gold speedy Shiners, #2 Needlefish and blue and silver Moose Look wobblers were working for most guys. Fishing pressure has been light. Doug Neal, Almanor Fishing Adventures, 530-258-6732.

SACRAMENTO RIVER: The spring striper spawn s in full swing near Colusa. Schools of striped bass throughout the river from Chico downriver through Verona. The best fishing has been in the evenings and early in the mornings before the boat traffic hits the river. The daytime bite has slowed, but anglers covering lots of river have been able to find keeper-sized striped bass. A variety of baits and techniques from black plastics, white swim baits, cut baits from anchor or drifting/back bouncing large live minnows. River levels in Colusa are low with many sand/gravel bars exposed. The fair striper fishing should continue through May.

The American Shad spawn is ramping up with many shad 1-4 pounds making their annual spring migration up the Sacramento, American and Feather Rivers. The best shad fishing can be found from Verona upriver towards Chico. Large schools of shad are moving through to get up river closer their spawning grounds making for fast action early in the mornings and late in the evenings at dusk. Medium/light sized brightly colored jig heads tipped with a curly tailed grub make for great fishing while targeting American shad. Shad will be in the river in large catchable numbers right up to the official Sacramento River salmon opener of July 16. Look for shad fishing to improve by late May and all of June.

The official Sacramento River salmon fishing season will re-open on July 16, 2018 below the Red Bluff Diversion Dam. Salmon fishing will start 150 feet below the Sycamore boat launch at the Red Bluff Diversion Dam and on the Feather River below Oroville at the Feather River outlet hole downstream. The Sacramento and Feather Rivers have received a full salmon fishing season from July 16-Dec. 16 with a one salmon per person daily bag limit and a two salmon per person possession limit. Dave Jacobs Professional Guide Service, 530-646-9110.

HOT CREEK: Water conditions and flows are great. Numbers are good during warmer periods, with fish holding in the deeper slots and pools. Best bite occurs during early afternoon when the BWOs are emerging. Large midge hatches coming off during a high barometer. Dry dropper rigs with a #16-18 Para Hi-Vis BWO and a #22 Gillie dropper 12″-18″ below is a consistent rig currently. Longer leaders, & light tippet in the 5-6x class is best. During off hatch periods try attractor patterns fished with/without an Under-cator. Sierra Drifters 760-935 4250, sierradrifters.com.

OPINION: County Commissioners Neglect Needs of Lemmon Valley Residents

May 14, 2018 ThisIsReno Website Facebook Twitter YouTube LinkedIn

By Stephen Wolgast, candidate for Washoe County Commission district 2

We see irresponsible, destructive development all over the county. But nowhere more obviously egregious than Lemmon Valley.

All the elements come together here: misleading engineering reports, out-of-state developers, non-compliance with the master plans, and arbitrary judgement. You need look no further than the RGJ article "Reno knew Lemmon Valley would flood" to grasp the scope of the malfeasance.

Lemmon Valley is a closed basin: water escapes only by evaporation, and the deep rock is largely impenetrable.

Stephen Wolgast, candidate for district 2.

Swan Lake covers the lowest portion and acts as a catch basin. Flooding occurs when too much water enters Swan Lake causing it to flood the properties of nearby residents. The water comes from two sources: storm-water runoff from the slopes around the basin, and waste water from a water treatment plant that pumps effluent into Swan Lake.

So, new developments pose a dual flood threat. Paving for roads and foundations for homes are impervious to rain and drainage so that the covered soil does not absorb and retain water. This increases rain runoff.

The new homes are on city water which is pumped in and leaves the homes in sewer lines to the water treatment plant and then into Swan Lake. Note that the 50-year old water treatment plant is below the water line and protected by dirt berms and storm pumps.

The most recent scandal centers around a development called Lemmon Valley Heights (watch the video above) which will be built at the base of the slopes near Lemmon Valley Drive and Deodar.

Parts of it will have 1/10 acre lots in an area planned for 1-acre lots. This high density means that roughly 63% of the ground will be impervious where it is now completely open. More problematic is the estimated 62 acre-feet of waste water that the 206 new homes will supply to the treatment plant. This is the equivalent of a 100-yearr rainstorm.

So, the plan is to deliver effluent into the flood basin at a rate equivalent to a record storm averaged out over a year. The effect of the effluent on flooding does not appear in the hydrology report ordered by the developer.

The developer is offering a form of mitigation, catch basins, as part of the development. These are likely to be ineffective. In the local geology, once a basin is full it remains full except for evaporation. So, if the developer adds 73 acre-feet of catch basins these will be 84% filled by a 100-year storm.

A second, smaller storm in the same season might be 23 acre-feet which would cause 10 acre-feet to overflow.

These points were all made in the appeal made to the county commission on April 24. The county's legal counsel, Assistant District Attorney Paul Lipparelli, suggested that the appellants (Lemmon Valley Recovery Committee) did not have legal standing since their properties were more than 500 feet from the new development.

This is true, they are on the other side of the lake, but they suffer the flooding no matter where the water source is located.

In the end, Commissioner Bob Lucey proposed a motion that the appellants did not have legal standing since they were more than 500 feet away. Further, he said "they were not aggrieved in any manner, way, shape, or form."

RELATED:
Commissioner Accuses Forum Attendee of Being Plant for Opponent

Unbelievable!

His motion carried: Lucey, Marsha Berkbigler, and Kitty Jung voted "for" and Herman "opposed" the measure.

The county commission as composed does not faithfully represent the interests of residents, homeowners, or taxpayers.

Vote for change in November.

Water isn't a constraint to our growth: Kazmierski

Mike Kazmierski Published 5:00 a.m. PT May 16, 2018 | Updated 8:17 a.m. PT May 16, 2018
CLOSE

Chief Deputy Water Master Dave Wathen explains how a 43 percent increase in snowpack will help western Nevada endure coming summer months. Benjamin Spillman

Mike Kazmierski(Photo: Provided)

As our region continues to grow, I often hear, or read in the opinion section of the newspapers, comments about growth and our "lack" of water. There is frequently a reference to being in a desert climate, so there is concern about "allowing" this growth to continue.

The good news is that for the Reno-Sparks metro area, primarily managed by Truckee Meadows Water Authority, there is little reason to be concerned about water. Actually, water availability is one of our competitive advantages as we look at continued growth and economic diversification. In fact, we could almost double the Reno-Sparks population and have no real water constraints.

More: Check it out: Current water levels at Boca and Stampede reservoirs

More: Reno-Sparks' 'coming-out' party for tech: Kazmierski

More: How to submit an opinion column or letter to the editor

So why do we have all this water when it rarely rains here in the “desert”? The obvious answer is that as the clouds rise when they approach the mountains, the Sierra gets the bulk of the moisture, as opposed to the valley. What is not so obvious is that we have acquired water rights throughout the years that allow us access to much of the water as it flows by in the Truckee River or fills mountain lakes, several which we use for storage.

According to the TMWA Water Resource Plan, we use around 82,000 acre-feet of water a year, while we currently have 145,000 acre-feet available and other water sources over time could add to this total. The current projection is that by 2035 we will need just over 100,000 acre-feet a year, far short of our current capacity. On a daily basis we use an average of 70 million gallons of water, with peak summer day use at almost 140 million gallons per day while we have 200 million gallons available.

We are doing so well with water conservation that even during the last significant drought, when Lake Tahoe dropped 18 inches below the natural rim, we were able to tap into our upstream reserves to ensure adequate water for the region, something we have had to do only twice in the past 25 years. Since the recent drought we have increased the size of our reserves by adding the other half of Donner Lake to our inventory.

Video of the water level at Boca Reservoir. Andy Barron/RGJ

What this means for economic development is that a company that is a low or moderate water user does not have to worry about access to water or unreasonable price increases in the future like they would in most other places in the Southwest. In short, we are special when it comes to water in the West, because we have plenty of water now and for the future.

That does not mean we can be careless or irresponsible with this valuable resource. As you get out of the TMWA service area, there are potential issues with water availability. However, we will continue to discourage high water users from coming to the region, and water conservation remains essential to sustaining our resources in the years ahead. It is nice to know that even as the next drought looms around the corner, our community is postured for success, thanks to years of planning, responsible management and the proximity of the Sierra Nevada mountains.

Mike Kazmierski is president and CEO of the Economic Development Authority of Western Nevada.

More: Interns an untapped resource for Northern Nevada: Kazmierski

More: Housing the greatest challenge of our new year: Kazmierski

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Photos: Water Levels at Boca and Stampede Reservoirs
Fullscreen
Top of Form
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Posted!

A link has been posted to your Facebook feed.

Subject: New submission from Comments to the Board
Date: Monday, May 14, 2018 4:07:34 PM
Attachments: image001.jpg

From: Gebhardt, Andy
Sent: Wednesday, April 25, 2018 8:11 PM
To: Jason [redacted]
Subject: Re: Water service

I'm glad the water is on. My number is 834-8007.

I'll talk to you tomorrow.

Andy

Sent from my iPhone

On Apr 25, 2018, at 7:19 PM, Jason [redacted] wrote:

Thanks for getting back to me Andy.
Yes water restored.
Look forward to talking with you tomorrow.

Is there a number I can call you at?

best,

Jason

On Wednesday, April 25, 2018, 6:09:51 PM PDT, Gebhardt, Andy <agebhardt@tmwa.com> wrote:

Hello-

I understand your frustration, and I'll be happy to further discuss this with you tomorrow, but I am just checking as I believe your Water Service has been restored as of about 15 minutes ago. If that is not the case, please let me know ASAP.

I look forward to speaking with you tomorrow.

Thank you.

Andy Gebhardt
Director Operations and Water Quality
Truckee Meadows Water Authority

Sent from my iPhone
Our vision is to enhance the quality of life in the Truckee Meadows by delivering exceptional, customer-focused water services.

From: WEBSITE: Comments to the Board [mailto:info@waterforms.net]
Sent: Wednesday, April 25, 2018 5:25 PM
To: Folsom, Sonia <sfolsom@tmwa.com>
Subject: New submission from Comments to the Board

Name

Jason [redacted]

Email

[redacted]

Account Number

[redacted]

Comments

My water has been out. I suffer from Crohn's disease and cannot stay in the home without water. From the facts outlined bellow it appears that TWA does not have appropriate procedures and processes in place to deal with the possibility of residents needing to get a hotel if their water is out.

Susan a customer service rep for truckee meadowns water authority told me:
- Outage started 1:04 PM
- As of this writing at 5:11 PM no time estimate
- Kevin Comphel 834-8036 needs to approve hotel but he is no longer there
- Marci the supervisor was contacted by Susan and she has no idea of a time estimate
- No information on if and when an offer will be made to pay for a hotel