



TRUCKEE MEADOWS WATER AUTHORITY
Board of Directors

AGENDA

Wednesday, March 21, 2018 at 10:00 a.m.
Sparks Council Chambers, 745 4th Street, Sparks, NV

Board Members

Chair Geno Martini
Member Neoma Jardon
Member Jenny Brekhus
Member Ron Smith

Vice Chair Vaughn Hartung
Member Bob Lucey
Member Naomi Duerr

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**)

¹The Board may adjourn from the public meeting at any time during the agenda to receive information and conduct labor-oriented discussions in accordance with NRS 288.220 or 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 February 21, 2018 meeting of the TMWA Board of Directors **(For Possible Action)**
6. Discussion and action confirming General Manager's appointment of James Weingart as a trustee to fill the remaining term of Michael Nevarez to the §501.C-9 Post-Retirement Medical Plan & Trust ending December 31, 2018 — Jessica Atkinson **(For Possible Action)**
7. Discussion and action on Resolution No. 260: A Resolution to approve funding for the projects recommended by the Truckee River Fund Advisory Committee and an authorization for the Community Foundation to fund such projects from Fund proceeds — John Enloe **(For Possible Action)**
8. Discussion and action, and possible direction to staff for \$25,000 annual funding for FY18, FY19 and FY20 for the start-up of the Nevada Water Innovation Campus (NWIC) and \$97,707 funding in support of the South Truckee Meadows Wastewater Reclamation Facility (STMWRF) and Reno Stead Water Reclamation Facility (RSWRF) advanced treatment pilot testing operations — John Enloe **(For Possible Action)**
9. 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 — John Enloe **(For Possible Action)**
10. (Continued) Discussion and action, and possible direction to staff regarding staff recommendation on potential estimate and timeline to retrofit all unmetered services and alternative options for the meter retrofit fund program — John Zimmerman **(For Possible Action)**
11. Discussion and action on the TMWA Tentative Budget for the Fiscal Year ending June 30, 2019 and Draft Capital Improvement Plan for Fiscal Years 2019 through 2023 — Michele Sullivan and Joe Petrelli **(For Possible Action)**
12. Discussion and action, and possible direction to staff regarding river casing transfer agreement with BCH Gaming Reno, LLC and authorization for General Manager to negotiate and finalize agreement — Scott Estes, John Enloe, Mark Foree **(For Possible Action)**
13. Discussion and action, and possible direction to staff on the Agreement regarding West Reno Water System acquisition among Reno Land Development Company, BT SOUTH LLC and TMWA and authorization for General Manager to negotiate and finalize agreement — John Enloe, Scott Estes, Mark Foree **(For Possible Action)**
14. General Manager's Report*
15. Public comment — limited to no more than three minutes per speaker*
16. Board comments and requests for future agenda items*
17. Adjournment **(For Possible Action)**

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TRUCKEE MEADOWS WATER AUTHORITY
DRAFT MINUTES OF THE FEBRUARY 21, 2018
MEETING OF THE BOARD OF DIRECTORS

The Board of Directors met on Wednesday, February 21, 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, and Ron Smith.

Members Absent: Bob Lucey and Geno Martini

A quorum was present.

2. PLEDGE OF ALLEGIANCE

The Pledge of Allegiance was led by Mr. Chip Bowlby.

3. PUBLIC COMMENT

There was no public comment.

4. APPROVAL OF THE AGENDA

Member Brekhus recommended to hear agenda items #8, #9 and #12 first with the closed-door session held prior to agenda item #12.

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

5. APPROVAL OF THE MINUTES OF THE JANUARY 17, 2018 MEETING

Upon motion by Member Smith, second by Member Duerr, which motion duly carried by unanimous consent of the members present, with Alternate Member Dahir abstaining, the Board approved the January 17, 2018 minutes.

8. PRESENTATION OF FINANCIAL PERFORMANCE FOR FIRST HALF FISCAL YEAR 2018

Matt Bowman, TMWA Financial Controller, presented the financial performance for first half fiscal year 2018: Total revenues were higher than budget by \$2.3 million or 4%; operating expenses were \$2.2 million or 5% lower than budget, resulting in Operating Income of \$19.6 million (\$4.5 million over budget); Year over year, total revenue was higher than FY2017 by \$2.5 million; services and supplies expenses were lower than budget by \$1.3 million due to the 6-week closure of the Chalk Bluff Water Treatment plant; employee salaries and wages were less than budget by \$600,000 due to bargaining unit wage freezes and delays in MPAT wage increases, but was partially offset by overtime wages of \$300,000 higher than budget; capital contributions were approximately \$1.8 million higher than budget; and total cash on hand is \$189.1 million, with \$144.2 million of this is unrestricted.

Discussion followed regarding the creation of “non-rainy day” fund which the Board could consider doing. Mark Foree, TMWA General Manager, reminded the Board that there is a rate stabilization fund which currently has \$1.8 million and they could decide to add to that fund. This item will be addressed during the March Board meeting with the presentation of the tentative budget.

9. DISCUSSION AND ACTION ON ADOPTION OF RESOLUTION NO. 258: A RESOLUTION TO APPROVE A PRINCIPLE FORGIVENESS LOAN IN THE AMOUNT OF \$500,000 FROM THE STATE OF NEVADA DRINKING WATER STATE REVOLVING FUND (DWSRF) FOR COMPLETION OF THE VERDI MAIN EXTENSION AND ANNEXATION OF THE RIVERBELLE MOBILE HOME PARK INTO THE TMWA WATER SYSTEM; AND APPROVAL FOR AUTHORITY TO ABSORB ANY INDEBTEDNESS AS A RESULT OF RIVERBELLE COMPLETING ON-SITE WATER SYSTEM IMPROVEMENTS FUNDED THROUGH A DWSRF LOAN

Scott Estes, TMWA Engineering Director, informed the Board of the Verdi Main Extension project which would extend water service to the west side of the Truckee River and allow for water service to Riverbelle Mobile Home Park. Upon completion of the project, TMWA would receive the \$500,000 principle forgiveness payment from the state DWSRF. Also, Riverbelle was approved for a loan of \$343,563 from DWSRF to fund construction of upgrades to their system.

Discussion followed regarding concern about seeing a rental spike for the residents at the mobile home park after all the improvements have been made to bring water service to them (TMWA does not have the authority to impose any restrictions on property owners); and Riverbelle would repay TMWA through a surcharge added to their monthly water bill.

Upon motion by Member Dahir, second by Member Brekhus, which motion duly carried by unanimous consent of the members present, the Board adopted Resolution No. 258: A resolution to approve a principle forgiveness loan in the amount of \$500,000 from the State of Nevada

Drinking Water State Revolving Fund (DWSRF) for completion of the Verdi Main Extension and annexation of the Riverbelle Mobile Home Park into the TMWA water system; and approval for Authority to absorb any indebtedness as a result of Riverbelle completing on-site water system improvements funded through a DWSRF loan.

Vice Chair Hartung called for a closed-door session at 10:23 a.m.

Vice Chair Hartung resumed the meeting at 10:44 a.m.

Vice Chair Hartung suggested hearing agenda item #10 after item #12. The Board of Directors agreed.

12. DISCUSSION AND ACTION, AND POSSIBLE DIRECTION TO STAFF FOR THE RATIFICATION OF THE COLLECTIVE BARGAINING AGREEMENT BETWEEN TMWA AND THE INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS (IBEW) LOCAL 1245 FOR THE PERIOD JULY 1, 2017 THROUGH JUNE 30, 2021

Andy Gebhardt, TMWA Operations & Water Quality Director, and Jessica Atkinson, Human Resources Manager, presented to the Board the full tentative agreement on all issues discussed during negotiations with IBEW. The proposed Collective Bargaining Agreement (CBA) between TMWA and IBEW is a four-year contract, and Mr. Gebhardt stated both sides worked very hard to reach a fair and equitable agreement.

Vice Chair Hartung stated his appreciation to all IBEW members and TMWA staff, stating TMWA has very high caliber employees and TMWA would not have a 93% customer approval rating without them. Other board members also stated their appreciation to all for completing a successful contract negotiation.

Discussion followed regarding the out of town provisions (TMWA employees being called out to assist public utilities in other areas); job shadowing period shortened to allow for the position to be back-filled; and any pertinent labor management updates be included in the General Manager's report to the Board.

Upon motion by Member Smith, second by Member Duerr, which motion duly carried by unanimous consent of the members present, the Board approved the ratification of the Collective Bargaining Agreement between TMWA and the International Brotherhood of Electrical Workers (IBEW) Local 1245 for the period July 1, 2017 through June 30, 2021.

10. DISCUSSION AND ACTION ON REQUEST FOR ADOPTION OF RESOLUTION NO. 259: A RESOLUTION APPROVING THE SALE OF UP TO 196.47 ACRE-FEET OF SURPLUS WATER RIGHTS TO THE PYRAMID LAKE PAIUTE TRIBE TO

AUGMENT INSTREAM FLOWS AND TO AUTHORIZE THE GENERAL MANAGER TO EXECUTE DOCUMENTS TO COMPLETE THE TRANSACTION

John Zimmerman, TMWA Water Resources Manager, presented the staff report for the Board to approve General Manager's authorization for the sale of 196.47 acre feet of surplus water rights to Pyramid Lake Paiute Tribe (PLPT) as instream flow water rights.

Discussion followed regarding TMWA having some surplus water rights that cannot be used for service commitments but can be sold. These water rights were obtained by Sierra Pacific decades ago, before Sierra Rule 17 (and TMWA Rule 7) was implemented, and they cannot be used for service commitments; and staff could consider other uses for the remaining water rights balance that would benefit both parties.

Upon motion by Member Dahir, second by Member Duerr, which motion duly carried by unanimous consent of the members present, the Board adopted Resolution No. 259: A Resolution approving the sale of up to 196.47 acre-feet of surplus water rights to the Pyramid Lake Paiute Tribe to augment instream flows and to authorize the General Manager to execute documents to complete the transaction.

6. PRESENTATION OF TRUCKEE RIVER FUND ACTIVITIES FOR CALENDAR YEAR 2017

John Enloe, TMWA Natural Resources Director, presented the Truckee River Fund (the Fund) activities for calendar year 2017 including notable projects such as the Truckee River Watershed Council project to improve water quality by restoring actively eroding road networks, and the Nature Conservancy of Nevada project which conducted a landscape conservation forecasting study in the forested portion of the Truckee river watershed.

Discussion followed regarding the One Truckee River (OTR) efforts since they were given \$356,220; the money has been used for both educational efforts and many of the goals identified in their top 100 priorities such as river mile markers which has improved recovery efforts along the river. Also, the homeless issue and the lack of restrooms along the river were discussed; but the homeless issue is outside the Fund's guidelines. There was a small pilot project implemented for setting up a portable restroom along the river, which is ongoing.

7. DISCUSSION AND ACTION, AND POSSIBLE DIRECTION TO STAFF REGARDING THE ADOPTION OF THE DROUGHT CONTINGENCY RESPONSE PLAN

Laine Christman, TMWA Resource Economist & Conservation Administrator, presented the 2-year Drought Contingency Planning project sponsored through a Bureau of Reclamation (BOR) grant. The study, a collaborative effort between TMWA, the University of Nevada, Reno ("UNR"), Desert Research Institute ("DRI"), the U.S. Geological Survey ("USGS"), as well as, other relevant stakeholder groups,

evaluated the drought scenario within a Decision Support System model which balances monthly water supplies against customer demands and assessed TWMA's resiliency in regard to simulated extreme droughts that could potentially result from a changing climate. The results indicate no shortages would occur over the course of the drought period (even without enhanced customer conservation) which includes increasing customer demands projected in TMWA's 2035 Water Resource Plan. Staff will continue to promote conservation and responsible water use every day and continue the water audit program. This plan will be incorporated into the next Water Resources Plan.

Upon motion by Member Brekhus, second by Member Hartung, which motion duly carried by unanimous consent of the members present, the Board adopted the Drought Contingency Response Plan.

11. DISCUSSION AND ACTION, AND POSSIBLE DIRECTION TO STAFF REGARDING STAFF RECOMMENDATION ON POTENTIAL ESTIMATE AND TIMELINE TO RETROFIT ALL UNMETERED SERVICES AND ALTERNATIVE OPTIONS FOR THE METER RETROFIT FUND PROGRAM

This item was continued.

13. GENERAL MANAGER'S REPORT

Mr. Foree informed the Board of the Smart About Water travelling displays set up in the lobbies at their respective jurisdictions; staff is continuing to work with Reno Land regarding agreements related to the West Reno Water System (Verdi) acquisition; and NDEP and WCHD staffs and stakeholders continue to make progress on the proposed Nevada Administrative Code (NAC) revisions designed to provide more clarity and flexibility in water system design to help streamline water project approvals and TMWA staff is also working with NDEP and WCDH staff to expand TMWA's role in ensuring compliance with NAC regulations in relation to water distribution projects including subdivisions and commercial and industrial services.

14. PUBLIC COMMENT

There was no public comment.

15. BOARD COMMENTS AND REQUESTS FOR FUTURE AGENDA ITEMS

Vice Chair Hartung requested an update on aquifer storage and recovery (ASR).

16. ADJOURNMENT

With no further discussion, Vice Chair Hartung adjourned the meeting at 12:01 p.m.

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

Sonia Folsom, Recording Secretary

DRAFT



STAFF REPORT

TO: Board of Directors
THRU: Mark Foree, General Manager
FROM: Jessica Atkinson, HR Manager
DATE: March 8, 2018
SUBJECT: **Discussion and action confirming General Manager's Appointment of James Weingart as a trustee to fill the remaining term of Michael Nevarez to the §501-c-9 Post-Retirement Medical Plan & Trust ending on December 31, 2018**

Recommendation

Staff recommends that the Board of Directors confirm the General Manager's appointment of Apprentice Water Plant Operator, James Weingart as a trustee to the §501-c-9 TMWA Post-Retirement Medical Plan and Trust through December 31, 2018.

Summary

- One of the two trustees appointed by TMWA at the direction of IBEW Local 1245 is retiring.
- IBEW Local 1245 has directed TMWA to appoint James Weingart to fill this vacancy.
- The General Manager has appointed James Weingart as a trustee to the §501-c-9 TMWA Post-Retirement Medical Plan and Trust through December 31, 2018.
- Trust provisions required a final confirmation of trustee appointments by the Board.

Discussion

The §501-c-9 Trust document approved by the Board of Directors requires the Employer to appoint four individuals to serve as Trustees (two from the MPAT classification and two from IBEW). The two Trustees who are appointed from TMWA management are to be appointed by the Employer at the direction of the General Manager and the two Trustees who are appointed from IBEW are to be appointed by the Employer at the direction of IBEW Local 1245.

A vacancy exists due to the retirement of trustee Michael Nevarez. James Weingart was appointed as his replacement through the remainder of Mr. Nevarez's two year term ending on December 31, 2018. Mr. Weingart's appointment has been made by the General Manager at the direction of IBEW consistent with the Trust provisions pending final confirmation by the Board.



STAFF REPORT

TO: Board of Directors
THRU: Mark Foree, General Manager
FROM: John Enloe, Director of Natural Resources
Janet Phillips, Chairman, Truckee River Fund Advisory Committee
DATE: March 12, 2018
SUBJECT: Discussion and possible action on adoption of Resolution No. 260: A resolution to approve funding for the projects recommended by the Truckee River Fund Advisory Committee and an authorization for the Community Foundation to fund such projects from Fund proceeds

Recommendation

The Truckee River Fund (TRF) Advisors recommend that the TMWA Board authorize by resolution the funding of the following projects from the TRF. This recommendation stems from a Fund advisors' meeting held on February 23, 2018 where multiple grant proposals from the spring request for proposal process were reviewed and discussed. Corresponding to the TRF Grant Priorities (see attachment), seven projects are recommended for funding totaling \$501,670 out of nine project funding requests for \$600,003.40. Each of the project details are summarized below. In addition, staff has provided a project update report summarizing the status of ongoing projects and those that have been recently completed.

PROJECTS RECOMMENDED FOR FUNDING

Project #195: Watershed Education Initiative (WEI)

Organization: Sierra Nevada Journeys (SNJ)

Amount Requested: \$83,376

Amount Recommended: \$46,376

Organizational Match: \$12,707 (Cash) \$15,385 (In-Kind)

Project Description:

The WEI delivers high-quality, experiential watershed education programs based on local issues associated with the Truckee River watershed, the water cycle, point and non-point source pollution, invasive species, sources and impacts of erosion, water conservation and stewardship.

Through this funding, SNJ will serve 1,100 K-8th grade students in 30 classrooms throughout northern Nevada. Conducted over a four-week period, WEI includes three in-class lessons, one field-study experience, pre- and post-assessments, classroom extension lessons for teachers, significantly increases family and community engagement, and citizen science. Curriculum developed and delivered by SNJ's team of credentialed teachers aligns to state and national standards and the North American Association for Environmental Education's Guidelines for Excellence.

TMWA Benefit:

This program satisfies the TRF Grant Priority VI – *Stewardship and Environmental Awareness*.

WEI is an education program that addresses water, water quality and watershed protection for K-8th grade students, directly aligning with Grant Priority VI. Students gain first-hand experience with the Truckee River, explore human impacts on their water source, and obtain skills and knowledge to help protect the watershed. The overall long-term impacts achieved through this program include:

- Students understand important science concepts related to the Truckee River watershed and can articulate how their actions affect the Truckee River watershed and local ecosystems.
- Teachers use extension lessons and implement more hands-on exploration of the watershed.
- Parents and community members engage in watershed education directly through WEI volunteer opportunities

Project #196: Mount Rose Noxious Weed Monitoring and Treatment #6

Organization: Friends of Nevada Wilderness

Amount Requested: \$23,724

Amount Recommended: \$23,500

Organizational Match: \$6,761 (Cash) \$8,400 (In-Kind)

Project Description:

The greater goal of the Mount Rose Wilderness Noxious Weed Monitoring and Treatment Project is to protect the water quality of the Truckee River and its watershed. Specifically, our goal is to treat noxious weeds at their source to mitigate their spread, monitor known weeds sites for changes and growth, and identify any new weed activity or infestations. Noxious weeds threaten the biodiversity, wildlife habitat, soil productivity, water quality, and recreational resources of the Mt. Rose Wilderness and by removing them we will help retain and improve watershed health. Staff will lead volunteers to known locales of noxious weeds, removing them with shovels and clippers as necessary. Staff and volunteers will also monitor previously identified and/or treated sites and scout the 2017 Hunter Creek Fire perimeter and helicopter loading points.

TMWA Benefit:

This project satisfies Priority VI – *Stewardship and Environmental Awareness*. This project will focus on eradicating approximately 75 acres of noxious weeds on Humboldt-Toiyabe National Forest lands within the Truckee River Watershed.

Project #197: Doggie Ambassador Project

Organization: Truckee Meadows Parks Foundation

Amount Requested: \$15,214

Amount Recommended: \$15,214

Organizational Match: \$2,400 (Cash) \$13,680 (In-Kind)

Project Description:

To compensate for the lack of dog waste management in Reno, Truckee Meadows Parks Foundation implemented the Doggie Ambassador Project in the summer of 2016. Currently, the Parks Foundation manages 16 Doggie Ambassador volunteers. Every month, these volunteers obtain dog waste bags from the Parks Foundation and distribute them to assigned stations throughout Reno. The AmeriCorps VISTA Volunteer and Outreach Coordinator tracks volunteer time and dog waste bag distribution. With support from the Truckee River Fund, the Parks Foundation intends to expand the program by recruiting more volunteers through social media advertising, supplying dog waste bags and replacement stations, and conducting a volunteer-led educational campaign within Reno parks and trails.

Beginning in the spring of 2018, Parks Foundation volunteers will spend two weekends a month setting up a tent and table at trailheads around the Truckee Meadows where they will implement the community education component of the Doggie Ambassador Project. Volunteers will hand out dog waste bags in donated “dog bone” dispensers to unprepared dog owners. They will communicate with the public and will hand out dog treats and educational materials to dog owners.

TMWA Benefit:

The Doggie Ambassador Project advances priorities II, VI, VII, and VIII - *Watershed Improvements, Stewardship and Environmental Awareness, Meet Multiple Objectives, and Leverage Stakeholder Assets and Participation*. Priority II refers to watershed improvements such as reducing total dissolved solids. This project will reduce fecal matter, and therefore fecal coliform in the watershed. The Doggie Ambassador Project also advances priority VI by providing educational resources that foster better environmental stewardship. Community members adopt dog waste bag stations in our parks, thereby empowering and providing them with the proper tools to encourage responsible pet waste disposal throughout the Truckee Meadows. The Doggie Ambassador Project also works with multiple stakeholders, including Keep Truckee Meadows Beautiful, Nevada Land Trust (One Truckee River), Truckee Meadows Storm Water Permit Coordinating Committee, Friends of Nevada Wilderness, Natural Paws, and the City of Reno, to encourage collaborative efforts in reducing the pet waste problem in our watershed and promote the missions of all involved agencies, thereby advancing priority VIII.

Project #199: Cold Stream Meadow Road Decommissioning and Restoration Project

Organization: Truckee Donner Land Trust

Amount Requested: \$65,000

Amount Recommended: \$65,000

Organizational Match: \$17,800 (Cash) \$2,200 (In-Kind)

Project Description:

When complete, the Cold Stream Meadow Road Decommissioning and Restoration will make unavailable roughly five miles of former logging roads to motorized vehicle trespass on Truckee Donner Land Trust land, and mitigate erosion impacts to Cold Stream Meadow, a key headwater meadow in the Little Truckee Basin.

Specific project goals and measurable outcomes and how you will measure and report them.

- Decommission for motorized use all roads in the Cold Stream drainage south of the bridge at the foot of Cold Stream Meadow.
- Remove the broken bridge over Cold Stream.
- Remove culverts in abandoned roadways.
- Reconnect drainages and re-contour slopes where feasible.
- De-compact road surfaces where necessary.

Decommissioning the roads, removing the bridge, and removing culverts are all goals that are easily measured. It will not be possible to re-contour all slopes, connect all drainages and de-compact all road surfaces; these goals will be deemed complete when the U.S. Forest Service advises that road impacts to the meadow are minimized.

TMWA Benefit:

The project meets multiple grant priorities including Priorities II and IV: Minimizing erosion, improving source water quality, and encouraging future growth of vegetation in areas disturbed by past logging by reconnecting drainages, re-contouring slopes, de-compacting soil, and discouraging future compaction and erosion. In addition, the project advances grant priority VI, Stewardship and Environmental Awareness, with a volunteer component that will include work de-compacting road surfaces as well as a discussion on why properly-functioning headwater meadows are key to water quality and quantity in the Sierra.

Project #200: Truckee Meadows Restoration Project- Phase 2 Construction

Organization: Truckee River Watershed Council

Amount Requested: \$30,000

Amount Recommended: \$30,000

Organizational Match: \$47,750 (Cash)

Project Description:

The project was initiated in 2010 when TRWC convened a partnership of 8 public and private landowners that collectively owned the entire wetland complex and ephemeral drainage (i.e. from the springs to the Truckee River). Working with that partnership, we completed a feasibility study and assessment, four years of pre-project monitoring, 100% restoration designs, and environmental compliance and permitting. In 2017, we completed phase 1 construction. Overall, this approach will slow surface water within the upstream meadow, enhancing that habitat and attenuating high flows. This promotes more natural hydrology in the downstream ephemeral channel, where the channel and floodplain enhancements will reduce sediment erosion and promote deposition before reaching the main stem Truckee River.

TMWA Benefit:

The project addresses TRF Grant Priorities:

II. Watershed Improvements. The project will decrease sedimentation to the Truckee River and support attainment of the a 303(d) listed TMDL pollutant to the Truckee River.

III. Local Stormwater Improvements. Due it is urban surroundings, the project site receives stormwater inputs from adjacent roads, residential, and commercial developments. The project's approach and engineered solutions will provide natural treatments for those inputs before reaching the main stem of the Truckee River.

VII. Meet Multiple Objectives. The project meets the watershed and water quality objectives listed above. It also benefits wetland and instream habitat, native fish and wildlife species, flood attenuation, and carbon sequestration.

VIII. Leverage Stakeholder Assets and Participation. The project has leveraged stakeholder participation and assets from the outset. Project partners (public agencies, governments, and private landowners) were critical in starting and funding this project. All have contributed cost-share to the project (total \$300,000) and participated for 7 years.

Project #201: Perazzo Meadows Watershed Restoration & Erosion Control Project

Organization: National Forest Foundation

Amount Requested: \$189,099.40

Amount Recommended: \$148,000

Organizational Match: \$41,998.98 (In-kind)

Project Description:

The specific goals of the project are to:

- 1) Improve water quality for on-site and downstream beneficial uses by reducing erosion, sediment loading, and other pollutants to the Little Truckee River and Stampede Reservoir.
- 2) Increase water storage in the upper Truckee River watershed by restoring the floodplain and hydrologic function of the meadow tributaries to the Little Truckee River.
- 3) Improve riparian and aquatic habitat for sensitive species.

Progress towards achieving these goals will be measured and reported through the following metrics: miles of road improved, number of culverts installed, number of drainage dips installed, number of low water crossings installed, and miles of stream channel enhanced/restored (Appendix I). All figures reflect estimates and are subject to change during project implementation based on the necessary prescriptions that best suit the landscape.

This project will reduce the potential for sedimentation to the water system by stabilizing eroding areas and capturing sediment and other pollutants at its source, along Henness Road. In addition, improve the quality of surface water runoff, restore floodplain function in the meadow tributaries to the Little Truckee River, and improve and increase the riparian and aquatic habitat in the area. Please see Appendix II for a map of the project site with respect to Henness Pass Road, the Little Truckee River, and other recently completed restoration efforts.

TMWA Benefit:

The project fulfills grant priorities (II) *Watershed Improvements*, (III) *Local Stormwater Improvements*, (VII) *Meet Multiple Objectives*, and (VIII) *Leverage Stakeholder Assets and Participation*. Through retrofitting and adding appropriate erosion control infrastructure and restoring natural flow regimes, the project will mitigate storm water runoff and reduce sediment discharges to the Little Truckee River and subsequently Stampede Reservoir. The project adopts an innovative planning approach by combining road improvements with complimentary meadow restoration to maximize efficiency with project implementation and costs, and provide sustainable, lasting benefits. Such multifaceted actions will result in significant water quality improvement to both local and downstream waters, and advance the resilience of the overall Truckee River watershed.

Project #203: One Truckee River: Watershed Management and Source Protection Plan & OTR Partnership Support

Organization: One Truckee River (through Nevada Land Trust (NLT))

Amount Requested: \$273,580

Amount Recommended: \$173,580

Organizational Match: \$99,780 (Cash) (In-Kind)

Project Description:

One Truckee River (OTR) is concerned with the Truckee River in Nevada from the state line to Pyramid Lake. OTR's Phase I Management Plan covers the urban section of the Truckee from the vicinity of Chalk Bluff and McCarran (western boundary) to Vista Boulevard in Sparks (eastern boundary).

Funding from TRF is requested to support the following activities:

1. Contracting with an individual to serve as One Truckee River Coordinator.
2. Coordination of the OTR Partnership, and advancing 2018 priorities established by OTR working groups in each of the following areas:
 - a. Sanitation & Housing
 - b. Signage Plan & River Safety
 - c. Storm Water, Vegetation, Watershed Management
 - d. Funding, Metrics for Success, Structure
3. Identification of sustainable funding and long-term agency home/structure for OTR.
4. Raising near-term funds for continued implementation of OTR Plan Action Items with a focus on leveraging and matching OTR Partner investments.
5. NLT/ KTMB staff participation in activities listed above, and in OTR Partnership – as well as contract management, leadership team engagement, communications support.

Progress will be measured against OTR working group priorities established for 2018 from the OTR Management Plan. Specific outcomes include: selection of and contract with new OTR Coordinator; well-informed local, state, and federal stakeholders; regular reporting of progress toward goals; identification and pursuit (and ideally receipt) of new funding for OTR; identification of long-term agency home/structure and funding for OTR; implementation of working group priorities.

TMWA Benefit:

All the TRF priorities, I thru VIII, are reflected in the One Truckee River (OTR) Management Plan developed by the OTR partners and adopted by Washoe County and the Cities of Reno and Sparks. As OTR founders, NLT and KTMB are continuing to provide staff support to OTR and to implementation of OTR priorities. As the new OTR Coordinator comes on board, NLT and KTMB staff will begin to shift responsibility to that individual for partnership management and facilitation but shall remain members of OTR and undertake project implementation. Education and outreach to engage the community in understanding and caring for the Truckee River is the focus of the AmeriCorps team members managed by KTMB. Staff of both KTMB and NLT facilitate partnership activities and handle communications for the OTR partners; communication and community outreach responsibilities will continue. OTR Partners have identified priorities for 2018 within each of the following areas: Sanitation & Housing, Signage Plan & River Safety; Storm Water, Vegetation, Watershed Management; and Funding, Metrics for Success, and Structure. For all the reasons stated above, the requested funds clearly Meet Multiple Objectives (VII).



Grant Priorities

Based upon the aforementioned discussion, TMWA recommends that the Advisors give preference to well-prepared and thought out grant requests for projects and programs that mitigate substantial threats to water quality and the watershed, particularly those threats upstream or nearby treatment and hydroelectric plant intakes:

- I. **Aquatic Invasive Species (AIS):** Projects/Programs that support the prevention or control of aquatic invasive species in the main stream Truckee River, Lake Tahoe, other tributaries and water bodies in the Truckee River system.
- II. **Watershed Improvements:** Projects that reduce erosion or sediment, suspended solids, or TDS discharges to the River. Projects or programs that are located within 303d (impaired waters) sections of the River should be considered, both in California and Nevada. Innovative techniques should be encouraged.
- III. **Local Stormwater Improvements:** Projects that are well designed which mitigate storm water run-off due to urbanization of the local watershed. Priority should be given to those improvement projects in close proximity to TMWA's water supply intakes and canals and which will improve the reliability and protect the quality of the community's municipal water supply.
- IV. **Re-Forestation and Re-Vegetation Projects:** Projects to restore forest and upland areas damaged by fire and historical logging operations, and to improve resiliency in drought situations. Projects/programs in this category should be given a high priority due to urbanization of the watershed and increased susceptibility of the urban and suburban watershed to wildfire.
- V. **Support to Rehabilitation of Local Tributary Creeks and Drainage Courses:** Practical projects to support water quality improvement in Gray Creek, Bronco Creek, Mogul Creek, Chalk Creek, Steamboat Creek and the North Truckee Drain.
- VI. **Stewardship and Environmental Awareness:** Support to Clean-Up programs and the development and implementation of educational programs relative to water, water quality and watershed protection.
- VII. **Meet Multiple Objectives:** Projects/Programs should identify opportunities to meet multiple water quality and watershed objectives as outlined above with preference given to those achieving multiple benefits.
- VIII. **Leverage Stakeholder Assets and Participation:** Projects/Program selection should include an assessment of various stakeholder interests in all aspects of river water quality, watershed protection, source water protection and species enhancement thereby leveraging available funds and other assets.

TRUCKEE MEADOWS WATER AUTHORITY
(TMWA)

RESOLUTION NO. 260

**A RESOLUTION APPROVING PROJECTS
FOR FUNDING UNDER THE TRUCKEE RIVER FUND**

WHEREAS, the Truckee Meadows Water Authority and the Community Foundation of Western Nevada (the "Community Foundation"), a Nevada non-profit corporation, have entered into an agreement creating The Truckee River Fund (the "Fund") to foster projects that protect and enhance water quality or water resources of the Truckee River, or its watershed;

WHEREAS, pursuant to the Fund Agreement, an Advisory Committee has solicited proposals from prospective beneficiaries of the Fund;

WHEREAS, the Advisory Committee has recommended projects for funding, as listed on Exhibit A, attached hereto;

WHEREAS, the Advisory Committee has the responsibility of securing preliminary approval for projects from the TMWA Board, which may disapprove projects for any reason, or may approve projects by resolution, subject to Community Foundation Board approval;

WHEREAS, the Community Foundation has advised the Advisory Committee that the projects' applicants are eligible beneficiaries of the Fund;

WHEREAS, the Board has reviewed the recommendation of the Advisory Committee and has found that the projects as listed on Exhibit A are consistent with the purposes of the Fund and merit funding;

NOW THEREFORE, BE IT RESOLVED by the Board of Directors of the Truckee Meadows Water Authority:

The projects set forth on **Exhibit A** are approved for funding under the Truckee River Fund in the amount set forth in such Exhibit, subject to final authorization by the Community Foundation Board, and subject to the provisions of the Fund Agreement, including without limitation the requirements set forth in Article VC.

Truckee Meadows Water Authority
Resolution No. 260 (continued)

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Truckee Meadows Water Authority,

Upon motion of _____, seconded by _____, the foregoing Resolution was passed and adopted on March 21, 2018 by the following vote of the Board:

Ayes: _____

Nays: _____

Abstain: _____ Absent: _____

Approved March 21, 2018

Geno Martini, Chairman

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

On this 21st of March, 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

EXHIBIT A

Project #195: Watershed Education Initiative (WEI)

Organization: Sierra Nevada Journeys (SNJ)

Amount Requested: \$83,376

Amount Recommended: \$46,376

Organizational Match: \$12,707 (Cash) \$15,385 (In-Kind)

Project Description:

The WEI delivers high-quality, experiential watershed education programs based on local issues associated with the Truckee River watershed, the water cycle, point and non-point source pollution, invasive species, sources and impacts of erosion, water conservation and stewardship.

Through this funding, SNJ will serve 1,100 K-8th grade students in 30 classrooms throughout northern Nevada. Conducted over a four-week period, WEI includes three in-class lessons, one field-study experience, pre- and post-assessments, classroom extension lessons for teachers, significantly increases family and community engagement, and citizen science. Curriculum developed and delivered by SNJ's team of credentialed teachers aligns to state and national standards and the North American Association for Environmental Education's Guidelines for Excellence.

TMWA Benefit:

This program satisfies the TRF Grant Priority VI – *Stewardship and Environmental Awareness*. WEI is an education program that addresses water, water quality and watershed protection for K-8th grade students, directly aligning with Grant Priority VI. Students gain first-hand experience with the Truckee River, explore human impacts on their water source, and obtain skills and knowledge to help protect the watershed. The overall long-term impacts achieved through this program include:

- Students understand important science concepts related to the Truckee River watershed and can articulate how their actions affect the Truckee River watershed and local ecosystems.
- Teachers use extension lessons and implement more hands-on exploration of the watershed.
- Parents and community members engage in watershed education directly through WEI volunteer opportunities

Project #196: Mount Rose Noxious Weed Monitoring and Treatment #6

Organization: Friends of Nevada Wilderness

Amount Requested: \$23,724

Amount Recommended: \$23,500

Organizational Match: \$6,761 (Cash) \$8,400 (In-Kind)

Project Description:

The greater goal of the Mount Rose Wilderness Noxious Weed Monitoring and Treatment Project is to protect the water quality of the Truckee River and its watershed. Specifically, our goal is to treat noxious weeds at their source to mitigate their spread, monitor known weeds sites for changes and growth, and identify any new weed activity or infestations. Noxious weeds threaten the biodiversity, wildlife habitat, soil productivity, water quality, and recreational resources of the Mt. Rose Wilderness and by removing them we will help retain and improve watershed health. Staff will lead volunteers to known locales of noxious weeds, removing them with shovels and clippers as necessary. Staff and volunteers will also monitor previously identified and/or treated sites and scout the 2017 Hunter Creek Fire perimeter and helicopter landing points.

TMWA Benefit:

This project satisfies Priority VI – *Stewardship and Environmental Awareness*. This project will focus on eradicating approximately 75 acres of noxious weeds on Humboldt-Toiyabe National Forest lands within the Truckee River Watershed.

Project #197: Doggie Ambassador Project

Organization: Truckee Meadows Parks Foundation

Amount Requested: \$15,214

Amount Recommended: \$15,214

Organizational Match: \$2,400 (Cash) \$13,680 (In-Kind)

Project Description:

To compensate for the lack of dog waste management in Reno, Truckee Meadows Parks Foundation implemented the Doggie Ambassador Project in the summer of 2016. Currently, the Parks Foundation manages 16 Doggie Ambassador volunteers. Every month, these volunteers obtain dog waste bags from the Parks Foundation and distribute them to assigned stations throughout Reno. The AmeriCorps VISTA Volunteer and Outreach Coordinator tracks volunteer time and dog waste bag distribution. With support from the Truckee River Fund, the Parks Foundation intends to expand the program by recruiting more volunteers through social media advertising, supplying dog waste bags and replacement stations, and conducting a volunteer-led educational campaign within Reno parks and trails.

Beginning in the spring of 2018, Parks Foundation volunteers will spend two weekends a month setting up a tent and table at trailheads around the Truckee Meadows where they will implement the community education component of the Doggie Ambassador Project. Volunteers will hand out dog waste bags in donated “dog bone” dispensers to unprepared dog owners. They will communicate with the public and will hand out dog treats and educational materials to dog owners.

TMWA Benefit:

The Doggie Ambassador Project advances priorities II, VI, VII, and VIII - *Watershed Improvements, Stewardship and Environmental Awareness, Meet Multiple Objectives, and Leverage Stakeholder Assets and Participation*. Priority II refers to watershed improvements such as reducing total dissolved solids. This project will reduce fecal matter, and therefore fecal coliform in the watershed. The Doggie Ambassador Project also advances priority VI by providing educational resources that foster better environmental stewardship. Community members adopt dog waste bag stations in our parks, thereby empowering and providing them with the proper tools to encourage responsible pet waste disposal throughout the Truckee Meadows. The Doggie Ambassador Project also works with multiple stakeholders, including Keep Truckee Meadows Beautiful, Nevada Land Trust (One Truckee River), Truckee Meadows Storm Water Permit Coordinating Committee, Friends of Nevada Wilderness, Natural Paws, and the City of Reno, to encourage collaborative efforts in reducing the pet waste problem in our watershed and promote the missions of all involved agencies, thereby advancing priority VIII.

Project #199: Cold Stream Meadow Road Decommissioning and Restoration Project

Organization: Truckee Donner Land Trust

Amount Requested: \$65,000

Amount Recommended: \$65,000

Organizational Match: \$17,800 (Cash) \$2,200 (In-Kind)

Project Description:

When complete, the Cold Stream Meadow Road Decommissioning and Restoration will make unavailable roughly five miles of former logging roads to motorized vehicle trespass on Truckee Donner Land Trust land, and mitigate erosion impacts to Cold Stream Meadow, a key headwater meadow in the Little Truckee Basin.

Specific project goals and measurable outcomes and how you will measure and report them.

- Decommission for motorized use all roads in the Cold Stream drainage south of the bridge at the foot of Cold Stream Meadow.
- Remove the broken bridge over Cold Stream.
- Remove culverts in abandoned roadways.
- Reconnect drainages and re-contour slopes where feasible.
- De-compact road surfaces where necessary.

Decommissioning the roads, removing the bridge, and removing culverts are all goals that are easily measured. It will not be possible to re-contour all slopes, connect all drainages and de-compact all road surfaces; these goals will be deemed complete when the U.S. Forest Service advises that road impacts to the meadow are minimized.

TMWA Benefit:

The project meets multiple grant priorities including Priorities II and IV: Minimizing erosion, improving source water quality, and encouraging future growth of vegetation in areas disturbed by past logging by reconnecting drainages, re-contouring slopes, de-compacting soil, and discouraging future compaction and erosion. In addition, the project advances grant priority VI, Stewardship and Environmental Awareness, with a volunteer component that will include work de-compacting road surfaces as well as a discussion on why properly-functioning headwater meadows are key to water quality and quantity in the Sierra.

Project #200: Truckee Meadows Restoration Project- Phase 2 Construction

Organization: Truckee River Watershed Council

Amount Requested: \$30,000

Amount Recommended: \$30,000

Organizational Match: \$47,750 (Cash)

Project Description:

The project was initiated in 2010 when TRWC convened a partnership of 8 public and private landowners that collectively owned the entire wetland complex and ephemeral drainage (i.e. from the springs to the Truckee River). Working with that partnership, we completed a feasibility study and assessment, four years of pre-project monitoring, 100% restoration designs, and environmental compliance and permitting. In 2017, we completed phase 1 construction. Overall, this approach will slow surface water within the upstream meadow, enhancing that habitat and attenuating high flows. This promotes more natural hydrology in the downstream ephemeral channel, where the channel and floodplain enhancements will reduce sediment erosion and promote deposition before reaching the main stem Truckee River.

TMWA Benefit:

The project addresses TRF Grant Priorities:

II. Watershed Improvements. The project will decrease sedimentation to the Truckee River and support attainment of the a 303(d) listed TMDL pollutant to the Truckee River.

III. Local Stormwater Improvements. Due it is urban surroundings, the project site receives stormwater inputs from adjacent roads, residential, and commercial developments. The project's approach and engineered solutions will provide natural treatments for those inputs before reaching the main stem of the Truckee River.

VII. Meet Multiple Objectives. The project meets the watershed and water quality objectives listed above. It also benefits wetland and instream habitat, native fish and wildlife species, flood attenuation, and carbon sequestration.

VIII. Leverage Stakeholder Assets and Participation. The project has leveraged stakeholder participation and assets from the outset. Project partners (public agencies, governments, and

private landowners) were critical in starting and funding this project. All have contributed cost-share to the project (total \$300,000) and participated for 7 years.

Project #201: Perazzo Meadows Watershed Restoration & Erosion Control Project

Organization: National Forest Foundation

Amount Requested: \$189,099.40

Amount Recommended: \$148,000

Organizational Match: \$41,998.98 (In-kind)

Project Description:

The specific goals of the project are to:

- 1) Improve water quality for on-site and downstream beneficial uses by reducing erosion, sediment loading, and other pollutants to the Little Truckee River and Stampede Reservoir.
- 2) Increase water storage in the upper Truckee River watershed by restoring the floodplain and hydrologic function of the meadow tributaries to the Little Truckee River.
- 3) Improve riparian and aquatic habitat for sensitive species.

Progress towards achieving these goals will be measured and reported through the following metrics: miles of road improved, number of culverts installed, number of drainage dips installed, number of low water crossings installed, and miles of stream channel enhanced/restored (Appendix I). All figures reflect estimates and are subject to change during project implementation based on the necessary prescriptions that best suit the landscape.

This project will reduce the potential for sedimentation to the water system by stabilizing eroding areas and capturing sediment and other pollutants at its source, along Henness Road. In addition, improve the quality of surface water runoff, restore floodplain function in the meadow tributaries to the Little Truckee River, and improve and increase the riparian and aquatic habitat in the area. Please see Appendix II for a map of the project site with respect to Henness Pass Road, the Little Truckee River, and other recently completed restoration efforts.

TMWA Benefit:

The project fulfills grant priorities (II) *Watershed Improvements*, (III) *Local Stormwater Improvements*, (VII) *Meet Multiple Objectives*, and (VIII) *Leverage Stakeholder Assets and Participation*. Through retrofitting and adding appropriate erosion control infrastructure and restoring natural flow regimes, the project will mitigate storm water runoff and reduce sediment discharges to the Little Truckee River and subsequently Stampede Reservoir. The project adopts an innovative planning approach by combining road improvements with complimentary meadow restoration to maximize efficiency with project implementation and costs, and provide sustainable, lasting benefits. Such multifaceted actions will result in significant water quality

improvement to both local and downstream waters, and advance the resilience of the overall Truckee River watershed.

Project #203: One Truckee River: Watershed Management and Source Protection Plan & OTR Partnership Support

Organization: One Truckee River (through Nevada Land Trust (NLT))

Amount Requested: \$273,580

Amount Recommended: \$173,580

Organizational Match: \$99,780 (Cash) (In-Kind)

Project Description:

One Truckee River (OTR) is concerned with the Truckee River in Nevada from the state line to Pyramid Lake. OTR's Phase I Management Plan covers the urban section of the Truckee from the vicinity of Chalk Bluff and McCarran (western boundary) to Vista Boulevard in Sparks (eastern boundary).

Funding from TRF is requested to support the following activities:

1. Contracting with an individual to serve as One Truckee River Coordinator.
2. Coordination of the OTR Partnership, and advancing 2018 priorities established by OTR working groups in each of the following areas:
 - a. Sanitation & Housing
 - b. Signage Plan & River Safety
 - c. Storm Water, Vegetation, Watershed Management
 - d. Funding, Metrics for Success, Structure
3. Identification of sustainable funding and long-term agency home/structure for OTR.
4. Raising near-term funds for continued implementation of OTR Plan Action Items with a focus on leveraging and matching OTR Partner investments.
5. NLT/ KTMB staff participation in activities listed above, and in OTR Partnership – as well as contract management, leadership team engagement, communications support.

Progress will be measured against OTR working group priorities established for 2018 from the OTR Management Plan. Specific outcomes include: selection of and contract with new OTR Coordinator; well-informed local, state, and federal stakeholders; regular reporting of progress toward goals; identification and pursuit (and ideally receipt) of new funding for OTR; identification of long-term agency home/structure and funding for OTR; implementation of working group priorities.

TMWA Benefit:

All the TRF priorities, I thru VIII, are reflected in the One Truckee River (OTR) Management Plan developed by the OTR partners and adopted by Washoe County and the Cities of Reno and

Sparks. As OTR founders, NLT and KTMB are continuing to provide staff support to OTR and to implementation of OTR priorities. As the new OTR Coordinator comes on board, NLT and KTMB staff will begin to shift responsibility to that individual for partnership management and facilitation but shall remain members of OTR and undertake project implementation. Education and outreach to engage the community in understanding and caring for the Truckee River is the focus of the AmeriCorps team members managed by KTMB. Staff of both KTMB and NLT facilitate partnership activities and handle communications for the OTR partners; communication and community outreach responsibilities will continue. OTR Partners have identified priorities for 2018 within each of the following areas: Sanitation & Housing, Signage Plan & River Safety; Storm Water, Vegetation, Watershed Management; and Funding, Metrics for Success, and Structure. For all the reasons stated above, the requested funds clearly Meet Multiple Objectives (VII).



STAFF REPORT

TO: Board of Directors
THRU: Mark Foree, General Manager
FROM: John Enloe, Director Natural Resources
DATE: March 21, 2018
SUBJECT: **Discussion and action, and possible direction to staff for \$25,000 annual funding for FY18, FY19 and FY20 for the start-up of the Nevada Water Innovation Campus (NWIC) and \$97,707 funding in support of the South Truckee Meadows Wastewater Reclamation Facility (STMWRF) and Reno Stead Water Reclamation Facility (RSWRF) advanced treatment pilot testing operations**

Recommendation

Approve \$25,000 in annual funding for FY18, FY19 and FY20 for the start-up of the Nevada Water Innovation Campus (NWIC), and \$97,707 in funding to support the South Truckee Meadows Water Reclamation Facility (STMWRF) and Reno/Stead Water Reclamation Facility (RSWRF) advanced treatment pilot testing operations.

Background

The University of Nevada, Reno (UNR) in collaboration with TMWA and other regional agencies, has created the Nevada Water Innovation Campus (NWIC), intended to assist local, regional, and State authorities develop innovative strategies and methods to address water needs and opportunities in the Truckee Meadows and the State of Nevada. The Nevada Water Innovation Campus research activities will complement current regional water planning efforts and water utility engineering and operations activities. A regional collaborative effort to study the feasibility of expanding water recycling within the Truckee Meadows also serves as a model demonstrating the benefits of enhanced agency collaboration together with the technical capabilities of UNR.

Discussion

The Nevada Water Innovation Campus is the outcome of a shared vision by the University of Nevada, Reno, Washoe County, Truckee Meadows Water Authority, City of Reno, City of Sparks, Nevada Department of Transportation, and the Northern Nevada Water Planning Commission/Western Regional Water Commission.

The mission of the Nevada Water Innovation Campus is to assist local, regional, and State authorities develop innovative strategies and methods to address water needs and opportunities in the Truckee Meadows and the State of Nevada. The vision of the Nevada Water Innovation Campus is to become a nationally and internationally recognized innovation campus, solving real-world problems in the water sector and providing opportunities for economic growth and water resiliency.

The objectives of Nevada Water Innovation Campus include:

- developing innovative water management systems and practices;
- building partnerships with UNR, local agencies, and industry;
- demonstrating national leadership in water innovation;
- enhancing community awareness and consumer understanding about water issues and practices;
- educating and preparing the next generation of water professionals;
- creating a local water research hub of activity.

In addition to providing funding for the start-up of the NWIC, a specific scope of work with NWIC for \$97,707 has been developed to assist Washoe County, Reno and TMWA staff with the assembly, start-up and optimization of advanced water treatment technologies at the STMWRF and RSWRF demonstration project for the Regional Indirect Potable Reuse Feasibility Study. Tasks include:

- assisting undergraduate and graduate students optimize conventional filtration and Ozone-Biological-Activated-Carbon (O3-BAC) treatment processes;
- installing and trouble-shooting instrumentation, and assisting to create, conduct and/or oversee all analytical protocols;
- evaluating energy consumption for the proposed treatment unit processes compared to reverse-osmosis based systems;
- assist with procurement of treatment equipment and assembly of a research trailer, housing ultra-violet disinfection, granular activated carbon, and chlorine dioxide treatment equipment in preparation of relocating the advanced water treatment technologies to RSWRF in 2019;
- assisting with the development and creation of educational components within the research trailer, including visual and hands-on displays to enhance public education and engagement.

Washoe County, Reno, Sparks and the Western Regional Water Commission also plan to fund the start-up of the NWIC, including technical work efforts in support of the regional collaborative effort to study the feasibility of expanding water recycling within the Truckee Meadows.

Attachment:

NWIC Scope of Work

PROJECT PROPOSAL

Principal Investigator: Krishna Pagilla, Ph.D., P.E.

Project Number:

1. Project Title: **Field Scale Pilot Testing of Indirect Potable Reuse
Feasibility at STMWRF**

2. Principal Investigator: **Krishna Pagilla, Ph.D., P.E., Professor**
University of Nevada, Reno
Director, Nevada Water Innovation Campus
Department of Civil and Environmental Engineering
Phone: 775-682-1918; E-mail: pagilla@unr.edu

3. Project Manager: **John Enloe, PE**
Director, Natural Resources
Truckee Meadows Water Authority
1355 Capital Blvd., Reno, NV 89502
Phone: 775-834-8250
E-mail: jenloe@tmwa.com

3. Scope of Work: See Page 2

4. Duration of the Project: April 1, 2018 to December 31, 2018

5. Specified Deliverable Items:

As described in the Scope of Work

6. Equipment: None

7. Budget: See Page 4

**Field Scale Pilot Testing of Indirect Potable Reuse Feasibility at STMWRF
University of Nevada, Reno
Scope of Work**

A. Introduction and Background

Staff from the Northern Nevada Water Planning Commission, City of Reno, City of Sparks, Truckee Meadows Water Authority (“TMWA”) and Washoe County, the Regional Effluent Management Team (“Regional Team”) are effective at addressing region-wide water and wastewater planning issues. The Regional Team’s accomplishments are evidenced by their efforts working collaboratively with the State of Nevada Division of Environmental Protection staff to adopt updated reclaimed water regulations in 2017, the Agreement for Treated Effluent between the City of Reno, City of Sparks and TRI General Improvement District, and the ongoing Advanced Water Treatment Technologies Demonstration Project with the University of Nevada, Reno (UNR).

As a result of the Regional Team’s efforts, Bureau of Reclamation has provided a grant to Washoe County and UNR to undertake Northern Nevada Indirect Potable Reuse Study. The goal of this study is to demonstrate strategies for indirect potable reuse in Northern Nevada.

The Regional Team will be assisting this effort in many different ways including set-up and start-up of pilot scale system, operating support, analytical support, and review and reporting support. The pilot scale study is being conducted at Washoe County’s STMWRF. To effectively conduct this study and support Washoe County and UNR to investigate reclamation of STMWRF effluent for indirect potable reuse, TMWA will provide support in set-up, conduct, and successful completion of the pilot scale project at STMWRF and educational and feasibility aspects of indirect potable reuse.

B. Project Goals

The overall goal of the study is to develop feasibility of indirect potable reuse of advanced treated reclaimed water in Northern Nevada. The specific objectives are as follows:

1. Conduct a market value study for Category A+ reclaimed water in Northern Nevada.
2. Determine methods to create and account for a new Category A+ reclaimed water right that are acceptable to Nevada State Water Engineer.
3. Conduct resiliency analysis to determine if and to what extent does the Category A+ reclaimed water increases water resiliency of the region under potential scenario of adverse effects of climate change.
4. Conduct detailed and critical review and analysis of low energy water treatment technologies for producing Category A+ reclaimed water suitable for indirect potable reuse in lieu of reverse osmosis based treatment train.

C. Project Tasks

To achieve the overall project goal and specific objectives identified above, Truckee Meadows Water Authority is requested to provide funding to UNR through the Nevada Water Innovation Campus to support the following tasks.

- **Task 1: Pilot Scale System Set-up and Operation.** Assist County and TMWA staff with assembly, start-up, and optimization of advanced water treatment technologies at the STMWRF demonstration project for the Northern Nevada Indirect Potable Reuse Feasibility Study. Tasks include optimization of conventional coagulation-flocculation-filtration and Ozone-Biological-Activated-Carbon (O3-BAC) treatment processes; installing and trouble-shooting instrumentation, and assisting to create, conduct and/or oversee all analytical protocols.
- **Task 2: Energy Use Determination of Pilot Scale System.** For the Indirect Potable Reuse Feasibility Study, evaluate energy consumption for the proposed treatment unit processes, and compare to other treatment trains, including O3-BAC systems utilizing membrane systems (micro-filtration and ultra-filtration), and also compare to reverse-osmosis based systems.
- **Task 3: Determine Climate Variability Effects on Indirect Potable Reuse.** Based upon existing climate variability research published by UNR and DRI, evaluate if a regional potable reuse project potentially offers the Truckee Meadows region significant benefits with respect to changing snow/rain patterns, temperature variability, and other climate-related considerations.
- **Task 4: Research Trailer for Polishing Treatment.** Assist County and TMWA with procurement of treatment equipment and assembly of a Research Trailer, housing ultra-violet disinfection, granular activated carbon, and chlorine dioxide treatment equipment in preparation of relocating the advanced water treatment technologies to Reno-Stead WRF in 2019.
- **Task 5: Develop Public Education Components.** Assist with the development and creation of educational components within the Research Trailer, including visual and hands-on displays to enhance public education and engagement.

D. Project Team

The UNR project team will consist of the Principal Investigator, Dr. Krishna Pagilla, PE, one Associate Research Professor, and undergraduate student assistants, as necessary. Additional faculty and staff at UNR will be used for unique and supplementary tasks as needed with approval from Truckee Meadows Water Authority.

E. Project Schedule

The project schedule for UNR tasks will extend over a period of 9 months starting on April 1, 2018 and ending on December 31, 2018. A detailed project schedule for UNR involvement outlining the exact duration of each task described above and the respective deliverables will be developed during the first month of the project.

F. Project Costs

Required TMWA funding for the project is estimated at \$97,707. The budget supports a Research Associate Professor to conduct the tasks listed and also for the materials and lab services needed for the project. The budget includes 6-months of Research Associate salary with fringe benefits, \$2000 for travel, and \$8000 for materials and supplies. The indirect costs (Facilities and Administration Costs) are charged at 26% of the direct costs as per UNR's off-campus rate. The project will be principally conducted at STMWRF and no work will be done on UNR campus under this scope.



STAFF REPORT

TO: Board of Directors
THRU: Mark Foree, General Manager
FROM: John Enloe, Director of Natural Resources
DATE: March 21, 2018
SUBJECT: **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**

Recommendation

Provide direction to staff related to the proposed terms for consideration in a draft Return Flow Management Agreement between City of Reno, City of Sparks, Tahoe-Reno Industrial General Improvement District (TRIGID) and TMWA.

Background

Reno, Sparks and TRIGID have entered into an Agreement for Treated Effluent dated September 13, 2017 (“TRIGID Agreement”) whereby Reno and Sparks have agreed to reserve and deliver up to 4,000 acre feet annually of reclaimed water to the TRIGID for resale as process water to TRIGID Customers in the TRI Center, and TRIGID has agreed to design, construct and operate the pipeline project on the terms and conditions set forth in the TRIGID Agreement.

In some circumstances, where effluent generated at TMWRF is used as reclaimed water and is not returned to the Truckee River, secondary permits require that the return flow component to the Truckee River must be made up from other water sources, typically approved for in-stream flow purposes.

TMWA, as allowed by TROA, holds certain water resources which can support reclaimed water service and which are either not subject to the return flow requirement or which otherwise can satisfy the return flow requirement to the Truckee River. Reno, Sparks, and TRIGID desire to enter a separate agreement with TMWA under which TMWA would manage water resources available for return flow purposes to facilitate the implementation of the TRIGID Agreement, which may also provide indirect benefits to TMWA.

Discussion:

The parties continue to negotiate the terms of the Return Flow Management Agreement (RFMA), and while that Agreement has not been finalized many of the key concepts are sufficiently developed to present to the Board for review and consideration. Key concepts anticipated to be included in the RFMA include the following:

1. TRIGID owns Truckee River water rights that can be permitted to satisfy return flow requirements, and TRIGID will provide 1,500 acre feet of its Truckee River water resources that TMWA may manage as return flow resources. TRIGID will prove title and permit the Truckee River water rights for this purpose to the satisfaction of the Nevada Division of Water Resources, all at no cost to the cities or TMWA.
2. The State of Nevada Department of Transportation (“State”) owns Truckee River water rights in the Truckee Meadows, estimated to be between 1,500 and 2,200 acre feet. TMWA will enter an agreement with the State that allows TMWA to manage the water rights for in-stream flows to help satisfy the return flow requirement. TRIGID will prove title to and permit these State Truckee River water rights for this purpose to the satisfaction of the Nevada Division of Water Resources, all at no cost to the cities, TMWA or the State.
3. Reno and Sparks desire to allocate a portion of the un-utilized groundwater component of TMWRF effluent to satisfy a portion of TRIGID Reclaimed Water Supply return flow requirements. TMWA will determine the amount of un-utilized groundwater component available to TRIGID on an ongoing basis.
4. It is anticipated that additional water resources may be required to satisfy potential return flow requirements associated with the full 4,000 acre foot TRIGID reclaimed water supply. TMWA, as allowed by TROA, holds certain water resources which can support Reclaimed Water service and which are either not subject to the Return Flow Requirement (i.e. the groundwater component or Privately Owned Stored Water) or resources which otherwise can satisfy the Return Flow Requirement to the Truckee River. Reno, Sparks and TRIGID desire TMWA to make up to 1,000 AF of these resources available to help satisfy the return flow requirement. Generally, TMWA’s resources would be used last, but the timing would be in TMWA’s discretion.
5. Reno, Sparks, and TRIGID desire TMWA to control and utilize the water resources to make water resources available for Return Flow Purposes in connection with and to facilitate implementation of the TRIGID Agreement. Reno, Sparks, TRIGID and TMWA further recognize that water resource operational efficiencies may result from TMWA managing the utilization and scheduling of water resources used to meet return flow obligations associated with TMWRF reclaimed water deliveries and the TRIGID Agreement.
6. It is currently anticipated that TMWA would provide the following services for the Parties during the term of the Agreement:

(a) Manage, direct, and schedule the allocation and use of the Managed Resources to support delivery of reclaimed water supply, and to facilitate compliance with the Return Flow Requirement, including developing and submitting to Reno, Sparks and TRIGID operation schedules and scheduling procedures for managing and operating the Managed Resources.

(b) Monitor return flow obligations of TMWRF and provide direction on return flow issues to enable Reno and Sparks to provide the Reclaimed Water in compliance with the Return Flow Requirement while seeking to achieve water quality benefits and efficient regional use of water resources.

(c) Coordinate operational activities of Reno and Sparks with respect to TMWRF Effluent Production and Reclaimed Water supply and TRIGID with respect to storage and use of TRIGID Reclaimed Water Supply, including timing and scheduling of deliveries, facility capacity, and demands.

(d) Collect, review, analyze and develop information necessary to prepare a water accounting and to schedule the operations of the Managed Resources used for Return Flow Purposes under this Agreement.

(e) Collect, verify, organize and analyze data determined necessary by TMWA for management of the Managed Resources for Return Flow Purposes, including, but not limited to, climatologic data, hydrologic data, Truckee River operating data, operational status of facilities, and data associated with unscheduled events that may require changes to the operation of, or desirability of operating, the Managed Resources as scheduled.

(f) Prepare reports on at least a weekly basis documenting the scheduling, accounting and operation of the Managed Resources and administer, oversee and coordinate the implementation of such operational schedules.

(g) Communicate with the Nevada Division of Water Resources and TROA Administrator regarding the scheduling and operations of Managed Resources for Return Flow Purposes, including administering and coordinating any submittals required to maintain the Managed Resources in good standing with the Nevada Division of Water Resources.

(h) Establish and implement priorities between Managed Resources and the scheduling of Managed Resources used to support TMWRF Effluent Production and Reclaimed Water supply and satisfy the Return Flow Requirement for Reclaimed Water and TRIGID Reclaimed Water Supply.

(i) To the extent practicable and consistent with exercise of water rights, assurance of water supplies, and operational considerations, recommend and encourage changes to operations to reduce or avoid conflicts in schedules and improve efficiency of use of Managed Resources.

In providing these services, TMWA would seek to promote the efficient use of resources in compliance with the operational requirements of TROA and the Federal Water Master/TROA Administrator and in a manner which minimizes the use of TMWA Return Flow Resources, where feasible. TMWA shall have the right, where such does not diminish the quality, quantity or availability of resources and will enhance efficient use of Truckee River resources, to exchange all or any portion of the TRIGID Replacement Water with other TMWA water resources.

7. The following table illustrates potential calculations of the amount of TMWA Return Flow Resources which could be made available:

<u>TRIGID and State Replacement Water</u>	<u>TMWA Return Flow Resources</u>
1,500 AFA or less	0 AFA
1,800 AFA	200 AFA
2,400 AFA	600 AFA
3,000 AFA	1,000 AFA

8. TRIGID would be required to reimburse TMWA for all costs incurred in connection with the performance of TMWA's obligations under the Agreement, including without limitation, internal and third party costs to perform the Resource Management Services, administrative and staffing costs, permitting fees, and operating expenses incurred by TMWA to facilitate TRIGID Reclaimed Water Supply or Reclaimed Water supply.

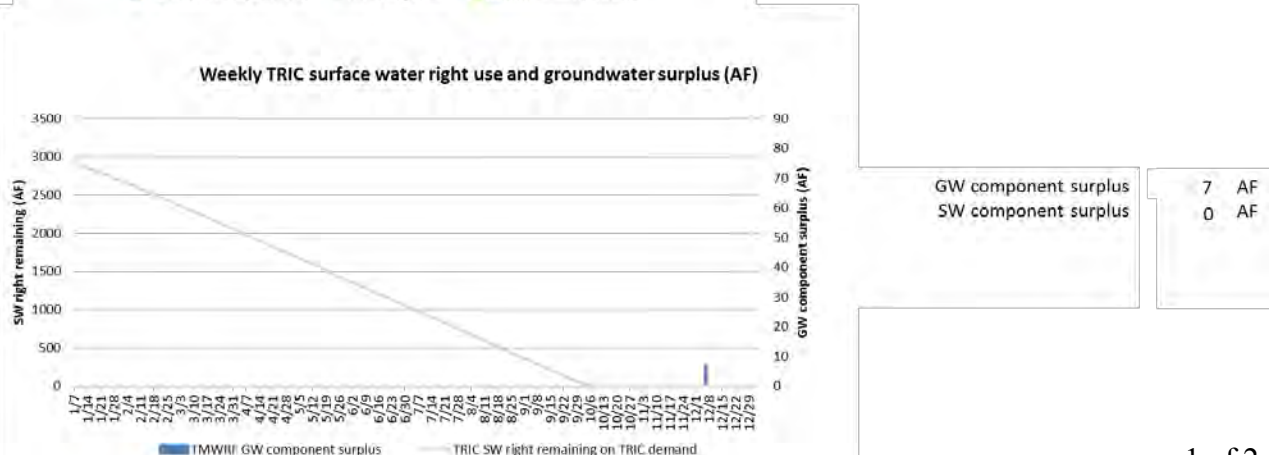
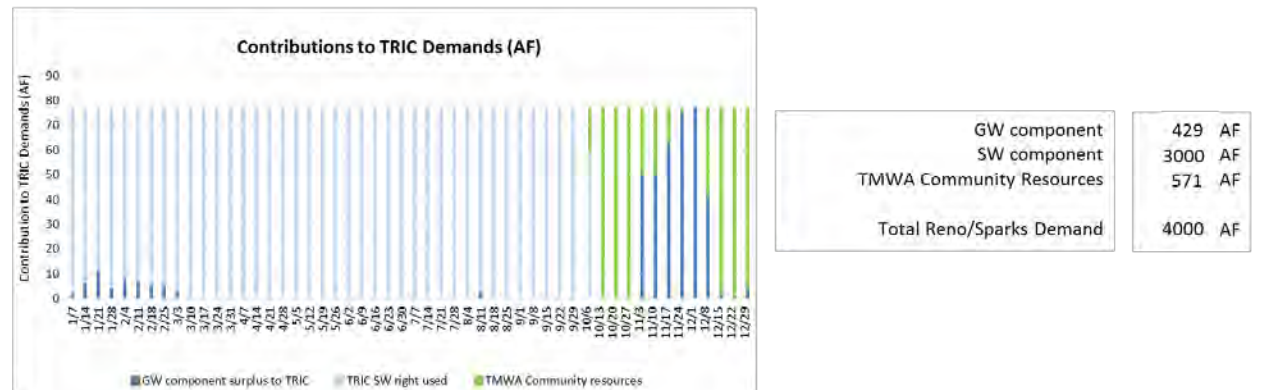
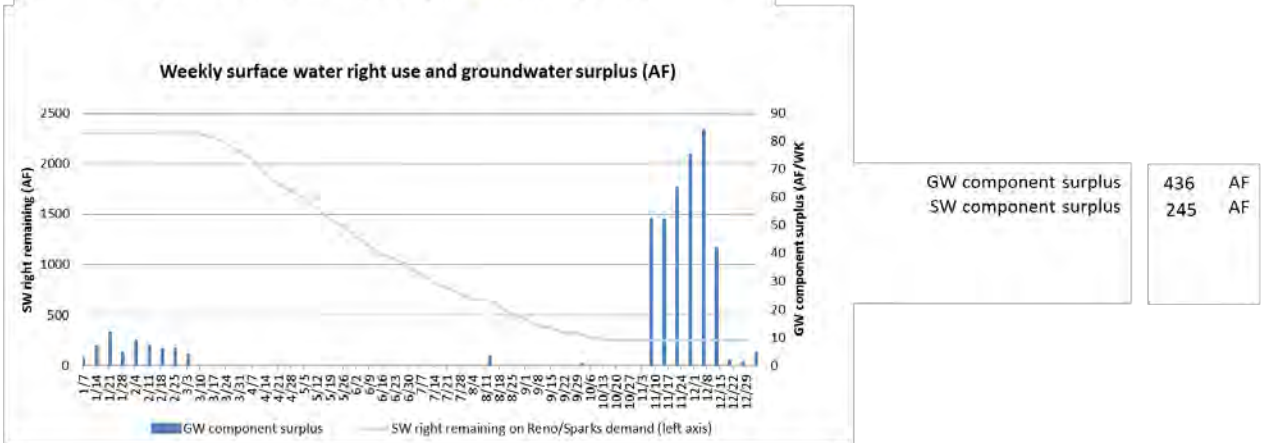
9. Any water rights acquired after the Effective Date for use as TRIGID Return Flow Resources shall be deeded to TMWA for use by TMWA as TRIGID Return Flow Resources or, when not otherwise required for Return Flow Purposes, such other temporary purposes determined by TMWA from time to time. Upon termination of this Agreement, the after acquired rights shall be permitted for municipal use within TMWA's retail service area and banked by TMWA for the benefit of TRIC, TRIGID or their assignees as mutually agreed by TRIC and TRIGID.

10. Optimal management of the Managed Resources may require the daily amount of TRIGID Reclaimed Water Supply to fluctuate in accordance with the season, drought conditions, TRIGID demands, and efficient use of Managed Resources, and in some circumstances may require TRIGID to accept delivery of TRIGID Reclaimed Water Supply in excess of daily demands for storage in the Reservoir for later use, or to accept deliveries below daily demands and supplement such deliveries with TRIGID Reclaimed Water Supply previously stored in the Reservoir. Reno, Sparks and TRIGID would cooperate with TMWA on these matters.

In support of the RFMA, an operational modeling effort is underway to demonstrate to the satisfaction of the Federal Water Master, the State Engineer and TMWA, that the planned operational strategies to be employed to satisfy the return flow requirement is consistent with TROA and related agreements and rulings. The attached preliminary model output figures will be reviewed at the meeting.

Attachments: Preliminary Model Output figures (2)

2024 Reno/Sparks Projected Demands (5500 AF) 03-21-18 BOARD Agenda Item 9
Normal water year (2013)
 TRIC 4000 AF demand scenario
 Attachment



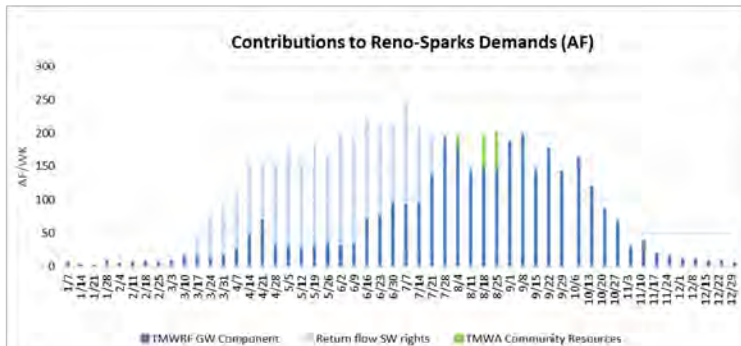
2024 Reno/Sparks Demands (5500 AF)

Drought year (2014)

TRIC 4000 AF demand scenario

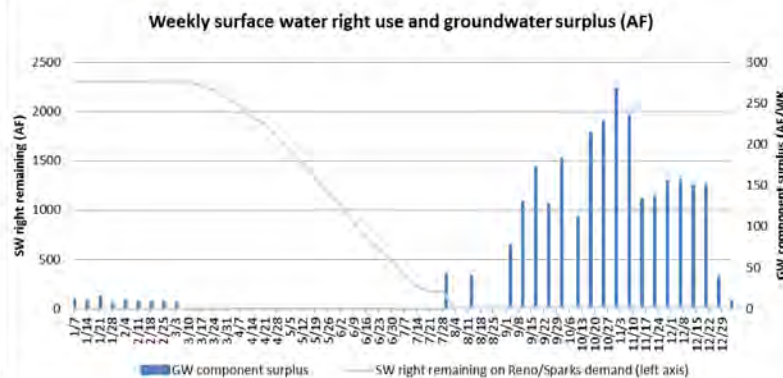
03-21-18 BOARD Agenda Item 9

Attachment



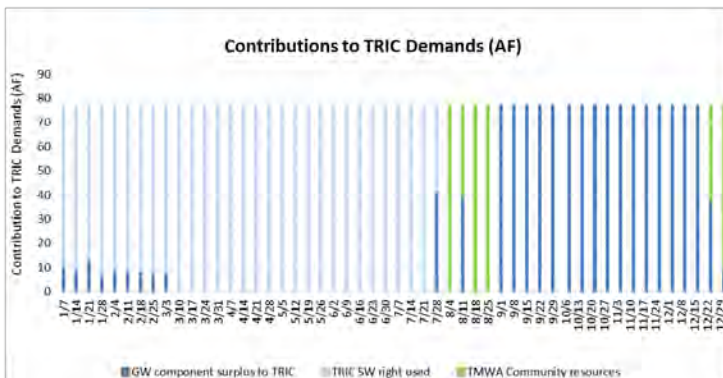
GW component
SW component
TMWA Community Resources
Total Reno/Sparks Demand

3313 AF
2123 AF
119 AF
5555 AF



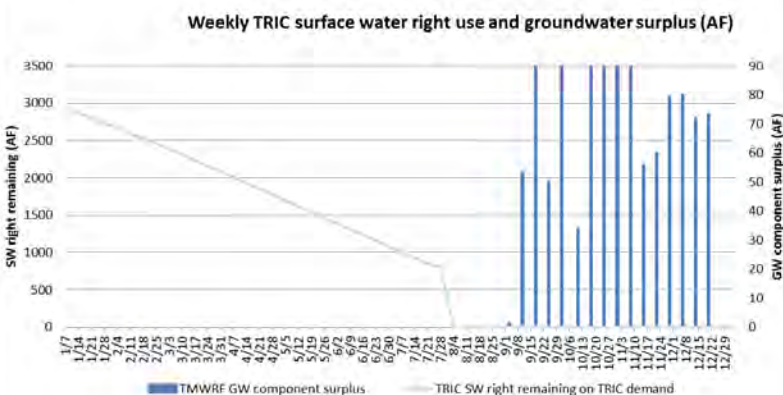
GW component surplus
SW component surplus

2838 AF
0 AF



GW component
SW component
TMWA Community Resources
Total Reno/Sparks Demand

1440 AF
2184 AF
376 AF
4000 AF



GW component surplus
SW component surplus

1398 AF
0 AF



STAFF REPORT

TO: Chairman and Board Members
THRU: Mark Foree, General Manager
FROM: John Zimmerman, Water Resources Manager
DATE: February 8, 2018
SUBJECT: **(Continued) Discussion and action, and possible direction to staff regarding staff recommendation on potential estimate and timeline to retrofit all unmetered services and alternative options for the meter retrofit fund program**

Staff presented a status report (attached) to the Board last August regarding the water meter retrofit fee. As a result of that discussion, board member Brekhus asked staff to further analyze which of the remaining nonmetered services feasibly could be metered and obtain a more-detailed cost estimate for metering those services. Member Brekhus also requested staff provide options to the Board for transitioning the retrofit fee to other purposes. The following is a brief discussion regarding staff's analysis of these issues and recommendation.

Recommendation

The remaining nonmetered services are relatively insignificant from a water use perspective, the cost to retrofit them is substantial (roughly \$73,000/service), and metering them could potentially cause them to increase their water use. Accordingly, the Board should consider directing staff to reserve the current balance of the meter retrofit fund (\$3.2M) to complete as many meter retrofits as possible if and when such services request metering and change the purpose of the fee going forward to water resource sustainability and drought resiliency. This purpose would allow TMWA to use the funds collected from the fee to support projects such as expanded conjunctive use, aquifer storage and recovery (ASR), demonstration and validation of exceptional quality reclaimed water (Class A+) uses, future water resource investigation efforts, and other projects that enhance water resource sustainability and drought resiliency. Under that purpose, the Board could also change the amount of the fee. Staff presented this analysis to the TMWA Standing Advisory Committee and it voted to recommend this option to the Board.

If the Board chooses to change the purpose and amount of the fee, staff would bring a proposed rule change to the Board at a future meeting that more-fully describes the intended purposes of the fee, clear parameters for using these fees, reporting to the Board on expenditures, and the fee amount necessary to achieve the intended purposes. The rule change must be presented to the Board for consideration and adoption at two public meetings and staff would take Board direction regarding outreach to the development community regarding the proposed rule change.

Summary of Meter Retrofit Fee

The meter retrofit fee was created to satisfy Section 29 of the May 23, 1989 Preliminary Settlement Agreement, which required TMWA to adopt a plan for financing and installing water meters. Under TMWA Rule 7(H)(3), applicants for water service (except those relying on domestic well conversion credits issued by the Nevada State Engineer, imported water resources, or groundwater rights for their dedication) must pay \$1,830 per acre-foot of their estimated water demand.

Nonmetered Services That Feasibly Could Be Metered

There are 253 remaining nonmetered services, which fall under the following three service types: Multiple-Unit Residential and Irrigation (MRIS), Multiple-Unit Residential Flat (MRFS), and Small Unit Flat Rate (SUFR). Staff eliminated all SUFR services (110) from feasibility consideration because metering them would be cost prohibitive considering: they are duplexes and fourplexes each fed by a single service line, each unit is usually under separate ownership, some of the internal plumbing and irrigation waterlines are shared among the units, it would require installation of additional service lines and metering facilities to each housing unit (which may need to be installed through adjoining property owner's land), and retrofitting each unit with a single service connection would require modifications to each unit's internal shared and non-shared plumbing as well as separating their irrigation systems.

Staff engaged Shaw Engineering to assist with reviewing the remaining 143 MRIS and MRFS services to determine whether they feasibly could be metered. Shaw and staff reviewed numerous factors to determine retrofit feasibility including, but not limited to, adequacy of existing water pressure to withstand pressure loss due to installation of meters and related facilities, whether there was adequate available space to install the required facilities, not placing facilities under streets (to avoid hazards to employees, additional costs, and creating traffic congestion during construction and maintenance activities), and legal issues due to multiple ownership of properties on a single service. Additionally, the analysis considered the age and state of the structure connected to the service to estimate the likelihood of it being demolished or substantially renovated and altered in the near future, which would trigger meter installation. Any structures that Shaw and staff considered likely to be demolished or renovated within 10 years were removed from the list.

After considering the above-described physical, legal, and practicable constraints of metering the remaining services, staff concluded that 82 of the 143 services could feasibly be retrofitted. These include only MRIS services as the MRFS services were deemed to be not feasible. Of the 82 services that are feasible, 68 are in Reno and 14 are in Sparks.

Retrofit Cost Estimate

The estimated cost of retrofitting the 82 feasible services is \$5.98M (\$73,000/service on average). This estimate is based on analysis and review by Shaw and TMWA staff of preliminary design drawings and construction cost estimates (see attached example cost estimate). Based on the average cost per service, staff estimates that the current meter fund balance would fund approximately 45 retrofits.

Preliminary Economic Analysis

As part of this project, staff also completed an abbreviated economic analysis of the potential impacts that metering the 143 non-SUFR services may have on revenue and water usage related to these services. That analysis estimates that revenue could decrease by \$76/service/year and water usage could increase by as much as 400 acre-feet annually. This outcome is similar to what occurred in the prior “flip the switch” metering process where certain flat-rate customers were required to switch to metered service.

Retrofit Options

The following are potential options for retrofitting services and the retrofit fee. The first two options would require a rule change, which would be subject to future public meetings. All of the options include using the current fund balance for meter retrofitting. This is because General Counsel Michael Pagni advised staff that the current fund balance should be used for the purpose for which it was collected to avoid legal challenges. Staff believe that course of action is prudent considering the fee was collected for metering services and it is likely that at least 50% of the nonmetered services will request to be metered in the next 10 years. Therefore, despite the substantial per service cost to meter the remaining services, staff believe the current fund balance should be reserved for that purpose to avoid legal challenge and out of fairness to existing nonmetered services who may request to be metered in the near future.

1. Reserve Current Fund Balance For Future Retrofits And Change Fee Purpose

Based on experience and TMWA’s preliminary economic analysis it does not appear that metering the remaining services would save water and may actually lead to increased water usage. Further, the average cost to retrofit each service is substantial (roughly \$73,000/service). Staff anticipates 50% of the remaining services will request to be metered over the next 10 years. This estimate is based on the number of retrofits completed in the past few years and the type and difficulty of the remaining services. The estimated cost to retrofit 50% of the remaining services is nearly \$3M, which is close to the current meter fund balance. Staff recommends the Board direct staff to reserve the current amount in the fund to retrofit as many of the remaining services that request to be metered. Staff would report to the Board annually regarding the number of services retrofitted, costs of retrofitting, and fund balance.

Staff also recommends the Board consider changing the purpose of the fee going forward to water resource sustainability and drought resiliency, which could be used to support projects such as expanded conjunctive use, ASR, demonstration and validation of exceptional quality reclaimed water uses, future water resource efforts, and other projects that improve water resource sustainability, and drought resiliency. Under this option, the Board could also consider changing the fee. Staff presented this analysis to the TMWA Standing Advisory Committee and it voted to recommend this option to the Board.

If the Board chooses to change the purpose and amount of the fee, staff would bring a proposed rule change to the Board at a future meeting that more-fully describes the intended purposes of the fee, clear parameters for using the fees, reporting to the Board on expenditures,

and the fee amount necessary to achieve the intended purposes. The rule change must be presented to the Board for consideration and adoption at two public meetings and staff would take Board direction regarding outreach to the development community regarding the proposed rule change.

2. Reserve Current Fund Balance For Future Retrofits And Terminate Fee

The Board could direct staff to reserve and apply the fund balance to the feasible services, but terminate the fee.

3. Terminate Fee After Remaining Feasible Services Are Retrofitted

This is the status quo option, which would direct staff to continue collecting the fee until the meter retrofit fund equals the estimated cost to retrofit the remaining feasible services.

Service Address: 101 E PRATER WAY

Service ID: 94938

Meter Size: 6-inch fire series

Easement Needed: Yes

Meter Retrofit Tracking Number: 143

Description	Unit	Quantity	Unit Cost	Total Cost	Comments
Easements and Legal	LS	1	\$5,000	\$5,000	Per TMWA
Engineering and Topographic Survey	LS	1	\$7,000	\$7,000	Assume \$2K survey, \$5K engineering
Permit Fees	LS	1	\$500	\$500	Assumed cost for EE permit
Mobilization/Demobilization	0	1	\$3,000	\$3,000	
2-inch meter/setter/box	LS	0	\$5,000	\$0	
4-inch Water Meter-Pipe	LS	0	\$31,500	\$0	Includes meter/vault, excludes backflow
6-inch Water Meter-Pipe	LS	0	\$38,000	\$0	Includes meter/vault, excludes backflow
8-inch Water Meter-Pipe	LS	0	\$45,000	\$0	Includes meter/vault, excludes backflow
4-inch Fire Series-Pipe	LS	0	\$40,000	\$0	Includes meter/vault, excludes backflow
6-inch Fire Series-Pipe	LS	1	\$45,000	\$45,000	Includes meter/vault, excludes backflow
8-inch Fire Series-Pipe	LS	0	\$50,000	\$0	Includes meter/vault, excludes backflow
10-inch Fire Series-Pipe	LS	0	\$58,000	\$0	Includes meter/vault, excludes backflow
Sidewalk R&R	SF	0	\$25	\$0	Includes meter/vault, excludes backflow
Curb and Gutter R&R	LF	30	\$45	\$1,350	
Concrete Driveway Apron	SF	0	\$18	\$0	
4-inch AC Patch	SF	0	\$10.6	\$0	Per West Coast 17 Bid
6-inch AC Patch	SF	0	\$12	\$0	
2-inch Grind and Overlay	SF	0	\$8	\$0	Per West Coast 17 Bid
Landscape R&R	SF	500	\$4	\$2,000	
Misc:				\$0	
Valves Raise/Lower	EA	0	\$700	\$0	Per COR Street Cut Fee
CATV Relocate	LS	1	\$2,000	\$2,000	
Added T&B/Pipe for (P) layout	LS	0	\$1,000	\$0	Have added pipe/fittings and/or utility x-ings
Total Estimated Construction Cost =				\$65,850	
20% Contingency =				\$13,170	
Total Estimated Project Cost =				\$79,020	



STAFF REPORT

TO: Chairman and Board Members
THRU: Mark Foree, General Manager
FROM: Pat Nielson, Director of Distribution, Maintenance and Generation
Brent Smith, Field and Meter Service Supervisor
John Zimmerman, Water Resources Manager
DATE: August 8, 2017
SUBJECT: **Informational report regarding the water meter retrofit fund program**

At the June Board meeting, Member Brekhus requested an informational report on the status of the water meter retrofit program. The following is a brief discussion regarding the current meter fund balance, projected fund revenue over the next five years, and estimated costs and complications of retrofitting all remaining non-metered services.

Water Meter Retrofit Fee and Fund Balance

Under TMWA Rule 7(H)(3), applicants for water service (except those relying on domestic well conversion credits issued by the Nevada State Engineer, imported water resources, or groundwater rights for their dedication) must pay \$1,830 per acre-foot of their estimated water demand. In fiscal year 2017, TMWA collected \$370,667 in meter retrofit fund fees and as of June 30, 2017 the fund balance was \$2,425,647.

Estimated Annual Fund Revenue

Based on a very preliminary analysis, staff estimates that by the end of fiscal year 2022, the projected meter fund balance will be between \$4.2M and \$9.7M.¹ This range is based on the amount of surface water staff estimates may be used to satisfy dedication requirements over the next five years (fiscal years 2018-2022). The results of staff's analysis are shown in Tables 1 and 2.

Under the first scenario, surface water dedications remain constant at fiscal year 2017 levels. Under the second scenario, surface water dedications increase by 50% each year from fiscal year 2017 levels. It is somewhat likely that more surface water will be dedicated than projected in scenario 1 because groundwater resources in TMWA's Inventory are nearly exhausted, and thus, most commitments based on Inventory resources will be surface water. Accordingly, scenario 1 serves as a lower bound estimate.

¹ This projection does not account for expenditures under the fund over the next five years.

Table 1			
Scenario 1: 202.6 Acre-Feet of Surface Water Committed Annually			
Fiscal Year	Committed Acre-Feet	Revenue	Ending Balance
2018	202.55	\$ 370,667	\$ 2,796,314
2019	202.55	\$ 370,667	\$ 3,166,981
2020	202.55	\$ 370,667	\$ 3,537,648
2021	202.55	\$ 370,667	\$ 3,908,315
2022	202.55	\$ 370,667	\$ 4,278,982
Table 2			
Scenario 2: 50% Increase in Surface Water Committed Each Year			
Fiscal Year	Committed Acre-Feet	Revenue	Ending Balance
2018	303.90	\$ 556,137	\$ 2,981,784
2019	455.85	\$ 834,206	\$ 3,815,990
2020	683.78	\$ 1,251,308	\$ 5,067,298
2021	1025.66	\$ 1,876,962	\$ 6,944,260
2022	1538.49	\$ 2,815,444	\$ 9,759,704

Estimated Cost to Complete Retrofitting

There are 253 non-metered services and staff estimates the total cost to retrofit them with meters would be approximately \$4,326,000 – \$6,880,000. This cost estimate is based solely on staff's experience with, and knowledge of, these service types and is limited to the estimated amount of labor and materials to complete retrofitting. Staff believes converting these services to meters would be very difficult because of meter size, physical location of piping, and legal complications associated with obtaining any necessary easements and access rights. These complications are difficult to estimate without a more in-depth analysis, but are likely to increase the costs, substantially in some cases. To obtain more accurate cost estimates, staff would need to physically inspect each service property at a minimum.

The remaining services fall under three rate schedules:

Rate Schedule	Total Services	Estimated Cost Range
Multiple-Unit Residential and Irrigation Service	129	\$3,250,000 – \$4,000,000
Multiple-Unit Residential Flat Rate Service	14	\$300,000 – \$400,000
Small Unit Flat Rate Service	110 ²	\$500,000 – \$2,480,000

² As of June 2017, there were 396 customers billed under these SUFR party services.

The Multiple-Unit Residential and Irrigation services include apartment complexes and mobile home parks. These services are connected to TMWA's water system by single or multiple feeds and some have multiple owners. Most of these services use relatively large diameter pipe that likely would require construction of a vault with backflow prevention assemblies. Also, some of these services may require pipe upsizing to meet fire flow requirements.

The Multiple-Unit Residential Flat Rate services are all apartment complexes fed by one service line. These services also are likely to require construction of a vault and backflow assemblies and may require modifications to satisfy fire flow requirements.

The Small Unit Flat Rate party services consist of duplexes and fourplexes that are each fed by a single service line.³ Each housing unit is usually under separate ownership, but some of the internal plumbing and irrigation waterlines are shared among the units. These services will be the most difficult to retrofit. It would require installation of additional service lines and metering facilities to each housing unit from TMWA's main waterlines. These additional service lines may need to be installed through adjoining property owner's land, and thus, would require coordination with, and easements from, the affected property owners. Lastly, retrofitting each unit with a single service connection would require modifications to each unit's internal shared and non-shared plumbing as well as separating their irrigation systems. These modifications could increase the cost to retrofit each unit by approximately \$5,000, which additional cost is included in the higher cost estimate provided above.

For each service type, any construction that involves the installation of new or modified facilities on a customer's property or within their housing unit would require their consent.

Meter Fund Status

Based on staff's preliminary estimates and using the lower range of values provided above, the fund may receive enough fees for the estimated retrofitting costs of these services between fiscal years 2020 and 2022. Staff continues to retrofit existing services as time allows, however, it may be worthwhile to analyze the benefits of retrofitting the remaining SUFR party services due to their complexity and expense.

³ See attached photographs of several Small Unit Flat Rate services.

Example Duplex – SUFR



Example Fourplexes – SUFR







STAFF REPORT

TO: TMWA Board of Directors
THRU: Mark Foree, General Manager
FROM: Michele Sullivan, Chief Financial Officer/Treasurer
Joe Petrelli, Principal Financial Analyst
DATE: March 13, 2018
SUBJECT: Discussion and action on the TMWA Tentative Budget for the Fiscal Year ending June 30, 2019 and Draft Capital Improvement Plan for Fiscal Years 2019 through 2023

Recommendation

TMWA Board and SAC review the tentative budget report for the fiscal year ending June 30, 2019 and preliminary Five Year Capital Improvement Plan 2019-2023 (CIP). This allows the Board and SAC to provide input and direction to TMWA management in advance of the public hearing on the budget and CIP on Wednesday, May 23, 2018. The tentative budget will be filed with the Nevada Department of Taxation by April 15, 2018 in compliance with statutory requirements.

Schedule of Revenues and Expenses Summary- See Attachment A

Operating Revenues

Water demands have been projected based on an average of calendar year 2014 to 2017 water usage per service type and by service size. This methodology projects water sales revenue at \$100.6 million, essentially equal to projections in the most recent funding plan. The approved 3% increase in rates as of the first billing cycle in May, 2018 is included in revenue. The fiscal year 2019 budget also anticipates the addition of 2,206 service connections over the course of the year. This expected growth is corroborated by current billing statistics. While the budget for water sales revenue is in line with the funding plan for 2019, it is \$6.3 million and 6.7% higher than the FY2018 budget due to growth and the 3% rate increase.

Hydroelectric revenues are expected to be slightly lower than FY2018 with generation expected through the entire year. River flows are expected to be sufficient to operate all three hydroelectric plants, with only minor outages for repairs or weather, which will generate \$2.8 million in revenue.

Other miscellaneous operating revenues are estimated at \$3.4 million. Other miscellaneous revenues are made up of late payment fees, turn-on and turn-off fees, construction water sales, cell phone tower rents, inspection services on new business and interruptible water sales. Depending on the pace of residential/commercial construction there could be more or less construction water sales and inspection fees than projected.

Operating Expenses

TMWA operating expenses are expected to increase in 2019. Wages and salaries costs are expected to increase \$2.05 million and 10.79% mainly due to increases in staffing levels by \$1.22 million, with cost of living wage increases and IBEW wage adjustments per the recently approved contract totaling \$0.83 million. Staffing is expected to increase from 206 full time equivalents (FTEs) in FY18 budget to 221 FTEs in FY19 budget. Increases in staff include 12 IBEW employees and 3 MPAT employees. Two of the MPAT employees are engineers, and their salaries will be capitalized as part of construction costs. Headcount increases related to operations are detailed in the table below:

Additions to Staff for Operations		Headcount	Wages
Fitter (Apprentice)	IBEW	4	\$ 321,843
Inspector	IBEW	1	\$ 106,010
Treatment Plant Operator (Apprentice)	IBEW	2	\$ 220,290
Equipment Specialist	IBEW	1	\$ 99,212
Plant Electrician (Apprentice)	IBEW	1	\$ 110,810
Mechanic Specialist (Apprentice)	IBEW	2	\$ 174,498
SCADA Technician (Apprentice)	IBEW	1	\$ 98,307
Systems Administrator	MPAT	1	\$ 89,535
Total Cost of headcount additions to O&M		13	\$ 1,220,505

The main reasons for additional headcount are to mitigate overtime, ensure preventive maintenance is performed, and prepare for retirements in the next 3 years. Overtime for water operators will be mitigated with more operators, and should ultimately save as much as \$350,000 annually. This will take time because the apprenticeship for an operator is 2 years. TMWA should begin experiencing savings in overtime in FY20. Overtime for SCADA technicians will also decrease when employees are finished with apprenticeships, which are four years. With a larger service area and more construction, less employee time is available for preventative maintenance. This is especially true for the equipment specialists, plant electricians, mechanic specialists, and SCADA technicians. Retirements of 21 skilled field personnel are expected in the next 3 years. To train individuals to fill these positions, 4 entry level fitters, and one inspector will be hired. A system administrator will be hired in the IT department to manage growing IT infrastructure.

Employee benefits are expected to increase \$0.8 million and 8.4% for FY19. Benefits increased by about 2.4% less than wages expense. This is mainly due to new pension accounting rules causing a one-time expense included in the FY18 budget for \$0.7 million. Medical benefits are projected to increase by 5%, and all other benefit rates are expected to be similar to last year's levels on a proportionate basis.

Service and supplies budget is in line with FY18 augmented budget. Expenses related to the Donner dam channel dredging of \$2.6 million will be completed in FY18; however, included in the FY19 budget is \$1.5 million in expenses to restore the Glendale Plant diversion due to damage from high river flows in the winter of 2017. TMWA will apply for FEMA funding to recoup a portion of these flood related expenses at Glendale. TROA administration costs are expected to increase by \$0.3 million. Funding for the *Truckee River Fund* was restored to \$0.85 million, an increase of \$0.4 million over FY18, and funding for *Desert Research Institute's (DRI's)* cloud seeding was added back at \$75K to maintain minimum standards for that program. Water treatment chemical expenses are expected to increase \$0.3 million in FY19 due to increases in pricing. As in the past TMWA personnel will continue to work diligently on managing operating expenses. A breakdown of services and supplies expenses is presented in ***Attachment C***.

Nonoperating Revenues and Expenses

Investment income is expected to increase \$1.5 million due to higher rates of return projected over the next year. Interest expense is expected to remain consistent with estimates in the FY18 budget. Some interest rate estimate is being made for a possible fixed senior lien refunding of a portion (\$44.2 million) of the tax exempt commercial paper (TECP). If that refunding is priced and the deal closed the actual results will be incorporated in the final budget. TMWA plans to keep \$30 million in TECP to be paid down over the next five years. Beyond five years, expectations related to funding sources and interest rates are uncertain. Further information related to this refunding will be presented for Board consideration at the April, 2018 meeting. The budget currently reflects estimates of these transactions.

Capital Contributions

A loan forgiveness grant of \$500,000 is included in the FY19 budget to be received from the State on completion of the consolidation of the Riverbelle mobile home park water system. The water meter retrofit income is projected at a reduced fee of \$1,500 (from \$1,800) per acre foot of surface water will-serves sold. At the time of the preparation of the tentative budget it was uncertain if this fee will continue and in what format. The community is experiencing continued growth which is reflected in developer fee collections. Will-serve contributions are expected to decrease \$1.6 million, while other developer capital contributions are expected to increase \$1.6 million.

Draft Capital Improvement Plan for Fiscal Years 2019-2023

TMWA plans to spend \$191.6 million over the next five years on a variety of construction projects and capital outlays of which \$46.6 million is expected to be spent in fiscal year 2019 and \$50.1 million in fiscal year 2020.

Please refer to Attachment D.

Of the total \$46.6 million in capital spending in fiscal year 2019, \$12.4 million (27%), will be for a number of distribution system improvements. The South Virginia/Midtown Main Replacement project totaling \$1.5 million is included in the RTC road reconstruction projects to replace antiquated water main, valves, service connections and related appurtenances. The Gordon Avenue Main replacement, totaling \$1.6 million is scheduled ahead of the City of Reno

Neighborhood Street Rehabilitation project. In addition, the Verdi Main and Boomtown Water System Improvements total \$2.5 million and \$1.6 million respectively.

Treatment plant Improvements account for \$14 million (30%) with \$11.0 million comprising the major construction phase of the Mt. Rose/Galena Fan Water Treatment Facility.

Of the total \$50.1 million in capital spending in FY 2020, \$6.8 million will be for six additional distribution improvement projects, \$7.0 million will be for treatment plant improvements including completion of the Mt. Rose/Galena Fan Water Treatment Facility. For FY 2021 - 2023 capital spending at a reduced, but relatively level scale will include a combination of rehabilitation construction projects and construction to expand water system capacity to accommodate growth in the community. Total spending on water system rehabilitation projects is expected to be \$148.5 million over five years. The bulk of the remaining balance of project spending will be for water system expansion. After board input TMWA staff will finalize and present a final comprehensive CIP at the May 23, 2018 public hearing.

Cash Position and Coverage Ratios

At this time, TMWA expects to begin fiscal year 2019 with approximately \$180.0 million in total cash and investments, and end the fiscal year with \$174.1 million of total cash and investments based upon planned spending levels. These projections can be found in ***Attachment B***. This is a projected decrease in cash of \$5.9 million, and includes pay down of Commercial Paper notes by \$5.0 million. Of the total ending cash and investments in fiscal year 2018, \$52.7 million will be restricted for debt service payments and reserve requirements under TMWA's bond indentures and \$121.4 million will be unrestricted to be used for future operating expenses, capital improvements and any other necessary outlays. This unrestricted cash includes \$21.5 million in flood insurance settlements related to the Farad facility, and \$10 million in settlements related to bank delivery agreements. These unusual nonoperating transactions have helped strengthen TMWA's cash reserves. The \$52.7 million in restricted cash reserves includes \$7.0 million of remaining transferred funds from STMGID which are earmarked for capital improvements in the former STMGID service area.

TMWA's senior lien debt coverage ratio (DSC ratio), excluding system development charges, is estimated to be 2.84x by the end of fiscal year 2019. This ratio has been artificially inflated due to the extension of certain maturities of the Series 2016 Refunding Bonds beyond fiscal year 2034, and out of fiscal year 2019. This level of debt service coverage preserves the ability to access senior lien capital markets, if necessary, under favorable terms. TMWA's senior lien bond covenants require a minimum coverage ratio of 1.25x. TMWA's financial goals adopted in August 2003 established a debt coverage goal of approximately 1.50x (excluding developer fees) to maintain mid-level to higher level investment grade credit ratings and pay-as-you-go funding for water system rehabilitation construction projects. TMWA completed a credit review in February, 2017 by two major credit rating agencies, Moody's and Standard & Poor's (S&P), in front of the upcoming refunding opportunity with TMWA's Series 2007 Revenue Bonds. TMWA maintained its previous rating with Moody's of Aa2, and was upgraded by Standard & Poor's to AA+ from AA. A credit rating update is expected to be performed in April, 2018.

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

	Proposed Tentative Fiscal Year 2019 Total	Amended Final Fiscal Year 2018 Total	Increase (Decrease)
OPERATING REVENUES			
Charges for water sales	\$ 100,626,513	\$ 94,303,278	\$ 6,323,235
Hydroelectric sales	2,812,568	2,990,391	(177,823)
Other operating sales	3,404,500	3,131,500	273,000
Total Operating Revenues	106,843,581	100,425,169	6,418,412
OPERATING EXPENSES			
Salaries and wages	21,078,271	19,024,704	2,053,567
Employee benefits	10,125,919	9,303,274	822,645
Services and supplies	28,268,124	28,312,357	(44,233)
Total Operating Expenses before Depreciation	59,472,314	56,640,335	2,831,979
Depreciation	33,862,476	34,061,148	(198,672)
Total Operating Expenses	93,334,790	90,701,483	2,633,307
Operating Income	13,508,791	9,723,686	3,785,105
NONOPERATING REVENUES (EXPENSES)			
Investment earnings	2,833,548	1,342,692	1,490,856
Unrealized gain on investments	-	-	-
Gain (Loss) on disposal of assets	-	-	-
Amortization of bond/note issuance costs	(215,748)	(468,624)	252,876
Interest expense	(13,494,768)	(13,394,016)	(100,752)
Other non-operating revenue	-	-	-
Other non-operating expenses	-	-	-
Total Nonoperating Revenues (Expenses)	(10,876,968)	(12,519,948)	1,642,980
Income (Loss) before Capital Contributions	2,631,823	(2,796,262)	5,428,085
CAPITAL CONTRIBUTIONS			
Grants	500,000	200,004	299,996
Water meter retrofit/Sustainability program	676,020	781,488	(105,468)
Developer infrastructure contributions	-	-	-
Developer will-serve contributions (net of refunds)	3,470,232	5,034,744	(1,564,512)
Developer capital contributions-other	5,922,000	4,345,296	1,576,704
Developer facility charges (net of refunds)	4,950,708	4,826,436	124,272
Contributions from others	-	-	-
Contributions from other governments	-	-	-
Net Capital Contributions	15,518,960	15,187,968	330,992
Change in Net Position	18,150,783	12,391,706	5,759,077
NET POSITION , BEGINNING OF YEAR	\$ 602,342,294	\$ 589,950,588	
NET POSITION, END OF YEAR	\$ 620,493,077	\$ 602,342,294	\$ 18,150,783

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

	Presented Tentative Fiscal Year 2019 Total	Amended Final Fiscal Year 2018 Total	Increase (Decrease)
INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS			
CASH FLOWS FROM OPERATING ACTIVITIES			
Cash received from customers	\$ 106,843,581	\$ 100,425,169	\$ 6,418,412
Cash paid to employees	(31,204,190)	(28,327,978)	(2,876,212)
Cash paid to suppliers	(28,268,124)	(28,312,357)	(44,233)
Net Cash Provided by Operating Activities	47,371,267	43,784,834	3,497,967
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES			
Acquisition and construction of capital assets	(46,641,000)	(43,032,000)	(3,609,000)
Interest paid on financing	(16,993,550)	(17,225,410)	(231,860)
Principal paid on financing	(2,738,723)	(2,637,285)	(101,438)
Proceeds from capital debt issuance	-	-	-
Redemptions of commercial paper notes	(5,000,000)	(9,200,000)	4,200,000
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	781,488	(105,468)
Contributions from developers-will-serve letters	3,470,232	5,034,744	(1,564,512)
Contributions from developers-other	5,922,000	4,345,296	1,576,704
Contributions from developers-facility charges	4,950,708	4,826,436	124,272
Contributions from (to) others	-	-	-
Contributions from (to) other governments	-	-	-
Grants	500,000	200,000	300,000
Bond/Note issuance costs	(215,748)	(468,624)	252,876
Net Cash (Used) by Capital and Related Financing Activities	(56,070,061)	(57,375,355)	841,574
CASH FLOWS FROM INVESTING ACTIVITIES			
Interest received	2,833,548	1,342,692	1,490,856
Net Increase (Decrease) in Cash and Cash Equivalents	(5,865,246)	(12,247,829)	5,830,397
CASH AND CASH EQUIVALENTS, BEGINNING OF YEAR	\$ 180,000,000	\$ 171,000,000	\$ 9,000,000
CASH AND CASH EQUIVALENTS, END OF YEAR	\$ 174,134,754	\$ 158,752,171	\$ 15,382,583

Attachment B

Truckee Meadows Water Authority
Tentative Fiscal Year 2019 Budget comparison to Fiscal Year 2018
Services and Supplies

	Augmented FY 2018 Budget	Tentative FY 2019 Budget	Variance
Services and Supplies Expenses			
License/Permit Fees	907,780	1,662,050	754,270
Chemicals	2,237,324	2,525,000	287,676
Property Taxes	504,000	735,000	231,000
Training/Travel	255,500	398,542	143,042
Other	438,600	571,219	132,619
Street Repairs	201,200	215,200	14,000
Postage/Shipping (Vertex)	820,700	828,310	7,610
Computer Hardware/Software	1,271,300	1,263,160	(8,140)
Professional Services	2,294,920	2,282,365	(12,555)
Claims	145,800	132,800	(13,000)
Equipment Rental	129,100	107,046	(22,054)
Telephone	452,700	409,500	(43,200)
Insurance	606,000	551,460	(54,540)
Ditch/Storage Fees	863,380	805,380	(58,000)
Electric Power	5,069,939	4,873,523	(196,416)
Supplies	2,773,480	2,562,973	(210,507)
Contracted Services	9,340,634	8,344,592	(996,042)
Total Services and Supplies	\$ 28,312,357	\$ 28,268,120	\$ (44,237)

Attachment C

TMWA Draft Capital Improvement Schedule for FY 2019 - 2023

Raw Water Supply Improvements

Highland Canal-Upgrades-Downstream FY 2019- FY 2023
Highland Canal-Upgrades-Diversion to Chalk Bluff FY 2019 - FY 2023
Independence Lake Permitting Study FY 2019
Indirect Potable Reuse FY 2019 - FY 2023
TROA Drought Storage / Implementation FY 2019 - FY 2023
Donner Lake Outlet Improvements Phase 2 FY 2019 - FY 2021

Ground Water Supply Improvements

Well Rehabilitation Improvements FY 2019 - FY 2023
Double Diamond #4 Equipping FY 2023
Campello Capacity Increase FY 2020
Callamont Well South Equipping FY 2020 - FY 2021
Air Guard Well Replacement FY2021
Sunrise Well #3 Replacement FY 2019
Bedell Flat Water Bank FY 2019 - FY 2023
Lemmon Valley Well #8 Replacement FY 2023
Well Fix & Finish FY 2019 - FY 2023
Well Plugging / Conversion FY 2021
NDEP Monitoring Wells FY 2019 - FY2021
Thomas Creek Well Replacement FY 2021 - FY 2022
Wellhead Biological Treatment Pilot Study FY 2019
Well Head TTHM Mitigation FY 2019 - FY 2022
Spring Creek Well 7 Recharge FY 2020
Desert Springs 1 & 2 and Spring Creek 5 ASR Retrofit (Bureau of Rec Grant) FY2019
Callamont Well North Equipping FY 2022 - FY 2023

Treatment Plant Improvements

Chalk Bluff Treatment Plant Fix & Finish FY 2019 - FY 2023
Glendale Treatment Plant Fix and Finish FY 2019 - FY 2023
Chalk Bluff Pump Building Air Handler FY 2019
Chalk Bluff Lighting Upgrade FY 2021
Glendale Lighting Upgrade FY 2020
Eagle Canyon Transmission Main Phase 2 FY 2019 - 2020
Truckee Canyon Water Treatment Improvements FY 2019 - FY 2022
Lightning W Treatment Improvements FY 2019 - FY 2022
SCADA Rehab / Plant Operating Software FY 2019 - FY 2023
Mount Rose Surface Water Treatment Plant FY 2019 - FY 2020
Longley Lane Water Treatment Plant Assessment / Retrofit FY 2020
Glendale Diversion Emergency Flood Repairs FY 2019 - FY2020 (FEMA)
Sparks Ground Water Treatment Plant FY 2023

Pressure Improvements

Pressure Regulators Rehabilitation FY 2019 - 2023
Pressure Reducing Valve (Roll Seal) Removal FY 2019 - 2023
Land Acquisitions FY 2019 - 2023
Desert Springs Pressure Improvements FY 2020
Paloma Pressure Regulating Station / Main FY 2019
Longley Booster Pump Station / Double R Capacity Increase FY 2019
Pump Station Oversizing FY 2019 - 2023
Pump Station Rebuilds, Rehabilitations FY 2019 - 2023
Truckee River Highlands Pump Station # 1 FY 2021
Mount Rose Well #3 Pump Station Improvements FY 2019 -2020
Standby Generator Improvements FY 2020 - 2023
Idlewild Booster Pump Station Improvements FY 2021 - 2022
Parkridge Circle Conversion FY 2022
SW Reno Pump Zone Consolidation Phase 1 FY 2022
Spanish Springs #1 Pump Zone Intertie FY 2022
STMGID Tank 4 Booster Pump Station / Transmission Line FY2020 - FY2021
Wildwood Pressure Regulating Station Scada Control FY 2021
Truckee River Highlands Pump Station # 2 FY 2022
Old Virginia Regulation Station FY 2020
Chalk Bluff Additional Backup Generator FY 2019
Huffaker Booster Pump Station FY 2019
Twin Lakes Booster Pump Station FY 2019

Water Main-Distribution-Service Line Improvements

Street & Highway Main Replacements FY 2019 - FY 2023
South Virginia / Midtown Main Plumb to Liberty FY 2019
California-Marsh 24" Main Replacement FY 2019 - FY 2020
Booth, Sharon Way, Monroe 24" Main Replacements FY 2020 - FY 2021
South Virginia 24" Main (Kumle to Peckham) FY 2019 - FY 2020
North East Sparks Feeder Main Relocation FY 2020 - FY 2021
Spanish Springs - Spring Creek South Zone Conversion FY 2019 - FY2020
West Hidden Valley, Surge St., Piping Rock Main Replacement FY 2020 - FY 2022
Spanish Springs Main Replacement FY 2019 - FY 2020
Bonnie Lane, Snow Flower, Main Extensions FY 2021 - FY 2022
South Truckee Meadows Capacity Improvements FY 2019
Stead Golf Course Main Replacement FY 2022- FY 2023
General Waterline Extensions FY 2019 - FY 2023
Verdi Main FY 2019
Mount Rose 5 Distribution / Pressure Improvements FY 2019 - FY2020
Gordon Avenue Main Replacement FY 2019
Boomtown Water Sytem Improvements FY 2019
Boomtown to TMWA Connection FY 2019
Lemmon Valley Sand Yard FY 2019

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	Proposed Five Year CIP Total
Raw Water Supply Improvements						
Highland Canal-Upgrades-Downstream FY 2019- FY 2023	225	225	225	225	225	1,125
Highland Canal-Upgrades-Diversion to Chalk Bluff FY 2019 - FY 2023	100	100	1,000	100	100	1,400
Independence Lake Permitting Study FY 2019	100					100
Indirect Potable Reuse FY 2019 - FY 2023	100	100	100	100	100	500
TROA Drought Storage / Implementation FY 2019 - FY 2023	75	50	50	50	50	275
Donner Lake Outlet Improvements Phase 2 FY 2019 - FY 2021	300	300	4,000			4,600
	900	775	5,375	475	475	8,000
Ground Water Supply Improvements						
Well Rehabilitation Improvements FY 2019 - FY 2023	725	925	925	925	925	4,425
Double Diamond #4 Equipping FY 2023	-	-		-	1,100	1,100
Campello Capacity Increase FY 2020	-	250	-			250
Callamont Well South Equipping FY 2020 - FY 2021	-	60	1,040	-		1,100
Air Guard Well Replacement FY2021	-	-	1,000	-		1,000
Sunrise Well #3 Replacement FY 2019	100	-	-	-		100
Bedell Flat Water Bank FY 2019 - FY 2023	100	100	100	100	100	500
Lemmon Valley Well #8 Replacement FY 2023	-	-	-		1,000	1,000
Well Fix & Finish FY 2019 - FY 2023	150	150	150	150	150	750
Well Plugging / Conversion FY 2021	-	-	110	-		110
NDEP Monitoring Wells FY 2019 - FY2021	110	100	100	-		310
Thomas Creek Well Replacement FY 2021 - FY 2022	-		1,250	1,000		2,250
Wellhead Biological Treatment Pilot Study FY 2019	200					200
Well Head TTHM Mitigation FY 2019 - FY 2022	300	500	500	500		1,800
Spring Creek Well 7 Recharge FY 2020	75	425	-	-		500
Desert Springs 1 & 2 and Spring Creek 5 ASR Retrofit (Bureau of Rec Grant) FY2019	10					10
Callamont Well North Equipping FY 2022 - FY 2023				60	1,140	1,200
	1,770	2,510	5,175	2,735	4,415	16,605
Treatment Plant Improvements						
Chalk Bluff Treatment Plant Fix & Finish FY 2019 - FY 2023	780	600	360	355	355	2,450
Glendale Treatment Plant Fix and Finish FY 2019 - FY 2023	485	1,250	210	65	65	2,075
Chalk Bluff Pump Building Air Handler FY 2019	150					150
Chalk Bluff Lighting Upgrade FY 2021			350			350
Glendale Lighting Upgrade FY 2020		250				250
Eagle Canyon Transmission Main Phase 2 FY 2019 - 2020	100	1,800	-	-		1,900
Truckee Canyon Water Treatment Improvements FY 2019 - FY 2022	50	60	60	35		205
Lightning W Treatment Improvements FY 2019 - FY 2022	60	10	60	160		290
SCADA Rehab / Plant Operating Software FY 2019 - FY 2023	1,331	1,002	793	489	471	4,086
Mount Rose Surface Water Treatment Plant FY 2019 - FY 2020	11,000	3,000	-	-		14,000
Longley Lane Water Treatment Plant Assessment / Retrofit FY 2020	-	600	-	-		600
Glendale Diversion Emergency Flood Repairs FY 2019 - FY2020 (FEMA)	100	900	-	-		1,000
Sparks Ground Water Treatment Plant FY 2023					1,750	1,750
	14,056	9,472	1,833	1,104	2,641	29,106
Pressure Improvements						
Pressure Regulators Rehabilitation FY 2019 - 2023	500	500	500	500	500	2,500
Pressure Reducing Valve (Roll Seal) Removal FY 2019 - 2023	400	400	400	400	400	2,000
Land Acquisitions FY 2019 - 2023	250	250	250	250	250	1,250
Desert Springs Pressure Improvements FY 2020		400	-	-		400
Paloma Pressure Regulating Station / Main FY 2019	200	-	-	-		200
Longley Booster Pump Station / Double R Capacity Increase FY 2019	500	-	-	-		500
Pump Station Oversizing FY 2019 - 2023	100	100	100	100	100	500
Pump Station Rebuilds, Rehabilitations FY 2019 - 2023	1,450	1,000	1,000	1,000	1,000	5,450
Truckee River Highlands Pump Station # 1 FY 2021	-	-	1,000	-		1,000
Mount Rose Well #3 Pump Station Improvements FY 2019 -2020	50	250	-	-		300
Standby Generator Improvements FY 2020 - 2023		150	150	150	150	600
Idlewild Booster Pump Station Improvements FY 2021 - 2022	-	-	100	1,200		1,300
Parkridge Circle Conversion FY 2022	-	-	-	300		300
SW Reno Pump Zone Consolidation Phase 1 FY 2022	-	-	-	300	3,500	3,800
Spanish Springs #1 Pump Zone Intertie FY 2022	-	-	600	-		600
STMGID Tank 4 Booster Pump Station / Transmission Line FY2020 - FY2021	-	2,450	550	-		3,000
Wildwood Pressure Regulating Station Scada Control FY 2021	-	-	50	-		50
Truckee River Highlands Pump Station # 2 FY 2022	-	-	-	1,000		1,000
Old Virginia Regulation Station FY 2020	-	330	-	-		330
Chalk Bluff Additional Backup Generator FY 2019	1,000					1,000
Huffaker Booster Pump Station FY 2019	400					400
Twin Lakes Booster Pump Station FY 2019	400					400
	5,250	5,830	4,700	5,200	5,900	26,880
Water Main-Distribution-Service Line Improvements						
Street & Highway Main Replacements FY 2019 - FY 2023	3,000	5,000	5,000	5,000	5,000	23,000
South Virginia / Midtown Main Plumb to Liberty FY 2019	1,500	-	-	-		1,500
California-Marsh 24" Main Replacement FY 2019 - FY 2020	50	1,150	-	-		1,200
Booth, Sharon Way, Monroe 24" Main Replacements FY 2020 - FY 2021		100	3,100	-		3,200
South Virginia 24" Main (Kumle to Peckham) FY 2019 - FY 2020	100	900	-	-		1,000
North East Sparks Feeder Main Relocation FY 2020 - FY 2021	-	50	950	-		1,000
Spanish Springs - Spring Creek South Zone Conversion FY 2019 - FY2020	50	650	-	-		700
West Hidden Valley, Surge St., Piping Rock Main Replacement FY 2020 - FY 2022	-	1,000	230	500		1,730
Spanish Springs Main Replacement FY 2019 - FY 2020	300	1,000	-	-		1,300
Bonnie Lane, Snow Flower, Main Extensions FY 2021 - FY 2022	-	-	620	900		1,520
South Truckee Meadows Capacity Improvements FY 2019	400	-	-	-		400
Stead Golf Course Main Replacement FY 2022- FY 2023	-	-	-	90	2,160	2,250
General Waterline Extensions FY 2019 - FY 2023	100	100	100	100	100	500
Verdi Main FY 2019	2,500	-	-	-		2,500
Mount Rose 5 Distribution / Pressure Improvements FY 2019 - FY2020	150	1,000	-	-		1,150
Gordon Avenue Main Replacement FY 2019	1,580					1,580
Boomtown Water Sytem Improvements FY 2019	1,990					1,990
Boomtown to TMWA Connection FY 2019	130	1,800				1,930
Lemmon Valley Sand Yard FY 2019	530					530
	12,380	12,750	10,000	6,590	7,260	48,980

Potable Water Storage Improvements

Sun Valley #2 Tank FY 2019 - FY 2021	50	100	1,750	-		1,900
Rattlesnake Ring Addition FY 2020	-	800	-	-		800
Fish Springs Ranch #2 Tank FY 2022 - FY 2023	-			100	2,000	2,100
Storage Tank Recoats; Access; Drainage Improvements FY 2019 - FY 2023	900	900	900	900	900	4,500
Highland Reservoir Tank FY 2021 - FY 2022	-	-	100	5,700		5,800
STMGID Tank East (Zone 11 Tank) FY 2019 (Not STMGID)	50	3,075				3,125
	1,000	4,875	2,750	6,700	2,900	18,225

Hydroelectric Improvements

Forebay, Diversion, and Canal Improvements FY 2019 - FY 2023	55	50	50	50	50	255
Flume Rehabilitation FY 2019 - FY 2022	600		350	350		1,300
Hydro Plant Generator Rewinds FY 2020 - FY 2022	650	650	650			1,950
Washoe Flume Reconstruction FY 2020		2,200				2,200
Fleish Overflow Reconstruction Design FY 2019	1,400					1,400
	2,705	2,900	1,050	400	50	7,105

Customer Service Outlays

Meter Reading Equipment FY 2020, FY 2022	-	60	-	60	-	120
New Business Meters FY 2019 - FY 2022	350	175	100	100		725
Mueller Pit Replacements former Washoe County FY 2019 - FY 2023	125	125	125	125	125	625
Meter - ERT-RTR Replacements FY 2019 - FY 2023	1,250	1,250	1,250	1,250	1,250	6,250
Galvanized / Poly Service Line Replacements FY 2019 - FY 2021	400	400	400	-	-	1,200
AMI Automated Meter Infrastructure FY 2019 - FY2022	750	750	750	750		3,000
	2,875	2,760	2,625	2,285	1,375	11,920

Administrative Outlays

GIS / GPS System Mapping Equipment FY 2019 - FY 2023	40	40	40	40	40	200
Desktop Computer Upgrades FY 2019 - FY 2023	100	100	100	100	100	500
Network Server / Storage Upgrades FY 2019 - FY 2023	175	175	175	275	275	1,075
Network Security Upgrades FY 2019 - FY 2023	150	150	150	150	150	750
Furniture - Office Equipment FY 2019 - FY 2023	50	50	50	50	50	250
Crew Trucks / Vehicles FY 2019 - FY 2023	1,270	585	650	600	600	3,705
Security-ER Projects FY 2019 - FY 2023	150	150	150	150	150	750
CIS System Replacement FY 2019 - FY 2020	100	3,200				3,300
Emergency Operations Annex Design / Construction FY 2021	250	250	1,500	-		2,000
System Wide Asphalt Rehabilitation FY 2019 - FY 2023	200	200	200	200	200	1,000
.	2,485	4,900	3,015	1,565	1,565	13,530

Subtotal Construction Spending Outlays

	43,421	46,772	36,523	27,054	26,581	180,351
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Special Projects Funded by Development

Water Meter Retrofits FY 2019 - FY 2023	300	300	300	300	300	1,500
Water Right Purchases FY 2019 - FY 2023	150	150	150	150	300	900
	450	450	450	450	600	2,400

Total Projected Capital Spending

	43,871	47,222	36,973	27,504	27,181	182,751
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Former STMGID System Improvements

STMGID Well Bypass & Chlorine Room Improvements FY 2019	300	-	-	-		300
STMGID Well Fix & Finish FY 2019 - FY 2023	150	150	150	150	150	750
STMGID Conjunctive Use Facilities FY 2019 - FY 2020	1,800	2,100	-	-		3,900
STMGID Tank Recoats FY 2019, FY 2021	220	-	300	-		520
STMGID Mueller Pit Replacements FY 2019 - FY 2021	50	50	50	-		150
STMGID NAC Deficiencies - Saddlehorn, Upper Toll, STMGID East FY 2019 - 2022	250	600	2,000	350	-	3,200
Total Former STMGID Capital Spending - Allocated Funding	2,770	2,900	2,500	500	150	8,820
Total Projected Capital Spending Including STMGID - Allocated Funding	46,641	50,122	39,473	28,004	27,331	191,571

Attachment D

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FY 2019 – 2023

Capital Improvement Plan



Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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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.

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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 \$191.6 million with approximately 77.5% or \$148.5 million dedicated to upgrades or replacement of existing infrastructure, and approximately 16.4% or \$31.4 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 4.6% 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 11.9% or \$22.9 million is considered contingency spending which is dependent on certain events occurring to trigger spending. The \$191.6 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 4.2% 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.

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Ground Water Supply Improvements contains 8.7% 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 15.2% or approximately \$29.1 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 14.0% or approximately \$26.9 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 25.6% or approximately \$49.0 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 9.5% 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.

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Hydroelectric Improvements contains 3.7% or approximately \$7.1million 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 6.2% 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 7.1% or approximately \$13.5 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 1.3% 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 4.6% 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.

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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.

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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.

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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.

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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

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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.

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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.

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FISCAL YEAR 2019 CAPITAL SPENDING-THE CAPITAL BUDGET

TMWA expects to spend \$46.6 million for fiscal year 2019, the first year of the FY 2019-2023 CIP. Of this total \$37.0 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 \$6.4 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 \$46.6 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

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Project Summary for FY 2019 (continued)	
Treatment Plant Improvements	
Chalk Bluff Treatment Plant Fix & Finish	780
Glendale Treatment Plant Fix and Finish	485
Chalk Bluff Pump Building Air Handler	150
Eagle Canyon Transmission Main Phase 2	100
Truckee Canyon Water Treatment Improvements	50
Lightning W Treatment Improvements	60
SCADA Rehab / Plant Operating Software	1,331
Mount Rose Surface Water Treatment Plant	11,000
Glendale Diversion Emergency Flood Repairs (FEMA)	100
Total	14,056
Pressure Improvements	
Pressure Regulators Rehabilitation	500
Pressure Reducing Valve (Roll Seal) Removal	400
Land Acquisitions	250
Paloma Pressure Regulating Station / Main	200
Longley Booster Pump Station / Double R Capacity Increase	500
Pump Station Rebuilds, Rehabilitations	1,450
Mount Rose Well #3 Pump Station Improvements	50
Chalk Bluff Additional Backup Generator	1,000
Huffaker Booster Pump Station	400
Twin Lakes Booster Pump Station	400
Total	5,250
Water Main-Distribution-Service Line Improvements	
Street & Highway Main Replacements	3,000
South Virginia / Midtown Main Plumb to Liberty	1,500
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

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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Project Summary for FY 2019 (continued)	Amount
Water Main Distribution-Service Line Improvements (continued)	
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
Boomtown to TMWA Connection	130
Lemmon Valley Sand Yard	530
Total	12,380
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 Design	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

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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Project Summary for FY 2019 (continued)	Amount
Administrative Outlays	
GIS / GPS System Mapping Equipment	40
Desktop Computer Upgrades	100
Network Server / Storage Upgrades	175
Network Security Upgrades	150
Furniture - Office Equipment	50
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	2,485
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

Detailed project descriptions are provided for all projects in the CIP. These descriptions cover the fiscal year 2019 capital budget as well as the four additional years from 2020-2023.

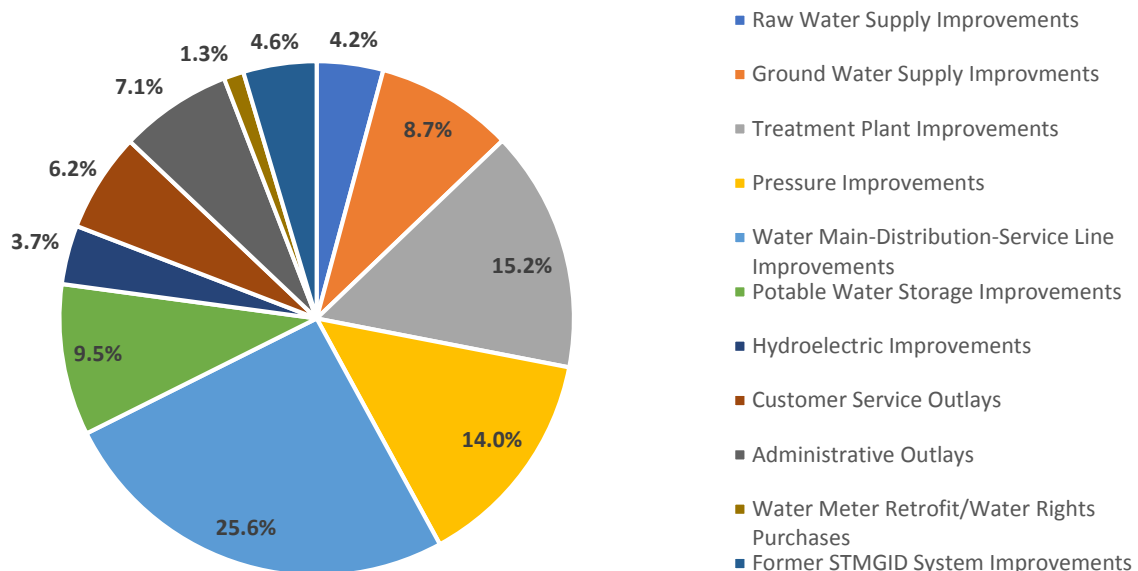
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CAPITAL EXPENDITURE BY FUNCTION

(Amounts in thousands of dollars)

Summary of Capital Expenditures by Function	FY 2019	FY 2019	FY 2020	FY 2021	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	14,056	9,472	1,833	1,104	2,641	29,106
Distribution System Pressure Improvements	5,250	5,830	4,700	5,200	5,900	26,880
Water Main Distribution Service Line Improvements	12,380	12,750	10,000	6,590	7,260	48,980
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	2,485	4,900	3,015	1,565	1,565	13,530
Water Meter Retrofit/ Water Right Purchases	450	450	450	450	600	2,400
Sub-Total TMWA Construction Spending & Outlays	43,221	47,222	36,973	27,504	27,181	182,751
Former STMGID System Improvements	2,770	2,900	2,500	500	150	8,820
Total Projected Capital Spending, Including STMGID	46,641	50,122	39,473	28,004	27,331	191,571

Capital Expenditures by Function

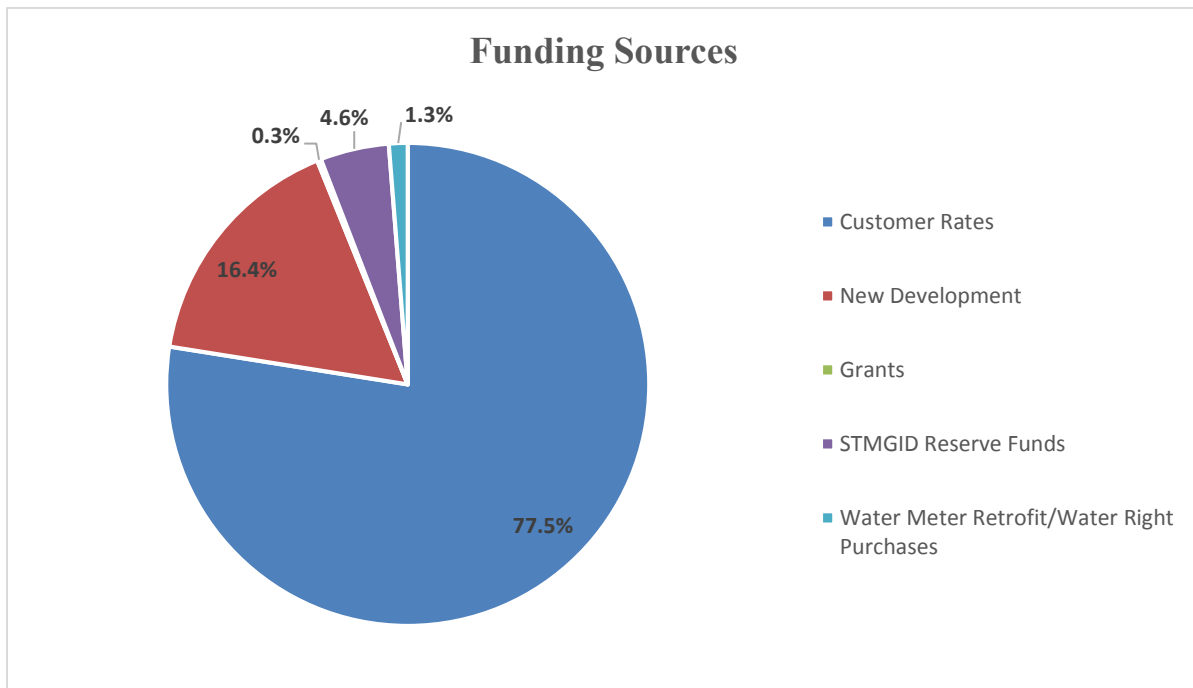


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PRELIMINARY FUNDING PLAN FUNDING SOURCES

(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	37,026	34,072	33,278	22,854	21,251	148,481
Capital Improvements Funded by Development	5,895	12,700	3,245	4,200	5,330	31,370
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	46,641	50,122	39,473	28,004	27,331	191,571

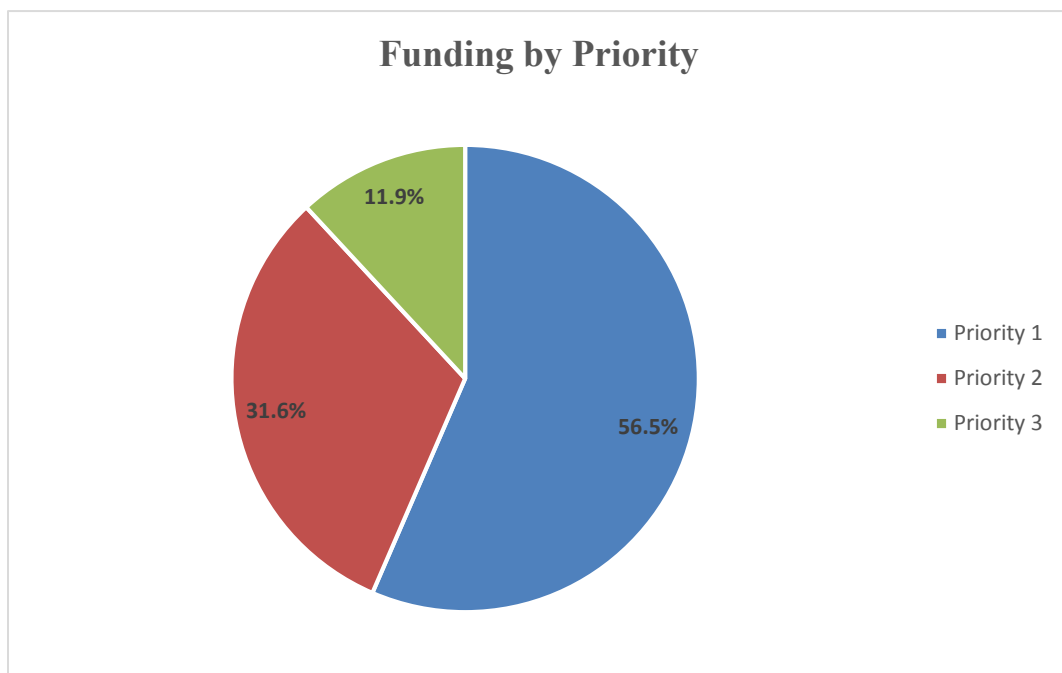


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FUNDING BY PRIORITY

(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	34,721	31,952	17,518	12,714	11,246	108,151
Priority 2 - Necessary Spending	9,550	15,945	18,905	6,930	9,235	60,565
Priority 3 - Contingency Spending	2,370	2,225	3,050	8,360	6,850	22,855
Total Projected Capital Spending	46,641	50,122	39,473	28,004	27,331	191,571



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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

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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.

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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.

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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.

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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.

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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.

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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.

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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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

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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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.

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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.

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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.

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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.

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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.

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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.

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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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.

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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 Fees	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.

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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.

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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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.

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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.

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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.

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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.

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

PROJECT: 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.

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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.

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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.

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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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.

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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.

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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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	100	1,800	—	—	—	1,900
2	Developer Fees	Truckee Canyon Water Treatment	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	11,000	3,000	—	—	—	14,000
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			14,056	9,472	1,833	1,104	2,641	29,106

DRAFT

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.

DRAFT

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.

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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.

DRAFT

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.

DRAFT

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.

DRAFT

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 2019 with construction scheduled to begin in FY 2020.

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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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.

DRAFT

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.

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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.

DRAFT

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	11,000	3,000	—	—	—	14,000

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.

DRAFT

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.

DRAFT

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.

DRAFT

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.

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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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	200	—	—	—	—	200
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

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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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	1,000	—	—	—	—	1,000
1	Customer Rates	Huffaker Booster Pump Station	400	—	—	—	—	400
1	Customer Rates	Twin Lakes Booster Pump Station	400	—	—	—	—	400
Sub-Total Pressure Improvements			5,250	5,830	4,700	5,200	5,900	26,880

DRAFT

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.

DRAFT

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.

DRAFT

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.

DRAFT

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.

DRAFT

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	200	—	—	—	—	200

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.

DRAFT

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.

DRAFT

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.

DRAFT

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.

DRAFT

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.

DRAFT

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.

DRAFT

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.

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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.

DRAFT

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.

DRAFT

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).

DRAFT

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 2021. The relocation of the Satellite Hills pump station must be completed prior to this project.

DRAFT

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.

DRAFT

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.

DRAFT

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.

DRAFT

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.

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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	1,000	—	—	—	—	1,000

PROJECT DESCRIPTION: The project was originally scoped as a dedicated generator for the 6,000 gallon 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.

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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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.

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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.

DRAFT

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	3,000	5,000	5,000	5,000	5,000	23,000
1	Customer Rates	South Virginia / Midtown Main Plumb to Liberty	1,500	—	—	—	—	1,500
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			12,380	12,750	10,000	6,590	7,260	48,980

DRAFT

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	3,000	5,000	5,000	5,000	5,000	23,000

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.

DRAFT

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	1,500	—	—	—	—	1,500

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.

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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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.

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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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.

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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.

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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.

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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.

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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.

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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.

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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.

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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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.

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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.

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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.

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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.

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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.

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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.

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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.

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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.

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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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.

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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.

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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 subject to successful acquisition of a suitable tank site which is elevation sensitive.

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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.

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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.

DRAFT

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.

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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.

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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	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.

DRAFT

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

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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.

DRAFT

Hydroelectric Improvements

Flume Rehabilitation

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Flume Rehabilitation	300	650	600	600	600	2,750

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.

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

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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.

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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 project is projected for the Fall of 2019 when river flows are dropping off for the winter months, this will minimize the loss of generation.

DRAFT

Hydroelectric Improvements
Fleish Overflow Reconstruction Design

FUNDING TIMELINE:

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
1	Customer Rates	Fleish Overflow Reconstruction Design	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 project is projected for the Fall of 2018 when river flows are dropping off for the winter months, this will minimize the loss of generation.

DRAFT

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

DRAFT

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.

DRAFT

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.

DRAFT

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.

DRAFT

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.

DRAFT

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.

DRAFT

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.

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

DRAFT

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
2	Customer Rates	Furniture -Office Equipment	50	50	50	50	50	250
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			2,485	4,900	3,015	1,565	1,565	13,530

DRAFT

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.

DRAFT

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.

DRAFT

Administrative Outlays**Furniture – Office Equipment****FUNDING TIMELINE:**

Priority	Funding Source	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	CIP Total
2	Customer Rates	Furniture -Office Equipment	50	50	50	50	50	250

PROJECT DESCRIPTION: A small provision is made each year for furniture requirements if necessary.

SCHEDULE: Furniture and office equipment is purchased or replaced as needed.

DRAFT

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.

DRAFT

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.

DRAFT

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.

DRAFT

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.

DRAFT

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.

Truckee Meadows Water Authority FY 2019-2023 Capital Improvement Plan

DRAFT

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

DRAFT

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.

DRAFT

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.

DRAFT

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.

DRAFT

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.

DRAFT

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.



STAFF REPORT

TO: Board of Directors
THRU: Mark Foree, General Manager
FROM: Scott Estes, Director of Engineering
DATE: March 12, 2018
SUBJECT: Discussion and action and possible direction to staff regarding river casing transfer agreement with BCH Gaming Reno, LLC and authorization for General Manager to negotiate and finalize agreement

Recommendation:

Approve an agreement (see attachment) that will transfer ownership of an existing casing to Authority and allow Authority to proceed with obtaining the required State Lands permit and potentially commence construction of the Verdi Main Extension project prior to the close of escrow of the West Reno Water Company acquisition.

Summary:

- BCH Gaming, the owner of Boomtown, paid for the installation of a 30-inch casing under and across the Truckee River at the same time as the Lawton Interceptor Sewer river crossing was constructed in 2004. BCH has continued to pay the annual permit fee since that time.
- The State Lands permit must be officially transferred to the Authority prior to installation of the proposed Verdi Main Extension pipeline into the casing to complete the crossing of the Truckee River.
- BCH is currently requesting the closing of this Agreement occur concurrently with the closing on the West Reno Acquisition agreement.
- If the proposed acquisition of the West Reno Water Company assets is delayed or not completed, the Authority would still need to cross the Truckee River with the Verdi water main to supply water to the Verdi area.

Background:

A pipe casing was installed under the river specifically for the extension of a water main to the Verdi area. Although a river crossing could be accomplished at another location, permitting would take at least one year; it would be irresponsible to disturb the environment to construct a new crossing when an existing casing exists; and it would be much more expensive to construct.

Attachments:

Draft River Casing Agreement

PIPE CASING AND PERMIT PURCHASE AGREEMENT

This Pipe Casing and Purchase Agreement (the “Agreement”) is dated as of the date last executed by the Parties below (the “Effective Date”), and is entered into by and among BCH GAMING RENO, LLC, a Nevada limited liability company (“BCH”), and TRUCKEE MEADOWS WATER AUTHORITY, a joint powers authority created pursuant to NRS Chapter 277 by the Cities of Reno and Sparks, and Washoe County (“TMWA”).

RECITALS

A. BCH owns that certain thirty inch (30”) pipe casing installed under the Truckee River in the general location described in Exhibit “A” attached hereto (“Pipe Casing”), and is a successor to Boomtown, Inc., to rights under that certain Non-Exclusive Easement issued by the State of Nevada, Division of State Lands recorded August 20, 2004 as Document No. 3086231, as amended by that certain unrecorded Easement Amendment dated August 25, 2016 by and between the State of Nevada and BCH (“Easement”, together with the Pipe Casing and all local, regional and federal permits and approvals issued with respect to the Pipe Casing referred to as the “Assets”).

B. TMWA is a public purveyor of domestic water service in the greater Reno-Sparks area.

C. TMWA and West Reno Water Company have entered that certain Agreement for Water System Acquisition of even date herewith (“West Reno Agreement”), pursuant to which TMWA has agreed to purchase and West Reno has agreed to sell, certain water system facilities on the terms and conditions therein.

D. BCH desires to sell and transfer to TMWA, and TMWA desires to purchase, the Assets on the terms and conditions set forth in this Agreement.

AGREEMENT

NOW, THEREFORE, in consideration of the above recitals and mutual covenants and agreements contained herein, and for other good and valuable consideration, the receipt and sufficiency of which all parties acknowledge, the parties hereto agree as follows:

1. PURCHASE AND SALE

1.1 Purchase and Sale. TMWA agrees to purchase, and BCH agrees to sell, the Assets for the Purchase Price and on the terms set forth herein.

1.2 Purchase Price. The purchase price for the Assets (the “Purchase Price”) is One Hundred Thousand Dollars (\$100,000.00). The Purchase Price shall be paid by TMWA to BCH in cash or other immediately available funds at the Closing.

2. ESCROW.

2.1 Escrow Instructions. The purchase and sale of the Assets shall be consummated through an escrow (“Escrow”) to be established at Western Title Company, Attn: Patti Hanson, with an address of 5390 Kietzke Lane Ste. 101, Reno, Nevada 89511 (“Escrow Holder” or “Title Company”). The Escrow shall be opened within three (3) business days following the Effective Date, by delivery to Escrow Holder of a fully-executed copy of this Agreement, which shall constitute Escrow Holder's instructions. BCH and TMWA agree to execute and deliver to Escrow Holder such additional and supplemental instructions

as Escrow Holder may require in order to clarify Escrow Holder's duties under this Agreement; provided, however, that in the event of any conflict or inconsistency between this Agreement and any other instructions delivered to Escrow Holder, the terms of this Agreement shall govern the duties of Escrow Holder and the rights and obligations of BCH and TMWA.

2.2 Closing Date. Escrow shall close concurrently with the closing of the West Reno Agreement (the "Closing Date") or such other date as mutually agreed by the Parties. For purposes of this Agreement, the term "Close of Escrow" shall mean the time when Escrow Holder shall have delivered all of the instruments and funds to be delivered with respect to the closing on the Assets.

3. DUE DILIGENCE PERIOD.

TMWA shall have up to 5:00 p.m. on the date which is one hundred twenty (120) days after the Effective Date (the "Due Diligence Period") to conduct such due diligence investigations as TMWA deems necessary to determine the feasibility, economic or otherwise, of its intended use of, and otherwise related to, the Assets. TMWA shall pay all costs and expenses incurred to conduct the investigation and studies. BCH agrees to make available to TMWA for inspection and delivery to TMWA within three (3) business days after the Effective Date, and upon request from TMWA, copies of all existing as built drawings, plans specifications, permits, approvals, reports, surveys, engineering studies, geotechnical reports, environmental surveys, improvement plans, architectural, structural and landscape plans; and other consultant's material relating to the Assets which are presently available to BCH or available to BCH's agents, which BCH has knowledge of or has in its possession.

4. REPRESENTATIONS AND WARRANTIES

4.1 BCH's Representations and Warranties. As a material inducement to TMWA to enter this transaction, BCH represents and warrants the following to TMWA, which shall remain true and correct as of the Closing:

4.1.1 Agreements. Neither the execution and delivery of this Agreement by BCH nor the consummation of the transactions contemplated hereby will result in any breach or violation of or default under any judgment, decree, order, mortgage, lease, agreement, indenture or other instrument to which BCH is a party, to which it is subject or by which it is bound.

4.1.2 Litigation. There is no litigation, proceeding, claim or investigation, including, without limitation, any condemnation proceeding, pending or, to BCH's actual knowledge, threatened, which adversely affects the Assets or any portion thereof, in any court or before or by any federal, state, county or municipal department, commission, board, bureau or agency or other governmental instrumentality, except as disclosed in writing to TMWA by BCH prior to the Effective Date.

4.1.3 Authority. BCH has full power and authority to sell, convey and transfer the Assets as provided for in this Agreement, all necessary corporate trust action required on the part of BCH to execute this Agreement and consummate the transaction contemplated hereby has been taken, or will be by Closing, the persons executing this Agreement on behalf of BCH have all requisite authority to execute this Agreement, and this Agreement is binding and enforceable against BCH.

4.1.4 Title and Related Matters. BCH is and shall be at the Closing, the owner of all right, title and interest in the Assets, and shall have and convey to TMWA at Closing good and marketable title to the Assets. BCH has not previously sold, encumbered, pledged, assigned, conveyed, or transferred the Assets, and the Assets are and shall be at Closing free and clear of all security interests, mortgages, liens, pledges, charges, claims, or encumbrances of any kind or character.

4.2 TMWA's Representations and Warranties. TMWA represents and warrants to BCH as follows:

4.2.1 That it is a Joint Powers Authority entity created pursuant to a cooperative agreement among the cities of Reno, Nevada, Sparks, Nevada and Washoe County, Nevada, pursuant to N.R.S. Chapter 277, with full power and authority to enter into this Agreement and to consummate the transactions herein contemplated.

4.2.2 That this Agreement has been duly and validly authorized by all necessary governmental action, and no other action is necessary to authorize this Agreement or the transactions contemplated hereunder.

4.3 Breach of Representations and Warranties. Each party warrants that each of the foregoing representations and warranties made by it in this Article 4 is true as of the date of this Agreement and will also be true as of the Closing. Each party shall notify the other promptly if such party becomes aware prior to the Closing Date of any matter which would render any of the representations or warranties of such party untrue in any material respect. If any of the foregoing representations and warranties by BCH shall not be true as of the Closing and such breach is other than as a result of BCH's deliberate or willful act, TMWA may alternatively as its sole remedy either (i) waive such breach and close the transaction contemplated herein, or (ii) terminate this Agreement.

5. CLOSING

5.1 Deliveries. On or before the Closing, TMWA shall deliver to Escrow Agent the following: the Purchase Price, closing costs and prorations, and all other documents and sums required by Escrow Agent according to this Agreement to carry out the Escrow. On or before the Closing, BCH shall deliver to Escrow Agent (i) a Bill of Sale and General Assignment in such form agreeable to TMWA, duly executed with notary acknowledgment, (ii) an assignment of the Permit, and (iv) such other documents and sums required by Escrow Agent or TMWA according to this Agreement to carry out the Escrow.

5.2 Closing Procedure. Upon receipt of all funds, instruments and other documents described in this Article 5, and upon satisfaction or waiver of all contingencies and conditions set forth in this Agreement, the Escrow Agent shall deliver the Bill of Sale and General Assignment to TMWA and deliver the Purchase Price to BCH.

5.3 Property Taxes. Ad valorem real estate taxes or personal property taxes, if any, and assessments in respect of the Assets, if any, shall be prorated between TMWA and BCH as of the date of the Closing.

5.4 Closing Costs. Each party shall bear its own costs (including attorneys' fees) in connection with its negotiation and consummation of the transaction. Any liens on the Assets arising prior to the Closing shall be paid by BCH.

6. INDEMNIFICATION FOR BREACH OF REPRESENTATIONS AND WARRANTIES.

6.1 By BCH. BCH agrees to indemnify and hold harmless TMWA and its Board Members, agents and employees from and against any and all claims, damages, losses, liabilities, costs or expenses whatsoever (including attorneys' fees) which TMWA may incur by reason of or in connection with any untrue statement in this Agreement made by BCH or the breach of any representation or warranty of BCH contained in this Agreement.

6.2 By TMWA. Subject to the limitations of Nevada Revised Statutes Chapter 41, TMWA agrees to indemnify and hold harmless BCH and its Board Members, agents and employees from and against any and all claims, damages, losses, liabilities, costs or expenses whatsoever (including attorneys' fees) which BCH may incur by reason of or in connection with any untrue statement in this Agreement made by TMWA or the breach of any representation or warranty of TMWA contained in this Agreement.

7. MISCELLANEOUS

7.1 Covenants of Further Assurance. The parties to this Agreement covenant and agree to act in good faith and to take such further action as may be required to fully effectuate the intentions of the parties under this Agreement.

7.2 Effectiveness and Counterparts. This Agreement shall become effective upon the execution and delivery hereof by the parties hereto. This Agreement may be signed in any number of counterparts, each of which shall be an original, with the same effect as if the signatures thereto and hereto were upon the same instrument.

7.3 Successors and Assigns. This Agreement shall be binding upon and shall inure to the benefit of TMWA and BCH and its respective permitted successors and assigns.

7.4 Consent to Jurisdiction. This Agreement was negotiated by the parties in the State of Nevada, and TMWA and BCH consent to the personal jurisdiction in any court of competent jurisdiction in the State of Nevada, with venue in the County of Washoe.

7.5 Professional Fees. In the event of the bringing of any action or suit by a party hereto against another party hereunder by reason of any breach of any of the covenants, agreements or provisions on the part of the other party arising out of this Agreement, then in that event the prevailing party shall be entitled to have and recover of and from the other party all costs and expenses of the action or suit, including actual attorneys' fees, accounting and engineering fees, and any other professional fees resulting therefrom.

7.6 Possession. Possession of the Assets shall be transferred to TMWA at the Closing.

7.7 Entire Agreement. This Agreement contains all of the agreements of the parties with respect to the matters contained in this Agreement. All prior or contemporaneous agreements or understandings, oral or written, are merged in this Agreement and shall not be effective for any purpose. No provision of this Agreement may be amended or modified except by an agreement, in writing, signed by the parties or its respective successors-in-interest and expressly stating that it is an amendment of this Agreement.

7.8 Severability. If any paragraph, Section, sentence, clause or phrase contained in this Agreement becomes or is held by any court of competent jurisdiction to be illegal, null or void or against public policy, the remaining paragraphs, Sections, sentences, clauses or phrases contained in this Agreement shall not be affected thereby.

7.9 Time of the Essence. Time is of the essence with respect to each and every provision of this Agreement. Unless the context otherwise requires, all periods terminating on a given day, period of days, or date shall terminate at 5:00 p.m. on such date or dates and references to "days" shall refer to calendar days; provided, however, in the event that any period terminates on a Saturday, Sunday or legal holiday, under the laws of the State of Nevada, the termination of such period shall be on the next succeeding business day. The time in which any act provided under this Agreement is to be done, shall

be computed by excluding the first day and including the last, unless the last is a Saturday, Sunday or legal holiday under the laws of the State of Nevada, and then it is also so excluded.

7.10 Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Nevada.

7.11 Headings. Headings used in this Agreement are used for reference purposes only and do not constitute substantive matters to be considered in construing the terms of this Agreement.

7.12 Third Party Beneficiaries. No other third party is intended to be a beneficiary hereof.

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands the date written below.

<p>“BCH”</p> <p>BCH GAMING RENO, LLC.</p> <p>By: _____</p> <p>Its: _____</p> <p>Dated: _____</p>	<p>“TMWA”</p> <p>TRUCKEE MEADOWS WATER AUTHORITY, a joint powers authority</p> <p>By: _____ Mark Foree, General Manager</p> <p>Dated: _____</p>
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STAFF REPORT

TO: Board of Directors
THRU: Mark Foree, General Manager
FROM: John Enloe, Natural Resources Director
Scott Estes, Engineering Director
John Zimmerman, Water Resources Manager
DATE: March 21, 2018
SUBJECT: **Discussion and action, and possible direction to staff on the Agreement regarding West Reno Water System acquisition among Reno Land Development Company, BT SOUTH LLC and TMWA and authorization for General Manager to negotiate and finalize agreement**

Recommendation

Provide direction to staff related to the Agreement regarding West Reno Water System acquisition among Reno Land Development Company, BT SOUTH LLC and TMWA (RLD Agreement), and Authorize the General Manager to execute the Agreement, together with the discretion to make necessary, non-substantive changes to the final Agreement.

Background

At the January 17, 2018 meeting of the TMWA Board of Directors, the Board authorized staff to finalize the acquisition agreement for the West Reno Water System. Section 5.17 of the West Reno acquisition agreement required that West Reno cooperate with TMWA in securing an agreement between TMWA, RLD and BT South, LLC ("RLD Agreement"), prior to the expiration of the Due Diligence Period, whereby i) RLD and BT South, LLC shall be obligated to convey to TMWA at the Closing all right, title and interest each may have in any Water Resources and/or Assets; ii) RLD and BT South LLC agree all water service to property owned by either of them shall be governed solely by TMWA Rules, unless otherwise agreed in writing by TMWA; iii) RLD and BT South LLC, if applicable, agree to amend the CC&R's as set forth in Section 5.14; iv) BT South LLC agrees to enter the Annexation Agreements; v) RLD and/or BT South agree to complete the RLD Improvements, including construction of the water tank on the Tank Site; vi) RLD and/or BT South shall be required to pay TMWA at least \$2,540,000 in connection fees with respect to certain specified development within the WR Service Area; and v) such other terms and conditions reasonably necessary in TMWA's discretion to effectuate the transaction contemplated by this Agreement.

The attached RLD Agreement satisfies the conditions of Section 5.17 of the West Reno Water System acquisition agreement as described above.

Discussion:

As a condition precedent to TMWA's acquisition of the West Reno Water Business, the West Reno Agreement requires RLD and BT South to enter this Agreement and provide for conveyance of certain water rights and assets; agreement that water service shall be governed by TMWA Rules and associated annexation agreements; completion of certain improvements, including construction of a second water tank; and a requirement to pay TMWA at least \$2,540,000 in connection fees with respect to certain specified development within the West Reno Service Area. Key terms of the RLD Agreement include the following:

2.4 Meridian North Connection Fees. Conditional upon the consummation of the West Reno Closing and the timely performance of all of RLD's and BT South's obligations under this Agreement, TMWA agrees that in lieu of WSF Fees otherwise applicable under TMWA Rules, a modified connection fee shall apply to any development of the Meridian North Lots equal to One Thousand Eight Hundred Dollars (\$1,800.00) per residential unit.

4.3 Water Resource Dedications. TMWA agrees the RLD Water Rights, BT Water Rights and Exchange Rights shall be acceptable for dedication for the issuance of will-serve commitment letters for future water service within the WR Service Area to the extent otherwise dedicated in compliance with TMWA Rule 7 and to the extent the rights have not been cancelled, forfeited or the beneficial use is not otherwise restricted by the Nevada Division of Water Resources or Washoe County District Health. Notwithstanding the foregoing, TMWA agrees the RLD Water Rights, BT Water Rights (other than the BT Certificated Rights) and Exchange Rights (collectively, the "Specified Rights") shall be acceptable for dedication for the issuance of will-serve commitment letters for the first 124 GPM of MDD service to the projects described as South Village 1, South Village 2, South Village 3, Public Facility and Arterial Commercial on the Site Plan (such projects referred to as the "Eastern Property"), and further agrees TMWA will not require dedication of additional surface or ground water rights to supplement the Specified Rights in excess of Rule 7 dedication requirements as of the Effective Date of this Agreement for service to the first 124 GPM of MDD service to the Eastern Property, provided: 1) the application(s) for will-serve commitments using the Specified Rights are received by TMWA within three (3) years of the West Reno Closing; 2) marketable title to the applicable Specified Rights is conveyed to TMWA free and clear of liens and encumbrances; and 3) the underlying permits for the Specified Rights remain in good standing with the Nevada Division of Water Resources at the time of dedication.

4.4 Modified Connection Fees for Portion of Future Development of BT South Property. Conditional upon the consummation of the West Reno Closing and the timely performance of all of RLD's and BT South's obligations under this Agreement, TMWA agrees that in lieu of WSF Fees otherwise applicable under TMWA Rules, a modified connection fee shall apply to the first 421 Residential Units and 2.3 acres of commercial/industrial uses (not to exceed an aggregate Maximum Day Demand of 124 GPM ("GPM Limit") to be developed on a portion of the BT South Property described as South Village 1, South Village 2, South Village 3 and AC (such portion of the BT South Property referred to as the "Eastern Property") in the conceptual site

plan attached hereto as Exhibit “C” (the “Site Plan”), equal to \$4,866 per Residential Unit and \$16,521 per GPM for commercial uses (“Modified BT South Connection Fee”).

Proposed Motion:

Authorize the General Manager to execute the Agreement regarding West Reno Water System acquisition among Reno Land Development Company, BT SOUTH LLC and TMWA, including the discretion to make necessary, non-substantive changes to the Agreement.

Attachments:

Agreement Regarding West Reno Water System Acquisition (RLDC and BT South)

**AGREEMENT REGARDING
WEST RENO WATER SYSTEM ACQUISITION
(RLDC and BT South)**

THIS AGREEMENT REGARDING WEST RENO WATER SYSTEM ACQUISITION (this “Agreement”), is dated as of the date last executed by the Parties below (the “Effective Date”), and is entered into by and among RENO LAND DEVELOPMENT COMPANY, a Nevada limited liability company (“RLD”), BT SOUTH LLC, a Nevada limited liability company (“BT South”) and TRUCKEE MEADOWS WATER AUTHORITY, a joint powers authority created pursuant to NRS Chapter 277 by the Cities of Reno and Sparks, and Washoe County (“TMWA”).

RECITALS

- A. TMWA is a public purveyor of domestic water service in the greater Reno-Sparks area.
- B. [REDACTED] TMWA and West Reno Water Company, Inc., a Maryland corporation (“West Reno”), have entered into that certain Agreement for Water System Acquisition dated _____, 2018 (“West Reno Agreement”), pursuant to which West Reno has agreed to sell and TMWA has agreed to purchase certain water system facilities and assets in connection with the operation of a retail water sale and delivery system in or near Verdi, Nevada (the “Water Business”) which has a service territory consisting of approximately 880.16 acres more particularly described in the West Reno Agreement (“WR Service Area”). As used in this Agreement, the term “West Reno Closing” shall mean the date upon which the closing of the transactions contemplated under the West Reno Agreement occurs. A true and correct copy of the West Reno Agreement is attached to this Agreement as Exhibit “A”.
- C. RLD owns certain groundwater rights permitted for diversion through the West Reno Water Facilities as more particularly described in Exhibit “B” attached hereto (“RLD Water Rights”).
- D. RLD is a party to that certain Declaration of Covenants, Restrictions and Easements recorded on June 26, 2012 as Document No. 4125499, Official Records Washoe County, as amended by Amendment No. 1 thereto recorded on August 27, 2014 as Document No. 4386643, as amended by Amendment No. 2 thereto recorded on December 17, 2015 as Document No. 4542990, and as amended by Amendment No. 3 thereto recorded on February 29, 2016 as Document No. 4564761 (the “CC&Rs”), and is obligated to construct and dedicate to West Reno certain water facilities and improvements described as the RLD Improvements in the CC&Rs. As used in this Agreement, the term “RLD Improvements” shall have the meaning ascribed in the CC&Rs.
- E. BT South, as successor to RLD, owns certain undeveloped real property in the WR Service Area described as APN 038-090-61, 038-120-03, 038-120-10, 038-120-12, 038-120-13, and 038-132-25 (collectively, “BT South Property”) upon which certain Water Facilities (as defined below) are located and which will benefit from TMWA’s acquisition of the Water Business.
- F. BT South owns certain groundwater rights permitted for diversion through the West Reno Water Facilities as more particularly described in Exhibit “B” attached hereto (“BT Water Rights”).
- G. RLD and BT South will each benefit from TMWA’s acquisition of the Water Business, and the ability of the BT South Property to receive retail water service from TMWA.
- H. As conditions precedent to TMWA’s acquisition of the Water Business, the West Reno Agreement requires RLD and BT South to enter this Agreement and provide for i) the conveyance of certain

easements, fee property, and water facilities on the BT South Property; ii) the amendment of the CC&Rs; iii) the payment of \$2,540,000 in connection fees upon the development of the BT South Property and the Meridian North Lots (as defined below); iv) the completion and dedication of the RLD Improvements; and v) the release of TMWA from any water service related agreements with West Reno.

AGREEMENT

NOW, THEREFORE, in consideration of the above recitals and mutual covenants and agreements contained herein, and for other good and valuable consideration, the receipt and sufficiency of which all parties acknowledge, the parties hereto agree as follows:

1. **DEFINED TERMS.** In addition to the capitalized terms defined elsewhere in this Agreement, the following terms, when used in this Agreement, shall have the meanings set forth below:

1.1 **“BT Certificated Water Rights”** means that portion of the BT Water Rights described in Exhibit B which have been certificated by the Nevada State Engineer for existing uses within the WR Service Area.

1.2 **“Escrow”** means the escrow opened to consummate the transactions contemplated in the West Reno Agreement.

1.3 **“Meridian North Lots”** means the 273 single family residential lots described as Lots 101 thru 198 in Subdivision Tract Map 5205, recorded May 15, 2017 as Document No. 4704095 and Lots 201 through 278 in Subdivision Tract Map 5227, recorded October 17, 2017 as Document No. 4754335, and Lots 301 through 397 in Meridian 120 North, Village 3 in Subdivision Tract Map _____, recorded _____ as Document No. _____.

1.4 **“Monitoring Well”** means the monitoring well site located on APN 038-120-10 upon which West Reno currently operates a monitoring well.

1.5 **“Residential Unit”** means: i) one (1) single family dwelling or building (commonly referred to as a single family residence), whether attached or detached; ii) one (1) apartment unit; iii) one (1) condominium unit; or iv) one (1) of such other building occupied for residential purposes.

1.6 **“RLD Improvements”** shall have the meaning ascribed to it in the CC&Rs.

1.7 **“Tank Site”** means approximately 1.27 acres located on APN 038-120-03 currently owned by BT South, upon which a 500,000 gallon water tank and a 1,500,000 gallon water tank are located.

1.8 **“Water Facilities”** means all water supply, distribution and storage assets, including all mains, markers, conduits, pipes, pump stations, valve boxes, meters, fixtures, pipes, service lines, backflow prevention equipment, tanks, wells, and any other facilities or appurtenances used or intended to be used in connection with the operation of the Water Business and distribution system of West Reno, including the RLD Improvements and Monitoring Well.

1.9 **“West Reno Closing”** shall mean the date upon which escrow closes in the West Reno Agreement as evidenced by the recordation by the escrow holder of all instruments to be recorded in connection with the closing of the assets under the West Reno Agreement.

1.10 “West Reno Customers” shall have the meaning ascribed to it in the West Reno Agreement.

1.11 “WR Service Area” shall have the meaning ascribed to it in the West Reno Agreement.

2. **RLD OBLIGATIONS**

2.1 Completion of RLD Improvements. RLD represents and warrants that it has completed the RLD Improvements. During the period between the execution of this Agreement and the West Reno Closing, TMWA shall make such inspections and take such actions as it deems necessary to confirm that the RLD Improvements have been completed, and TMWA’s Closing of the transactions described herein on the West Reno Closing shall be deemed to be TMWA’s acceptance of the RLD Improvements in their AS IS condition without further representation or warranty of any kind or nature from RLD. At the West Reno Closing, RLD shall assign to TMWA any third party warranties applicable to the RLD Improvements.

2.2 Amendment of CC&R’s. Conditional upon the consummation of the West Reno Closing, RLD shall execute an amendment to the CC&Rs substantially in the form attached hereto as Exhibit 2.2 (“CC&R Amendment”) at the West Reno Closing. RLD shall deliver the CC&R Amendment, duly executed by RLD with notary acknowledgement, to Escrow on or before the West Reno Closing.

2.3 Conveyance of Water Facilities. Conditional upon the consummation of the West Reno Closing, RLD shall dedicate and convey to TMWA, at no cost, all right, title and interest, if any, of RLD in and to the Water Facilities owned as of the date thereof by RLD. RLD shall convey the Water Facilities at the West Reno Closing by a General Assignment and Bill of Sale substantially in the form attached hereto as Exhibit 2.3 (“RLD Bill of Sale”) without further representation or warranty of any kind or nature from RLD; provided, RLD shall assign to TMWA any third party warranties applicable to the Water Facilities. RLD shall deliver the RLD Bill of Sale, duly executed by RLD, to Escrow on or before the West Reno Closing.

2.4 Meridian North Connection Fees. Conditional upon the consummation of the West Reno Closing and the timely performance of all of RLD’s and BT South’s obligations under this Agreement, TMWA agrees that in lieu of WSF Fees otherwise applicable under TMWA Rules, a modified connection fee shall apply to any development of the Meridian North Lots equal to One Thousand Eight Hundred Dollars (\$1,800.00) per residential unit (“Meridian North Connection Fee”). RLD shall pay the Meridian North Connection Fee no later than ten (10) days prior to the date a meter is to be installed for water service to the applicable Meridian North Lot, and must be paid prior to commencing any water service to the applicable Meridian North Lot. Prior to the West Reno Closing, RLD shall pay all Meridian North Connection Fees into Escrow with respect to meters set or requested to be set as of such date, which fees shall be deposited and held in Escrow and released to TMWA at the West Reno Closing. From and after the West Reno Closing, RLD shall pay all subsequent Meridian North Connection Fees directly to TMWA. In the event the West Reno Closing does not occur, all Meridian North Connection Fees shall be returned to RLD or such other person that paid them into Escrow. The obligations in this Section 2.4 shall survive the West Reno Closing.

3. **BT SOUTH OBLIGATIONS**

3.1 Water Rights Exchange. Conditional upon the consummation of the West Reno Closing and West Reno conveying at the Closing an equal volume of its permitted rights (the “Exchange Rights”) to BT South at no cost, BT South shall convey to West Reno, at no cost, the BT Certificated Water Rights. BT South shall convey the BT Certificated Water Rights at the West Reno Closing by deed substantially in

the form attached hereto as Exhibit 3.1A (“Water Rights Deed”). At the Closing, West Reno shall convey to BT South the Exchange Rights by deed in substantially the form of Exhibit 3.1.B (the “West Reno Water Rights Deed”). BT South shall deliver the Water Rights Deed, duly executed by BT South with notary acknowledgment, to Escrow on or before the West Reno Closing. The BT South Water Rights shall be conveyed to TMWA free and clear of any monetary liens, mortgages, pledges, security interests, rights of third parties, encumbrances or other charges of any kind. TMWA shall cause West Reno to deliver the West Reno Water Rights Deed, duly executed by West Reno, with notary acknowledgment, to Escrow on the West Reno Closing and immediately after BT South’s delivery of the Water Rights Deed as provided above. The permitted water rights to be conveyed to BT South at the Closing shall be conveyed free and clear of any monetary liens, mortgages, pledges, security interests, rights of third parties, encumbrances or other charges of any kind.

3.2 Tank Site. Conditional upon the consummation of the West Reno Closing, BT South shall parcel and convey the Tank Site to TMWA in fee at the West Reno Closing. TMWA and BT South acknowledge that a Parcel Map(s) or maps, merger and resubdivision map or boundary line adjustments that create the Tank Site as a legal parcel (individually or collectively, the “BLA or Parcel Map(s)”) must be created and approved by appropriate governmental entities prior to and as a condition of transfer. TMWA shall prepare the BLA or Parcel Map(s) and such surveys and governmental applications necessary to create a separate parcel or parcels for the Tank Site in a form and setting the Tank Site boundaries reasonably acceptable to BT South, as provided below. As soon as practicable after the Effective Date, TMWA shall submit the BLA or Parcel Map(s) to BT South for review and approval, such approval not to be unreasonably withheld, delayed or conditioned. TMWA shall thereafter immediately seek and use its best efforts to secure all required Final Governmental Approvals prior to the West Reno Closing to subdivide and create a separate parcel comprised of the Tank Site consistent with the BLA or Parcel Map approved by BT South and to permit the recordings of the BLA or Parcel Map(s) and conveyance of the Tank Site to TMWA. BT South shall cooperate with TMWA to the extent reasonably necessary with respect to the preparation of the BLA or Parcel Map(s) and securing Final Governmental Approvals thereof. All costs for preparing, submitting and securing Final Governmental Approvals of the BLA or Parcel Map(s) shall be split equally between TMWA and BT South. As used in this Agreement, the term “Final Governmental Approvals” shall mean the final act by any governmental agency or entity with jurisdiction over such matters, not subject to appeal, granting approval of the BLA or Parcel Map(s) under applicable Laws for TMWA’s intended use. If the net acreage, size, location or configuration of the Tank Site changes in any material respect from the final BLA or Parcel Map(s), as approved by TMWA, or mapping conditions impose material costs, delays or otherwise materially and negatively impact the property, TMWA’s obligation to consummate the West Reno Closing shall be conditioned upon TMWA’s approval of such changes, which approval shall not be unreasonably withheld. If Final Governmental Approvals are not secured by the West Reno Closing, TMWA may, in its discretion, elect to proceed with the West Reno Closing in which event 1) BT South shall grant TMWA at the West Reno Closing a temporary easement to access and operate facilities on the Tank Site until title is transferred to TMWA; 2) BT South shall convey the Tank Site to TMWA within five (5) days of the recordation of the BLA or Parcel Map(s).

3.3 Easements. Conditional on the consummation of the West Reno Closing, BT South shall convey to TMWA at the West Reno Closing easements for access and operation of the Water Facilities (including the Monitoring Well and Tank Site), which easements shall be substantially in the form attached hereto as Exhibit 3.3 and as otherwise reasonably agreed by TMWA and BT South (“Water Facilities Easements”), and which easements shall be sufficient to provide rights of access and operation for all Water Facilities being conveyed to TMWA hereunder and in connection with the West Reno Agreement. TMWA shall identify the specific location of all Water Facilities Easements prior to the West Reno Closing for BT South’s review and approval, which shall not be unreasonably withheld, delayed or conditioned, and BT South shall cooperate with TMWA as necessary to identify the location of all Water Facilities. BT South shall have no responsibility for the costs of all surveying, mapping and document preparation for the Water

Facilities Easements. BT South shall be solely responsible for the costs of relocating any Water Facilities Easements and/or Water Facilities and providing replacement easements to TMWA in accordance with TMWA Rules if such relocation is required in connection with the development of the BT South Property.

3.4 Amendment of CC&R's. Conditional upon the consummation of the West Reno Closing, BT South shall execute the amendment to the CC&Rs as set forth in the CC&R Amendment at the West Reno Closing. BT South shall deliver the CC&R Amendment, duly executed by BT South with notary acknowledgement, to Escrow on or before the West Reno Closing.

3.5 Conveyance of Water Facilities. Conditional upon the consummation of the West Reno Closing, BT South shall dedicate and convey to TMWA, at no cost, all right, title and interest, if any, of BT South in and to the Water Facilities at the West Reno Closing. BT South shall convey the Water Facilities by a General Assignment and Bill of Sale substantially in the form attached hereto as Exhibit 3.5 ("BT South Bill of Sale") without warranty of any kind or nature, express or implied from BT South provided, BT South shall assign to TMWA any third party warranties applicable to the Water Facilities. BT South shall deliver the BT South Bill of Sale, duly executed by BT South, to Escrow on or before the West Reno Closing.

3.6 Lender Consents. The Tank Site and Water Facilities Easements shall be conveyed to TMWA free and clear of any monetary liens, mortgages, pledges, or security interests of any kind, any rights of third parties (but with respect to the Water Facilities Easements, rights of third parties to the extent in conflict with such Water Facilities Easements), encumbrances or other charges of any kind that would interfere with TMWA's use and enjoyment of such easements or the ownership thereof, and BT South shall secure, at its sole cost and expense, agreements in such form reasonably agreeable to TMWA releasing (in the case of the Tank Site) or subordinating (in the case of Water Facilities Easements) any such liens and encumbrances to the rights being granted to TMWA (collectively, the "Lender Consents"). BT South shall deliver the Lender Consents to Escrow in recordable form, duly executed with notary acknowledgment, on or before the West Reno Closing.

4. TMWA OBLIGATIONS

4.1 Annexation of BT South Property Into TMWA Retail Service Area. Conditional upon the consummation of the West Reno Closing and the timely performance of all of RLD's and BT South's obligations under this Agreement, TMWA shall annex the BT South Property into TMWA's retail service area pursuant to the Annexation Agreement substantially in the form attached hereto as Exhibit 4.1.

4.2 Commitment Regarding Water Service. Conditional upon the consummation of the West Reno Closing and the timely performance of all of RLD's and BT South's obligations under this Agreement, TMWA shall issue to BT South an NAC 445A.65515 Acknowledgment of Water Service letter, acknowledging TMWA's willingness to supply water service to the BT South Property upon satisfaction of and in accordance with conditions in the Annexation Agreement and TMWA's rules and tariffs.

4.3 Water Resource Dedications. TMWA agrees the RLD Water Rights, BT Water Rights and Exchange Rights shall be acceptable for dedication for the issuance of will-serve commitment letters for future water service within the WR Service Area to the extent otherwise dedicated in compliance with TMWA Rule 7 and to the extent the rights have not been cancelled, forfeited or the beneficial use is not otherwise restricted by the Nevada Division of Water Resources or Washoe County District Health. Notwithstanding the foregoing, TMWA agrees the RLD Water Rights, BT Water Rights (other than the BT Certificated Rights) and Exchange Rights (collectively, the "Specified Rights") shall be acceptable for dedication for the issuance of will-serve commitment letters for the first 124 GPM of MDD service to the projects described as South Village 1, South Village 2, South Village 3, Public Facility and Arterial

Commercial on the Site Plan (such projects referred to as the “Eastern Property”), and further agrees TMWA will not require dedication of additional surface or ground water rights to supplement the Specified Rights in excess of Rule 7 dedication requirements as of the Effective Date of this Agreement for service to the first 124 GPM of MDD service to the Eastern Property, provided: 1) the application(s) for will-serve commitments using the Specified Rights are received by TMWA within three (3) years of the West Reno Closing; 2) marketable title to the applicable Specified Rights is conveyed to TMWA free and clear of liens and encumbrances; and 3) the underlying permits for the Specified Rights remain in good standing with the Nevada Division of Water Resources at the time of dedication..

4.4 Modified Connection Fees for Portion of Future Development of BT South Property. Conditional upon the consummation of the West Reno Closing and the timely performance of all of RLD’s and BT South’s obligations under this Agreement, TMWA agrees that in lieu of WSF Fees otherwise applicable under TMWA Rules, a modified connection fee shall apply to the first 421 Residential Units and 2.3 acres of commercial/industrial uses (not to exceed an aggregate Maximum Day Demand of 124 GPM (“GPM Limit”) to be developed on a portion of the BT South Property described as South Village 1, South Village 2, South Village 3 and AC (such portion of the BT South Property referred to as the “Eastern Property”) in the conceptual site plan attached hereto as Exhibit “C” (the “Site Plan”), equal to \$4,866 per Residential Unit and \$16,521 per GPM for commercial uses (“Modified BT South Connection Fee”). The Modified BT South Connection Fee shall be paid no later than ten (10) days prior to the date a meter is to be installed for water service to the applicable parcel receiving residential or commercial service, and must be paid prior to and as a condition of TMWA having any obligation to commence water service to the applicable parcel. With respect to meters required to be set prior to or within ten (10) days after the West Reno Closing, BT South shall pay all such Modified BT South Connection Fees into Escrow, which fees shall be deposited and held in Escrow and released to TMWA at the West Reno Closing. From and after the West Reno Closing, BT South or its successors shall pay all Modified BT South Connection Fees directly to TMWA. In the event the West Reno Closing does not occur, all Modified BT South Connection Fees paid into Escrow shall be returned to BT South or such other person that paid them into Escrow. It is further agreed that except as otherwise set forth in this Section 4.4, new water service to the BT South Property shall be governed exclusively by this Agreement, TMWA Rules and other written agreements between TMWA and BT South, and except as provided herein any applications for new or modified water service to any project shall be processed under and in accordance with TMWA Rules and shall require annexation of the BT South Property into TMWA’s retail service area in accordance with TMWA’s Rules. Any new or modified service on the BT South Property other than the Eastern Property referenced above or which in the aggregate (considering all service to the BT South Property) exceeds the GPM Limit shall be subject to all fees and charges, including WSF Charges, applicable to new development under TMWA Rules. The Modified BT South Connection Fee is appurtenant to, and may only be used in connection with development on, the BT South Property, and is not transferrable or assignable for use on any other property. The obligations in this Section 4 shall survive the West Reno Closing.

5. RELEASE

Conditional on the consummation of the West Reno Closing, BT South and RLD each, for itself and any assignees or successors in interest, hereby release and agree to hold harmless TMWA from and against any and all claims, liabilities, losses, damages, actions, or causes of action (in law or equity) of any kind or nature whatsoever, relating to arising directly or indirectly from or incident to any agreements between BT South and RLD, respectively, (or its predecessor) and SJP Reno Property, LLC, West Reno, PNK (Reno) LLC, or any of their predecessors in interest in connection with water supply and water service to RLD, BT South, or any property owned by them. The foregoing release and hold harmless shall not apply to agreements (including will serve commitments) expressly assumed by TMWA in the West Reno Closing.

6. REPRESENTATIONS AND WARRANTIES

6.1 RLD Representations. As a material inducement for TMWA to enter into this Agreement, RLD represents and warrants to TMWA, as of the Effective Date and through the West Reno Closing, that:

6.1.1 Good Standing. RLD is a limited liability company duly organized, validly existing, and in good standing under the Laws of the State of Nevada. RLD has taken all necessary corporate and other action to authorize and approve the execution, delivery, and performance of this Agreement and the transactions contemplated hereby.

6.1.2 No Violations; Proper Authority; No Required Consents. The execution, delivery and performance by RLD of this Agreement is not inconsistent with and will not violate or contravene any Law applicable to RLD; does not and will not contravene any provision of, or constitute a default under any contract to which RLD is a party. RLD has taken or will obtain prior to the West Reno Closing all necessary approvals required of its Board and members under all applicable Laws to consummate the transactions contemplated hereunder. There are no consents necessary which will not be obtained prior to the Closing from any person, association, entity, or governmental authority necessary to render the transactions contemplated hereby lawful, effective in accordance with the terms of this Agreement, and in compliance with any requirements by which RLD or the Assets are bound. RLD has the power, authority, and legal right to execute, deliver, and perform this Agreement. When executed and delivered, this Agreement and all other documents and instruments hereunder shall constitute legal, valid, and binding obligations of RLD enforceable against RLD in accordance with their respective terms.

6.1.3 Freedom from Restrictions. The execution and delivery of this Agreement, the consummation of the transactions contemplated hereby, and the fulfillment of the terms hereof by RLD, conditioned upon RLD's receipt of the Lenders Consents, do not violate or conflict with, and will not result in a breach or default, or in any occurrence that, with a lapse of time or action by a third party or both, could result in a breach or default with respect to any contract to which RLD is a party.

6.1.4 Material Contracts. Other than the CC&R's, RLD is not a party to, or bound by, any contract, understanding, commitment or agreement related to the Water Business or which would be applicable to or binding upon TMWA in connection with TMWA's operation of the Water Business after the West Reno Closing.

6.1.5 Compliance With Laws; Suits and Proceedings. RLD is not now (nor has it been within the past twelve (12) months) in violation of any Laws related to the Water Facilities. There are no actions, suits, proceedings, investigations or claims pending or, to the knowledge of RLD, threatened against RLD with respect to the Water Facilities, at law or in equity, before or by any federal, state, municipal or any other governmental court, department, commission, agency or instrumentality, domestic or foreign; nor to the knowledge of RLD is there any basis for any such claim, suit, proceeding or investigation.

6.2 BT South Representations. As a material inducement for TMWA to enter into this Agreement, BT South represents and warrants to TMWA, as of the Effective Date and through the West Reno Closing, that:

6.2.1 Good Standing. BT South is a limited liability company duly organized, validly existing, and in good standing under the Laws of the State of Nevada. BT South has taken all necessary corporate and other action to authorize and approve the execution, delivery, and performance of this Agreement and the transactions contemplated hereby.

6.2.2 No Violations; Proper Authority; No Required Consents. The execution, delivery and performance by BT South of this Agreement is not inconsistent with and will not violate or contravene any Law applicable to BT South; does not and will not contravene any provision of, or constitute a default under any contract to which BT South is a party or by which it or any of the BT South Property are bound; and will not result in the imposition of a lien upon the Tank Site or Water Facilities Easements pursuant to the terms of any agreement or instrument to which BT South is a party or by which it is bound. BT South has taken or will obtain prior to the West Reno Closing all necessary approvals required of its Board and members under all applicable Laws to consummate the transactions contemplated hereunder. There are no consents necessary which will not be obtained prior to the Closing from any person, association, entity, or governmental authority necessary to render the transactions contemplated hereby lawful, effective in accordance with the terms of this Agreement, and in compliance with any requirements by which BT South, the BT South Property, Tank Site or Water Facilities Easements are bound. BT South has the power, authority, and legal right to execute, deliver, and perform this Agreement. When executed and delivered, this Agreement and all other documents and instruments hereunder shall constitute legal, valid, and binding obligations of BT South enforceable against BT South in accordance with their respective terms.

6.2.3 Freedom from Restrictions. The execution and delivery of this Agreement, the consummation of the transactions contemplated hereby, and the fulfillment of the terms hereof by BT South, conditioned upon BT South's receipt of the Lenders Consents, do not violate or conflict with, and will not result in a breach or default, or in any occurrence that, with a lapse of time or action by a third party or both, could result in a breach or default with respect to any contract to which BT South is a party.

6.2.4 Ownership of Assets; Good Title. At the West Reno Closing, BT South shall convey good and marketable title to the BT Certificated Water Rights to West Reno and shall convey the Tank Site and Water Facilities Easements to TMWA, subject to no liens, mortgages, pledges, security interests, rights of third parties, encumbrances or other charges of any kind, except as expressly disclosed in this Agreement or in writing to TMWA and as approved in writing by TMWA.

6.2.5 Material Contracts. Other than the CC&R's, BT South is not a party to, or bound by, any contract, understanding, commitment or agreement related to the Water Business or which would be applicable to or binding upon TMWA in connection with TMWA's operation of the Water Business after the West Reno Closing.

6.2.6 Compliance With Laws; Suits and Proceedings. BT South is not now (nor has it been within the past twelve (12) months) in violation of any Laws related to the Tank Site or Water Facilities Easements. There are no actions, suits, proceedings, investigations or claims pending or, to the knowledge of BT South, threatened against BT South with respect to the Tank Site, Water Facilities or Water Facilities Easements, at law or in equity, before or by any federal, state, municipal or any other governmental court, department, commission, agency or instrumentality, domestic or foreign; nor to the knowledge of BT South is there any basis for any such claim, suit, proceeding or investigation.

7. CLOSING

7.1 Escrow Instructions. The transfers contemplated herein shall be consummated through the Escrow to be established at Western Title Company, Attn: Patti Hanson, with an address of 5390 Kietzke Lane Ste. 101, Reno, Nevada 89511 ("Escrow Holder" or "Title Company") pursuant to the West Reno Agreement. RLD, BT South and TMWA agree to execute and deliver to Escrow Holder such additional and supplemental instructions as Escrow Holder may require in order to clarify Escrow Holder's duties under this Agreement; provided, however, that in the event of any conflict or inconsistency between this Agreement and any other instructions delivered to Escrow Holder, the terms of this Agreement shall govern the duties of Escrow Holder and the rights and obligations of BT South, RLD and TMWA.

7.2 Closing Costs. Except as provided in this Section 7.2, RLD and BT South shall not be responsible for any closing costs. Any real property tax payable with respect to the Tank Site shall be prorated among TMWA and BT South as of the West Reno Closing, based upon the actual number of days in the month and/or year in which the West Reno Closing occurs. All Escrow Holder fees and costs, transfer taxes (if any), recording fees, escrow fees, closing costs and expenses shall be born and allocated between TMWA and West Reno pursuant to the West Reno Agreement.

7.3 Closing Duties of Escrow Holder. Upon receipt of all of the documents, instruments and funds required to be delivered to Escrow Holder pursuant to this Agreement, Escrow Holder shall proceed as soon thereafter as reasonably possible to but concurrently with the West Reno Closing to record any deed for the Tank Site, the deed for the BT Certificated Water Rights, the Water Facilities Easements, CC&R Amendment and Lender Consents in the Official Records, Washoe County, and delivering the fully executed original RLD Bill of Sale and BT South Bill of Sale to TMWA.

7.4 Termination. If the West Reno Closing fails to occur or the West Reno Agreement is terminated for any reason, this Agreement shall automatically terminate and be of no further force or effect.

8. NOTICES.

All notices or demands required or desired to be given under this Agreement shall be in writing and shall be validly given or made only if (i) personally delivered, (ii) mailed by United States mail, certified or registered, postage prepaid, return receipt requested, (iii) delivered by reputable overnight delivery service, such as FedEx, (iv) sent by facsimile if the sender's facsimile machine prints confirmation records showing the date sent, the recipient's facsimile number, and the completed status of the transmission, or (v) sent by email to the email address listed below with receipt confirmation requested, and shall be addressed as follows:

To RLD:	Reno Land Development Company, LLC 6001 Talbot Lane Reno, Nevada 89509 Attn: Chip L. Bowlby Email: cbowlby@renolandinc.com
With a copy to:	Brad Chamberlain c/o Reno Land, Inc. 6001 Talbot Lane Reno, Nevada 89509 Email: bchamberlain@bradchamberlainlaw.com
To BT South:	BT South, LLC 6001 Talbot Lane Reno, Nevada 89509 Attn: Chip L. Bowlby Email: cbowlby@renolandinc.com
With a copy to:	Brad Chamberlain c/o Reno Land, Inc. 6001 Talbot Lane

Reno, Nevada 89509
Email: bchamberlain@bradchamberlainlaw.com

To TMWA: Truckee Meadows Water Authority
1355 Capital Blvd.
Reno, Nevada 89502
Attn: Mark Foree
Email: mforee@tmwa.com

With a copy to: McDonald Carano Wilson LLP
P.O. Box 2670
Reno, Nevada 89505
Attn: Michael A.T. Pagni, Esq.
Email: mpagni@mcdonaldcarano.com

Delivery of any such notice or demand shall be conclusively deemed made upon receipt if personally delivered or delivered by overnight delivery service, upon the date of delivery or attempted delivery shown on the return reply card if delivered by United States Mail, or upon the date of transmission shown on the sender's fax confirmation page or email receipt confirmation.

9. MISCELLANEOUS PROVISIONS.

9.1 Entire Agreement. This Agreement constitutes the entire agreement between the parties pertaining to the subject matter hereof and supersedes all prior agreements, oral or written, express or implied, and all undertakings, negotiations or discussions of the parties, whether oral or written, all of which are integrated herein to the extent agreed upon by the parties. This Agreement may not be amended, changed, waived, terminated or modified unless the same shall be in writing and signed by or on behalf of the party to be charged. No waiver of any provision of this Agreement shall be valid unless in writing and signed by the party against whom it is sought to be enforced.

9.2 Attorneys Fees; Governing Law and Venue. In the event of any action for breach of, to enforce the provisions of, or otherwise involving this Agreement, the court in such action shall award a reasonable sum as attorneys' fees to the party who, in the light of the issues litigated and the court's decision on those issues was more successful in the action. This Agreement shall be governed by the Laws of the State of Nevada.

9.3 Construction; Headings. In the event of any dispute regarding any provision of this Agreement, the terms of this Agreement shall be construed neutrally and shall not be construed against or in favor of either party, notwithstanding the fact that one party may have been responsible for drafting the initial form of this Agreement. The parties acknowledge that they have each participated equally in the negotiation and drafting of this Agreement prior to execution and each have been represented by legal counsel of their choice in connection therewith. The headings of the sections and paragraphs of this Agreement are for convenience only and in no way define, limit or affect the scope of substance of any section or paragraph of this Agreement.

9.4 Severability. If any provisions or part of a provision in this Agreement shall, for any reason, be held to be invalid, illegal or unenforceable in any respect, the same shall not affect any other provision or part of a provision, but, to the fullest extent possible without defeating the parties' intentions

hereunder, this Agreement shall be reformed and construed as if such invalid or illegal or unenforceable provision or part of a provision had never been contained herein.

9.5 Successors and Assigns. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns.

9.6 Relationship of Parties. Nothing contained in this Agreement is intended to nor shall be deemed to create any partnership, joint venture, agency, fiduciary duty or other relationship between RLD, BT South and TMWA other than with respect to their contractual obligations contained herein.

9.7 Third-Party Beneficiaries. There are no express or implied third-party beneficiaries to this Agreement, or any obligation, claim, or right arising under this Agreement, and no other person or entity who is not a signatory to this Agreement shall have any obligation, claim, right, or remedy hereunder.

9.8 Days. If the date for performance of any provision of the Agreement is a Saturday, Sunday, or legal holiday (in the State of Nevada), the date for performance shall be extended until the next day that is not a Saturday, Sunday or banking holiday. The phrase "Business days" in this Agreement means consecutive days excluding Saturday, Sunday and any such legal holiday.

9.9 Counterparts. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

9.10 Recitals, Exhibits and Schedules. The recitals at the beginning of this Agreement and the following Exhibits and Schedules attached to this Agreement are incorporated herein by this reference and made a part hereof as if set forth in full herein.

IN WITNESS WHEREOF, RLD, BT South and TMWA have executed this Agreement effective the latest date written below.

“TMWA”

TRUCKEE MEADOWS WATER AUTHORITY

By: _____

Its: _____

Dated: _____

“RLD”

RENO LAND DEVELOPMENT COMPANY, a
Nevada limited liability company

By: _____

Its: _____

Dated: _____

“BT SOUTH”

BT SOUTH, LLC, a Nevada limited liability company

By: _____

Its: _____

Dated: _____

Exhibits and Schedules

- Exhibit A: West Reno Agreement
- Exhibit B: RLD Water Rights and BT South
Water Rights
- Exhibit C: Site Plan
- Exhibit 2.3: Form of CC&R Amendment
- Exhibit 2.4: Form of RLD Bill of Sale
- Exhibit 3.1A: Form of Water Rights Deed
- Exhibit 3.1B: Form of West Reno Water Rights Deed
- Exhibit 3.3: Form Water Facilities Easements
- Exhibit 3.5: Form of BT South Bill of Sale
- Exhibit 4.1: Form of Annexation Agreement

Exhibit A
West Reno Agreement
(to be attached)

Exhibit B
RLD Water Rights and BT South Water Rights

RLD Water Rights:

Permit No.	Amount in AF	Comments
Permit Nos. 44595 and 44596	10.00	Total combined duty

BT South Water Rights*:

Permit No.	Amount in AF	Comments
44595 & 44596	300.74	Total combined duty
66262	3.63	
66263	43.73	
66264	43.32	

BT South Certificated Water Rights*:

Certificate No.	Amount in AF	Comments
Permit No. 36512/Certificate 11131	1.39	
Permit No. 44593/Certificate 12461	64.63	
Permit No. 44594/Certificate 12462	20.99	

*Total Combined Duty of all BT South Water Rights and BT South Certificated Water Rights is 300.74 acre feet annually

**Exhibit “C”
Site Plan**

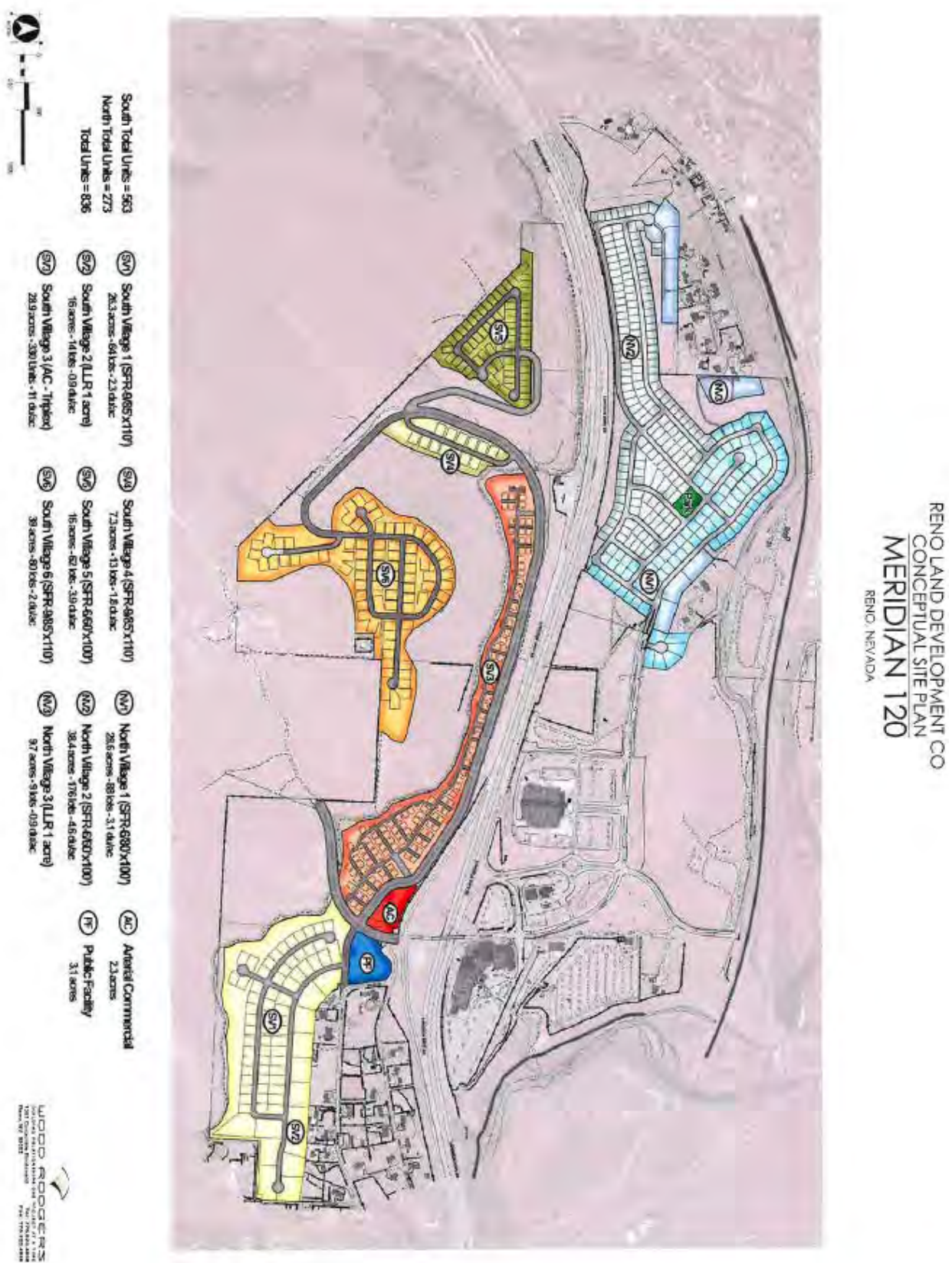


Exhibit 2.2
Form of CC&R Amendment

APN: _____

WHEN RECORDED MAIL TO:
Reno Land Development Company, LLC

Attention: Chip L Bowlby

I the undersigned hereby affirm that this document submitted for recording does not contain the social security number of any person or persons. (Per NRS 239B.030)

AMENDMENT NO. 4 TO DECLARATION OF
COVENANTS,
RESTRICTIONS AND EASEMENTS

This Amendment No. 4 to Declaration of Covenants, Restrictions and Easements ("**Amendment No. 4**") is made and entered into this ____ day of _____, 2018, by and between Reno Land Development Company, LLC, a Nevada limited liability company, and BT South, LLC, a Nevada limited liability company (together, "**RLD**"), SJP Reno Property, LLC, a Maryland limited liability company ("**SJP**"), and West Reno Water Company, Inc., a Maryland corporation ("**West Reno**").

WITNESSETH:

WHEREAS, a Declaration of Covenants, Restrictions and Easements was recorded on June 26, 2012 with the Washoe County Recorder as Document #4125499, as amended by Amendment No. 1 thereto which was recorded on August 27, 2014 with the Washoe County Recorder as Document #4386643 ("**Amendment No.1**"), as amended by Amendment No. 2 thereto which was recorded on December 17, 2015 with the Washoe County Recorder as Document #4542990 ("**Amendment No. 2**") , and as amended by Amendment No. 3 thereto which was recorded on February 29, 2016 with the Washoe County Recorder as Document #4564761 ("**Amendment No. 3**") (collectively, the "**Declaration**");

WHEREAS, RLD owns property which is subject to the Declaration, containing approximately 783.15 acres, as described on **Exhibit A** attached hereto (the "**RLD Property**"). SJP owns property which is subject to the Declaration, containing approximately 97.007 acres, as described on **Exhibit B** attached hereto (the "**SJP Property**");

WHEREAS, West Reno is the current Water Facilities Owner, as such term is defined in the Declaration;

WHEREAS, pursuant to that certain Agreement for Water System Acquisition between West Reno and the Truckee Meadows Water Authority ("Authority"), West Reno has assigned all right, title and interest in and to the Water Facilities and water system described in the Declaration to Authority, and Authority has assumed responsibility for operation of the water system. As a condition of such acquisition, Authority has required RLD and SJP to amend and restate the Declaration to remove provisions related to the creation, maintenance or operation of the water system, it being the express intention that easements for the existing Water Facilities be granted through separate easement deeds to be recorded concurrently herewith and that all terms and conditions of current and future water service to the Property be governed solely by the Authority's rules and regulations or other written agreements between the Authority and property owner.

WHEREAS, Pursuant to Section 11.3 of the Declaration, the Declaration may be amended by RLD, as the Largest Owner, together with SJP as the Owner other than the Largest Owner Controlling at least 5% of the Total Area, and West Reno Water Company as the Water Facilities Owner;

WHEREAS, the parties desire to amend and restate the Declaration in its entirety as set forth herein.

NOW, THEREFORE, the Declaration is hereby amended and restated in its entirety as follows:

ARTICLE 1
DEFINITIONS

1.1 "Affiliate" means a Person which, directly or indirectly, Controls or is Controlled by or is under common Control with another Person.

1.2 "Billboard" means the billboard sign located on the Developer Property as more particularly described and depicted on Exhibit "E" attached hereto.

1.3 "Business Day" means a day that is not a Saturday, Sunday or legal holiday in the State of Nevada.

1.4 "Constant Dollars" means the expressed dollar amount increased by the percentage increase of the CPI between the Effective Date and December 31 of the calendar year preceding the calendar year in which such calculation is being made.

1.5 "Control" or any derivative thereof, when used with respect to any specified Person, means the possession, directly or indirectly, of the power to direct or cause the direction of the management or policies of such Person, whether through ownership of voting securities or partnership or other ownership interests, by contract or otherwise, provided, however, that without limiting the generality of the foregoing any Person which owns, directly or indirectly, ownership interests representing fifty percent (50%) or more of the value or voting power of a corporation or fifty percent (50%) or more of the partnership or other ownership interests (based upon value or vote) of any Person is deemed to Control such corporation or other Person.

1.6 "CPI" means the Consumer Price Index for Urban Wage Earners and Clerical Workers, Los Angeles/Riverside/ Orange County, all items (1982-84 = 100), published by the U.S. Department of Labor, Bureau of Labor Statistics, or if such index is no longer published, the U.S. Department of Labor's most comprehensive official index then in use that most nearly corresponds to the index named above. If, at any time, the U.S. Department of Labor calculates the CPI using a base period that is different from the 1982-84 ~ 100 base period, then the CPI shall be converted to the appropriate base period using a conversion formula supplied by the U.S. Department of Labor. If the U.S. Department of Labor no longer publishes the CPI, then another index generally recognized as authoritative shall be substituted.

1.7 "Law" or "Laws" means, individually or collectively, as applicable, each and every present or future local, state or federal law, statute, code, rule, regulation, ordinance, writ, injunction, order, decree, ruling, or court decision and includes all governmental, special district and public utility approvals, conditions, waivers, variances, demands, entitlements, exactions, maps, building codes, ordinances (zoning or otherwise), permits, plans, orders and resolutions, which are from time to time adopted, amended, modified or supplemented, and which govern, affect or relate to the use, development, improvement, or operation of the Property, or any portion thereof.

1.8 "Lot" means or refers to any platted or unplatted parcels of real estate located within the boundaries of the Property other than areas used or dedicated for public improvements.

1.9 "Material Adverse Effect" means one or more of the following: (i) subjecting any Easement Area (as defined in Section 6. 1) to a foreclosure or similar proceeding (including any preliminary contractually or statutorily required notices of default or other notices required prior to the commencement of formal foreclosure or similar proceedings) under a lien that has priority over this Declaration, (ii) rendering or subjecting all or any portion of any Easement Area to forfeiture or involuntary sale, (iii) any involuntary closing of, or material adverse impact upon, any business or operations conducted on any Lot (except where such closing or impact is caused by the direct or indirect acts or omissions of the Owner of the affected Lot), (iv) subjecting an Owner or its Permittees to civil or criminal penalty or liability or such Owner's or any of its Occupant's property to damage, (v) subjecting any Easement Area to condemnation, vacation or damage, and (vi) creating an unsafe condition affecting any Easement Area.

1.10 "Mortgage" means any fee or leasehold deed of trust or mortgage recorded against any of the Lots or any portion thereof.

1.11 "Mortgagee" means a beneficiary or mortgagee under any Mortgage.

1.12 "Occupant" or "Occupants" means, individually and collectively, as applicable, each and every Owner and any other Person or Persons entitled, by ownership or pursuant to existing or future written leases, subleases, license agreements, occupancy agreements, concession agreements or any other written agreement devising any portion of the Property or permitting use of all or any portion of the Lots, but excluding, in all cases, Persons that are merely hotel guests or customers.

1.13 "Owner" means any individual, partnership, joint venture, corporation, limited liability company, trust, unincorporated association, governmental agency or other business entity now or hereafter holding of record an ownership interest in fee in a portion or all of a Lot.

1.14 "Permittee" or "Permittees" means, individually or collectively, as applicable, each and every Occupant of any portion of the Property and each and every guest, customer, patron, employee, contractor, vendor, concessionaire and other business invitee of the Occupants of such portion of the Lots.

1.15 "Person" means any individual, or a partnership, corporation, limited liability company, trust, estate or other legal entity.

1.16 "Property" means collectively the

ARTICLE 2 ESTABLISHMENT OF COVENANTS

2.1 Establishment of Covenants. The Property and each and every portion thereof shall be held, conveyed, hypothecated, encumbered, leased, used, occupied and improved subject to the covenants and restrictions set forth herein, all of which are declared and agreed to be equitable servitudes in furtherance of a plan for the continued use of the Property. All of the covenants are made [or the direct benefit of the Lots and each portion thereof that is to benefit from such covenants as provided herein and shall create obligations of the Person that owns the Lot that is burdened by such covenants and terms herein and privity of contract and estate between or among the Owner(s) and their respective heirs, successors and assigns, and such benefits and burdens shall run with the Lots and each portion thereof and shall be binding upon each Owner and Occupant of any Lot and each portion thereof and their respective heirs, successors and assigns, all as provided in this Declaration.

2.2 Dominant and Servient Estates. With respect to the Easements and the various covenants (whether affirmative or negative) on the part of each Owner contained in this Declaration which affect or bind or are to be performed on portions of such Owner's Lot during the term of this Declaration, the Lot benefited by such covenant shall be the dominant estate, and the servient estate shall be the Lot burdened by such covenant. The Owner(s) of any servient estate reserves the right to occupy, use and improve the Easement Areas located on its Lot for all purposes not inconsistent with the rights granted in this Declaration.

2.3 No Abandonment. Notwithstanding any applicable Law, no Easement created, granted or reserved hereunder shall be deemed abandoned or terminated merely by non-use or incompatible acts; rather, each Easement created, granted or reserved hereunder shall continue in full force and effect, unless and until a written agreement terminating such Easement is executed in accordance with the terms of this Declaration.

2.4 Covenants Binding. By accepting a deed, lease, sublease, license, occupancy grant, concession to all or any portion of any Lot or any other transfer of any portion of a Lot permitting use of all or any portion of a Lot, any Person becoming an Owner or Occupant of such Lot, agrees to be bound and abide by

the terms and conditions of this Declaration and each of the covenants, restrictions and Easements set forth herein applicable to such Person.

ARTICLE 3 BILLBOARD EASEMENT

3.1 Billboard Easement. Effective as of the date Declarant conveys either the Boomtown Property or the property described and depicted on Exhibit "E" attached hereto, also known as Parcel H of the Developer Property, upon which the Billboard is located (the "Encumbered Property"), Declarant reserves the following appurtenant easements in favor of the Owner(s) of the Boomtown Property (collectively, "Grantee"): (a) a perpetual non-exclusive easement and right-of-way in, upon, over, under and across the Encumbered Property as is reasonably necessary to use the Billboard consistent with its intended use; and (b) a perpetual non-exclusive easement and right-of-way in, upon, over, under and across the Encumbered Property, as is reasonably necessary to access, maintain, repair and replace the Billboard (collectively, the "Billboard Easement").

a. Maintenance and Repair of the Billboard Easement Property. Grantee shall pay all costs and perform all maintenance, repair and replacement necessary to keep the Billboard in good and orderly condition; provided, however, that should maintenance, repair or replacement of the Billboard or any portion thereof be necessary as a result of any intentional or negligent act or omission of any Owner(s) or such Owner(s)' agents, employees, servants, contractors, subcontractors, licensees, customers or invitees, such Owner(s) shall be solely responsible for the cost of such maintenance, repair or replacement. In the event of any damage to or destruction of any Owner(s)' real property arising from the use of the Billboard Easement by Grantee, Grantee shall, at its own expense, repair and replace such real property to the condition as existed prior to such damage or destruction.

b. Liability and Indemnity. Grantee shall indemnify and save the Owner(s) of the Encumbered Property ("Encumbered Property Owner(s)") and Encumbered Property Owner(s)'s directors, officers, successors, assigns, agents and employees harmless from and against any and all claims, demands, damages, costs and expenses, including reasonable attorneys' fees, arising from or related to Grantee's use of the Billboard Easement including, but not limited to, the use, maintenance, repair and replacement of the Billboard. Except for claims arising from or caused by any intentional or negligent act or omission of Encumbered Property Owner(s) or its agents, employees, servants, contractors, subcontractors, licensees, customers or invitees, the Encumbered Property Owner(s) shall not be liable, and Grantee waives all claims, for damage to Person or property sustained by Grantee or its successors, assigns, agents, employees, servants, licensees and invitees resulting from or related to the use of the Billboard Easement by such Persons, including, but not limited to, the use, maintenance, repair and replacement of the Billboard.

c. Billboard Easement Running with the Land. The burden of the Billboard Easement shall run with the Encumbered Property, does touch and concern the same, is intended to and does burden the Encumbered Property and benefit the Boomtown Property. The Billboard Easement shall inure to the benefit of and be binding upon the parties hereto and their respective successors and assigns, including, without limitation, all subsequent owners of either the Encumbered Property or the Boomtown Property, and all Persons claiming under them. Each Person hereafter at any time granted or conveyed an interest in or to any part or portion of either the Encumbered Property or the Boomtown Property shall be deemed to undertake performance and compliance with all the terms, covenants and conditions of this Declaration and the Billboard Easement, and such Persons shall in like manner receive the benefits of the Billboard Easement and the terms, covenants and conditions of this Declaration, to the same extent as if such Persons were original parties hereto.

d. Term. The Billboard Easement shall remain in effect until the date a termination executed by all Owner(s) of the Boomtown Property is recorded in the Official Records of Washoe County.

ARTICLE 4 WATER COVENANTS

4.1 Surface Water. No Owner(s) shall adversely impact any pipes or ditches located on any Lot through which any third party's existing surface water rights are exercised, including, without limitation, in the locations shown on Exhibit "G" attached hereto and incorporated herein. All Owner(s)' use of the Property is subject to the rights of any such third parties.

ARTICLE 5 COMPLIANCE WITH LAWS

5.1 Covenants in Favor of Other Owners Respecting Laws. Each Owner shall have an obligation to the other Owners to cause those portions of such Owner's Lot over which Easements benefiting another Owner have been granted (the "Easement Areas") to comply with all recorded instruments affecting such Owner's Lot and all applicable Laws, in each case, where noncompliance could cause a Material Adverse Effect. Notwithstanding the foregoing, each Owner shall have the right to contest, by appropriate legal or administrative proceedings diligently conducted in good faith, the validity or application of any such instruments or Laws and may defer compliance therewith until a final decision has been rendered in such proceedings and appeal is no longer possible, unless such contest or deferral could have a Material Adverse Effect. In any such case the contesting Owner shall promptly take such steps as may be necessary to prevent the occurrence of a Material Adverse Effect, including posting bonds or security or complying with such recorded instruments or Laws. In the case of a contest by an Owner, such contesting Owner shall indemnify the other Owners, their Occupants and their respective officers, directors, managers, agents, shareholders, members and partners, and (if so ordered by a court of competent jurisdiction) post a bond in the amount so ordered, against any and all losses that the indemnitees may suffer by reason of the contest and any noncompliance with such recorded instruments or Laws.

5.2 Enforcement. No Owner may enforce its rights hereunder respecting any other Owner's noncompliance with any recorded instruments affecting such Owner's Lot or applicable Laws unless, in each case, such noncompliance has had or, in the exercise of the reasonable judgment of the Owner which may suffer a Material Adverse Effect, is reasonably likely to have a Material Adverse Effect on the Lot of the Owner seeking to enforce such noncompliance.

ARTICLE 6 INSURANCE

6.1 Duty to Carry General Liability Insurance. Grantee (each, a "Commercial Owner") shall carry (or cause to be carried), at its sale cost and expense, commercial general liability insurance covering the insured against claims of bodily injury, personal injury and property damage covering the Billboard commencing upon the date such Commercial Owner takes title to the Boomtown Property and continuing until the date such Commercial Owner transfers its title to another Person.

6.2 General Requirements. All insurance required under 6.1 above shall: a. be maintained under a valid and enforceable policy or policies issued by insurers which are rated by Best's Insurance Guide at least A~VIII (or, if no Best's Insurance Guide rating is then available, having a comparable rating by a similar nationally recognized rating agency); b. provide that no cancellation or termination thereof on account of any reason other than non-payment of premiums shall be effective until at least thirty (30) days

after the endeavor to provide written notice thereof to the other Owner(s); c. insure against claims for personal injury, bodily injury or death or property damages occurring upon, in or about each Lot, or any improvements on each Lot or upon, in or about the adjoining land, streets and passageways thereof, such insurance to afford protection in an amount not less than \$3,000,000 each occurrence, and annual aggregate (allowing for such limit to be met through a combination of primary and excess policies), subject only to such commercially reasonable deductible as is customarily carried by other prudent owners of comparable properties; and

d. each liability insurance policy of any Commercial Owner shall include as an additional insureds the Owner(s) of the Encumbered Property (collectively, the "Burdened Owners").

6.3 Modification of Insurance Requirements. The requirement to obtain and maintain any particular insurance in accordance with this Article may be modified in accordance with Section ___ below. The parties acknowledge that over the term of this Declaration, it is likely that the insurance market will change such that certain coverage set forth herein will no longer be available, other coverage not set forth herein will become prudent business practice, or the limits of liability and deductible set forth herein will no longer provide the Burdened Owners with adequate protection. As such, each Commercial Owner shall act reasonably with respect to any request from any of the Burdened Owners to alter the insurance obligations set forth in this Article. Without limitation of the foregoing, the applicable Burdened Owners shall have the right to require the corresponding Commercial Owner to increase the minimum coverage amounts and limits of liability set forth in this Article to equal such coverage amounts in Constant Dollars, except that each Commercial Owner shall not be required to implement such increase more often than once every calendar year.

6.4 Certificate of Insurance. Each Commercial Owner shall, on the request of the applicable Burdened Owners, promptly furnish such requesting Burdened Owners with a certificate evidencing its compliance with the insurance coverage requirements of this Article.

6.5 Release and Waiver of Subrogation. Each Owner hereby waives all rights of recovery and causes of action, and releases all other Owners from any liability, due to losses and damages occasioned to its Lot and the Easements located thereon, which losses and damages are either (a) of the type covered under the insurance policy required under this Article, or (b) actually covered by an insurance policy carried by such Owner, to the extent that said loss is reimbursed by insurance, or would have been reimbursed if the required coverage had been carried by such Commercial Owner as required in this Article. To the extent such waivers are obtainable at a commercially reasonable cost, the policies required by this Article shall provide for waivers of any right of subrogation that the insurer of a Commercial Owner may acquire against each of the Burdened Owners with respect to any such releases.

ARTICLE 7 RIGHTS AND REMEDIES

7.1 Abatement and Suit.

a. If an Owner or other Person fails to comply with or observe any of the provisions, agreements, conditions, covenants or tenets contained in this Declaration for fifteen (15) days after written notice of such failure to such Owner or other Person, Or, if such failure cannot be cured within such 15-day period, the defaulting Owner or other Person does not commence to cure such failure within such 15-day period after receipt of such written notice and complete the cure within sixty (60) days thereafter or such longer reasonable period that may be required, then such failure shall constitute an "Event of Default" hereunder, and any Owner affected by such Event of Default may enforce any of the provisions herein contained and seek all remedies available under this Declaration, at law, or in equity.

b. Without limiting the rights and remedies at law, in equity or otherwise and under this Declaration, each Owner shall have the right to prosecute a proceeding at law or in equity, subject to Section 7.5 below, against any other Owner or Occupant of a Lot or any other Person or Persons responsible for an Event of Default, to accomplish any one or more of the following: to enjoin or prevent the violation; to cause such Owner or Occupant to remedy such Event of Default; or to recover damages for such Event of Default. Nothing contained in this Declaration shall be deemed to impose any liability upon an Owner for the failure to pursue any right or remedy arising out of an Event of Default.

c. Each and every covenant and agreement contained in this Declaration shall be deemed separate and independent and not dependent upon any other provisions of this Declaration and the damages for failure to perform the same shall be deemed in addition to and separate and independent of the damages accruing by reason of the breach of any other covenant contained in this Declaration.

7.2 Failure to Enforce Not a Waiver of Rights. The failure of any Owner to enforce any Easement, covenant, restriction or other provision herein contained will not be deemed to be a waiver of the right to thereafter do so nor of the right to enforce any other Easement, covenant, restriction or provision set forth in this Declaration. No express waiver of any default will affect any default or extend any period of time for performance other than as specified in such express waiver. One or more waivers of any default in the performance of any provision of this Declaration will not be deemed a waiver of any subsequent default in the performance of the same provision or any other provision.

7.3 Rights and Remedies Cumulative. Each of the rights and remedies of each Owner with respect to this Declaration and the Easements, restrictions, covenants and other provisions set forth herein shall be cumulative and not exclusive, and any Owner's exercise of one right or remedy shall not be deemed or construed to be an election of remedies or be deemed or construed as a waiver or in such a manner as to preclude such Owner from exercising any and all other rights and remedies available to such Owner at law, in equity or under this Declaration, from time to time and in any order selected by such Owner in the sole and absolute discretion of each.

7.4 Force Majeure. Except as otherwise provided in this Declaration, each Owner shall be excused from performing any obligation or undertaking provided in this Declaration, except a failure to pay money (unless such payment is conditioned upon performance of an obligation or undertaking excused under this Section 7.4), in the event, but only so long as, the performance of any such obligation is prevented or materially delayed, retarded or hindered by (a) act of God, fire, earthquake, flood, terrorism, explosion, action of the elements, war, invasion, insurrection, riot, mob violence, sabotage or inability to procure or general shortage of labor, equipment, facilities, materials or supplies in the ordinary course on the open market; (b) failure of normal transportation, strike, lockout or action of labor unions; (c) condemnation, requisition, Law or order of governmental or civil or military authorities; (d) the inability to obtain governmental entitlements necessary for the continued operation of essential business functions, despite the exercise of reasonable diligence and good faith commercially reasonable efforts; or (e) any other cause, whether similar or dissimilar to the foregoing, not within the reasonable control of such Owner (financial ability or such Owner's negligence excepted).

7.5 Governing Law: Jurisdiction: Waiver of Jury Trial: Costs. Any controversy, claim, or dispute arising out of or related to this Declaration or the interpretation, performance, or breach hereof, including alleged violations of state or federal statutory or common law rights or duties (a "Dispute"), shall be resolved in accordance with this Section 7.5.

a. Governing Law. This Declaration and all disputes between the parties under or related to this Declaration or the facts and circumstances leading to its execution, whether in contract, tort or otherwise,

shall be governed by and construed in accordance with the laws of the State of Nevada, applicable to contracts executed in and to be performed entirely within the State of Nevada, without regard to the conflicts of laws principles thereof.

b. Jurisdiction. Each of the parties hereto hereby irrevocably and unconditionally submits, for itself and its property, to the exclusive jurisdiction of any Nevada state court, or federal court of the United States of America, sitting in Reno, Nevada, and any appellate court from any thereof, for resolution of any Dispute and for recognition or enforcement of any judgment relating to such Dispute, and each of the parties hereby irrevocably and unconditionally (i) agrees not to commence any such action or proceeding except in such courts; (ii) agrees that any claim in respect of any such action or proceeding may be heard and determined in such Nevada state court or, to the extent permitted by Law, in such federal court; (iii) waives, to the fullest extent it may legally and effectively do so, any objection which it may now or hereafter have to the laying of venue of any such action or proceeding in any such Nevada state or federal court; and (iv) waives, to the fullest extent permitted by Law, the defense of an inconvenient forum to the maintenance of such action or proceeding in any such Nevada state or federal court. Each of the parties hereto agrees that a final judgment in any such action or proceeding shall be conclusive and may be enforced in other jurisdictions by suit on the judgment or in any other manner provided by Law.

c. WAIVER OF JURY TRIAL. EACH PARTY ACKNOWLEDGES AND AGREES THAT ANY CONTROVERSY WHICH MAY ARISE UNDER THIS DECLARATION IS LIKELY TO INVOLVE COMPLICATED AND DIFFICULT ISSUES, AND THEREFORE IT HEREBY IRREVOCABLY AND UNCONDITIONALLY WAIVES ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY LITIGATION DIRECTLY OR INDIRECTLY ARISING OUT OF OR RELATING TO THIS DECLARATION OR THE TRANSACTIONS CONTEMPLATED HEREBY. EACH PARTY CERTIFIES AND ACKNOWLEDGES THAT (i) NO REPRESENTATIVE, AGENT OR ATTORNEY OF ANY OTHER PARTY HAS REPRESENTED, EXPRESSLY OR OTHERWISE, THAT SUCH OTHER PARTY WOULD NOT, IN THE EVENT OF LITIGATION, SEEK TO ENFORCE SUCH WAIVERS; (ii) IT UNDERSTANDS AND HAS CONSIDERED THE IMPLICATIONS OF SUCH WAIVERS; (iii) IT MAKES SUCH WAIVERS VOLUNTARILY; AND (iv) IT HAS BEEN INDUCED TO ENTER INTO THIS DECLARATION BY, AMONG OTHER THINGS, THE MUTUAL WAIVERS AND CERTIFICATIONS IN THIS SECTION 7.5(c).

d. Attorneys' Fees and Costs. The prevailing party in any Dispute shall be entitled to reasonable attorneys' fees, costs and expenses incurred in connection with such Dispute and the enforcement of any judgment against the unsuccessful party therein, including court costs, fees and expenses, and the unsuccessful party therein shall pay all such fees, costs and expenses.

7.6 Indemnification by Owners. In addition to any indemnities otherwise provided in this Declaration, each Owner (collectively, "Indemnitor") agrees to indemnify, hold harmless, protect and defend, with counsel reasonably acceptable to the Person receiving such indemnity, each other Owner, including such Owner's Affiliates and their respective officers, directors, partners, managers, members, stockholders, agents, servants and employees (individually and collectively, "Indemnitee") from and against all losses, claims, actions, liens, proceedings, liabilities, damages (excluding consequential and punitive damages), costs and/or expenses (including the Indemnitee's reasonable attorneys' fees) (collectively, a "Claim") resulting from the death of or injury to any Person or the physical or economic damage to or loss of any property (a) except as provided in subsections (b) and (d) hereafter, as shall occur on the Lot or in any other improvements owned by Indemnitor, (b) as shall occur due to the entry by Indemnitor, its Occupants, or their respective Permittees onto the Lot owned by the Indemnitee pursuant to the rights granted under this Declaration, (c) as shall occur due to non-compliance with the provisions of this Declaration on the part of the Indemnitor, or (d) in connection with the exercise of any rights, licenses or interests granted to, or Easements used by, such Indemnitor or any of its Occupants or their respective

Permittees. Indemnatee shall give Indemnitor notice of any Claim entitling the Indemnatee to indemnification pursuant to this Declaration. Failure to give such notice shall not, however, in any manner negate or invalidate the obligation to provide such indemnity, except to the extent the Indemnitor is actually prejudiced thereby. No Owner shall be obligated to indemnify an Indemnatee to the extent the Claim underlying the Indemnatee's request for indemnification (i) results from the negligence or intentional wrongdoing of the Indemnatee, or (ii) results from such willful, intentional or wanton acts or omissions of the Indemnatee as shall constitute an "occurrence" excluded from coverage under standard comprehensive public liability and property damage insurance policies as they may exist at the time of any such determination.

ARTICLE 8 RIGHTS OF SECURED LENDERS

This Declaration shall be and remain senior in priority to all Mortgages hereafter executed or created with respect to any Lot or any portion thereof, provided, however, that no breach of this Declaration or the Easements, restrictions, covenants and other provisions set forth herein shall affect, impair, defeat or render invalid the lien, charge or priority of any Mortgage encumbering any Lot or portion thereof. Any Mortgagee or other Owner whose title to a Lot is derived through foreclosure, trustee's sale or deed in lieu of foreclosure with respect to such Mortgages shall take title to such Lot subject to, and shall be bound by, all the terms, Easements, restrictions, covenants and provisions set forth in this Declaration and shall be entitled to the benefits thereof.

ARTICLE 9 POWERS AND LIABILITY OF OWNERS

9.1 Limitation on Liability of Owners. No Owner (or any agent of each such Owner when acting in such capacity) that fails to grant its consent or approval where its review and approval is required under this Declaration, if such Owner (or such agent) has acted timely, reasonably and in good faith, shall be liable to any other Owner for any damage, loss, or prejudice suffered or claimed on account of such failure.

9.2 Enforcement. Each Owner (but no other Occupant or Permittee) shall have the right and power to enforce the provisions of this Declaration that benefit such Owner.

9.3 Cooperation. Each Owner agrees to use commercially reasonable efforts to execute any and all further instruments and documents reasonably requested by the other Owners and to take such further actions that the other Owners may reasonably request to the extent the same are necessary to implement the provisions hereof and the rights granted hereby, in each case, subject to applicable Laws and contractual restrictions binding on such Owner. Each Owner agrees that the requesting Owner shall pay all reasonable expenses incurred by the other Owners in connection with any requested instruments, documents, or actions pursuant to the foregoing.

ARTICLE 10 DURATION AND TERMINATION

10.1 Duration. This Declaration shall be effective as of the Effective Date and shall continue in full force and effect for a term of twenty-five (25) years from the Effective Date, at which time the same shall automatically be extended for successive periods of ten (10) years unless an installment agreed to and executed by the Owners (and Mortgagees, if any) of at least seventy-five percent (75%) of the Total Area (as defined below) terminating this Declaration and the Easements created hereby is recorded in the Official Records of Washoe County.

10.2 No Termination as Remedy. Notwithstanding anything to the contrary contained in this Declaration or any right or remedy available at law or in equity, in no event shall the rights or remedies available to a party for a breach of the provisions of this Declaration include the termination of this Declaration or any of the Easements. Each Owner hereby waives any right or remedy it may now or hereafter have at law, in equity or otherwise, to terminate this Declaration other than as otherwise permitted by this Article.

10.3 Amendment. This Declaration may be amended by written instrument, duly recorded in the Official Records of Washoe County and properly executed by the then Owners of more than 5% of the total area within the Property (excepting any portion of the Property dedicated to any governmental authority, the "Total Area") above the largest percentage of Total Area Controlled by a Person (the "Largest Owner"), but in any event, the Owners of more than 50% of the Total Area (e.g., if the Largest Owner Controls 90% of the Total Area, then the Owners of more than 95% of the total area within the Property are required to execute any amendment, but if the Largest Owner Controls 40%, then the Owners of more than 50% are required to execute any Amendment). Notwithstanding the foregoing, no amendment to this Declaration which places any new restrictions on any Lot, or otherwise materially adversely impacts the rights, or materially increases the obligation of the Owner of any Lot shall be effective against any such Lot unless the Owner of such Lot executes the written instrument which is recorded to effectuate such amendment.

ARTICLE 11 MISCELLANEOUS

11.1 Not a Common-Interest Community. It is not the Owners' intent that this Declaration constitute a "Declaration" or create a "Common-Interest Community" as those terms are defined under the Uniform Common-Interest Ownership Act, N.R.S. Chapter 116 (the "Act"). However, to the extent that this Declaration is deemed to create a Common-Interest Community under the Act, then this Declaration shall be deemed to create a "planned community" under the Act and not a "condominium," as those terms are defined by the Act. In such case, the planned community deemed to be created by this Declaration shall be exempt under the Act. In addition, the Owners acknowledge and agree that no master association shall be deemed to be created by this Declaration.

11.2 Estoppel Certificates. The Grantee shall, within fifteen (15) days of a written request of the applicable Burdened Owner, issue thereto or to any mortgagee, or to any other person specified by such requesting Burdened Owner, an estoppel certificate stating: (a) whether the Grantee knows of any default under this Declaration, and if there are known defaults, specifying the nature thereof; (b) whether to its knowledge this Declaration has been assigned, modified or amended in any way (and if it has, then stating the nature thereof); (c) that to the knowledge of the Grantee, as applicable, this Declaration as of that date is in full force and effect; and (d) such other matters as may be reasonably requested by the Burdened Owner or other person requesting the estoppel certificate.

11.3 No Partnership. Nothing contained in this Declaration and no action by the Owner of any Lot will be deemed or construed by any Owner or by any third Person to create the relationship of principal and agent, or a partnership, or a joint venture, or any association between or among any of the Owners of any of the Lots.

11.4 Severability. If any provision of this Declaration is, to any extent, declared by a court of competent jurisdiction to be invalid or unenforceable, the remainder of this Declaration (or the application of such provision to Persons or circumstances other than those in respect of which the determination of invalidity or unenforceability was made) will not be affected thereby and each provision of this Declaration will be valid and enforceable to the fullest extent permitted by law.

11.5 Captions. The captions of the paragraphs of this Declaration are for convenience only and are not intended to affect the interpretation or construction of the provisions herein contained.

IN WITNESS WHEREOF, the parties hereto have executed this Amendment No. 4 as of the date first above written.

SJP Reno Property, LLC

By: Edward St. John, LLC
Its: Manager

By: _____

Reno Land Development Company, LLC

By: _____
Chip Bowlby
Its: Manager

BT South, LLC

By: _____
Chip Bowlby
Its: Manager

WEST RENO WATER COMPANY, INC., a Maryland corporation

By: _____
Its: _____

Exhibit 2.3
Form of General Assignment and Bill of Sale

GENERAL ASSIGNMENT AGREEMENT AND BILL OF SALE

THIS GENERAL ASSIGNMENT AND BILL OF SALE is made effective the ____ day of _____, 2018 (“Effective Date”) by and between the RENO LAND DEVELOPMENT COMPANY, a Nevada limited liability company (“Assignor”) and TRUCKEE MEADOWS WATER AUTHORITY, a joint powers authority created pursuant to NRS Chapter 277 by the Cities of Reno and Sparks, and Washoe County (“Assignee”).

WITNESSETH:

Reference is made to that certain Agreement Regarding West Reno Water System Acquisition dated _____, 2018 (“Agreement”) by and between Assignor and Assignee, pursuant to which Assignor agreed to dedicate and convey to TMWA, at no cost, all right, title and interest, if any, of RLD in and to the Water Facilities owned as of the date thereof by RLD, entered into in connection with that certain Agreement for Water System Acquisition entered between Assignee and West Reno Water Company, Inc., pursuant to which West Reno agreed to sell and Assignee agreed to purchase certain water system facilities and assets in connection with the operation of a retail water sale and delivery system in or near Verdi, Nevada. As used herein, the term “Water Facilities” means all water supply, distribution and storage assets, including all mains, markers, conduits, pipes, pump stations, valve boxes, meters, fixtures, pipes, service lines, backflow prevention equipment, tanks, wells, and any other facilities or appurtenances used or intended to be used in connection with the operation of the West Reno water system.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignor hereby grants, assigns, transfers, conveys and delivers to Assignee, without representation or warranty except as otherwise provided in the Agreement, any and all of Assignor's right, title, interest, benefits and privileges, in and to the following:

1. All of Assignor’s right, title, and interest which Assignor may have in and to all of the Water Facilities to have and to hold the same unto Assignee, its successors and assigns, forever, and Assignee hereby accepts the sale, transfer, conveyance, and delivery of the Water Facilities, together with any assignment of existing and assignable third party warranties and representations that relate to completed or ongoing construction, reconstruction, upgrading, installation, expansion and repair of the Water Facilities.
2. All records, plans, plats, engineering and other drawings, designs, blueprints, plans, specifications, maintenance and operating manuals, engineering reports, calculations, computer models and studies relating to the Water Facilities, whether in written form or otherwise, in the possession of Assignor.
3. All electronic data, computer models and /or databases used to create geographic information, data and maps, distribution system design drawings, and as-built drawings with respect to the Water Facilities.
4. All necessary regulatory authorizations, governmental requirements, permits or approvals, permits, inspections, occupancy certificates, and similar approvals or documents issued by any applicable governmental entity or body, subject to all conditions, limitations or restrictions contained therein, necessary to construct, expand, repair, update, operate or maintain the Water Facilities.

Assignor hereby constitutes and appoints Assignee the true and lawful attorney of Assignor, with full power of substitution, in the name of Assignor or Assignee, but on behalf of and for the benefit of Assignee: (i) to demand and receive from time to time any and all of the Water Facilities and to make endorsements and give receipts and releases for and in respect of the same and any part thereof; (ii) to institute, prosecute, compromise and settle any and all actions or proceedings that Assignee may deem proper in order to collect, assert or enforce any claim, right or title of any kind in or to the Water Facilities; (iii) to defend or compromise any or all actions or proceedings in respect of any of the Water Facilities; and (iv) to do all such acts and things in relation to the matters set forth in the preceding clauses (i) through (iii) as Assignee shall deem desirable. Assignor hereby acknowledges that the appointment hereby made and the powers hereby granted are coupled with an interest and are not and shall not be revocable by it in any manner or for any reason.

This Assignment shall be binding upon and inure to the benefit of the successors, assigns, personal representatives, heirs and legatees of the respective parties hereto.

In the event of the bringing of any action or suit by a party hereto against another party hereunder by reason of any breach of any of the covenants, conditions, agreements or provisions on the part of the other party arising out of this Assignment, then in that event the prevailing party shall be entitled to have and recover of and from the other party all costs and expenses of the action or suit, including reasonable attorneys' fees.

This Assignment shall be governed by, interpreted under, and enforced and construed in accordance with the laws of the State of Nevada.

IN WITNESS WHEREOF, the parties hereto have executed this instrument as of the date first hereinabove written.

DATED effective as of _____, 2018.

ASSIGNOR: RENO LAND DEVELOPMENT COMPANY, a Nevada limited liability company By: _____ Its: _____ Dated: _____	Acknowledged and accepted: TRUCKEE MEADOWS WATER AUTHORITY By: _____ Its: _____
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Exhibit 3.1A
Form of Water Rights Deed
(To be attached)

Exhibit 3.1B
Form of West Reno Water Rights Deed
(To be attached)

Exhibit 3.3
Form of Water Facilities Easement

A.P.N.:

After Recordation Return To:
Truckee Meadows Water Authority
P.O. Box 30013
Reno, Nevada 89520-3013
Attn: Amanda Duncan, ARWP, Land Agent

The undersigned hereby affirms that this document submitted for recording does not contain the personal information of any person or persons per N.R.S. 239B.030.

**GRANT OF EASEMENT FOR
WATER FACILITIES**

THIS INDENTURE, made and entered into this ____ day of _____, 201__, by and between **(GRANTOR)** (hereinafter referred to as "Grantor"), and **TRUCKEE MEADOWS WATER AUTHORITY**, a Joint Powers Authority entity created pursuant to a cooperative agreement among the cities of Reno, Nevada, Sparks, Nevada and Washoe County, Nevada, pursuant to N.R.S. Chapter 277 (hereinafter referred to as "Grantee").

RECITALS

A. Grantor owns the real property located in the County of Washoe, State of Nevada, more particularly described as APN: (the "Grantor Property");

B. Grantee operates a municipal water system in Washoe County;

C. Grantor desires to grant an easement to Grantee over a portion of the Grantor Property, for the purposes of and on the terms and conditions set forth herein.

NOW THEREFORE, for good and valuable consideration, receipt of which is hereby acknowledged, the parties agree as follows:

GRANT OF EASEMENT

1. Grant of Easement. Grantor hereby grants to Grantee, its successors, assigns, agents, and licensees a permanent and non-exclusive easement and right of way to construct, alter, maintain, inspect, repair, reconstruct, and operate water system facilities, together with the appropriate mains, markers, conduits, pipes, generators, pump stations, valve boxes, meters, fixtures, and any other facilities or appurtenances deemed necessary or convenient by Grantee to provide water service (hereinafter called "Water Facilities"), over, across, upon, under, and through that portion of the Grantor Property more fully described on **Exhibit "A"** and shown on **Exhibit "A-1"** attached hereto and made a part hereof (the "Easement Area"). Additionally, Grantor grants to Grantee a permanent and non-exclusive easement to (i)conduct inspection and maintenance services on all exterior fire hydrants owned by Grantor and located

on Grantor Property that are not protected by approved backflow assemblies and (ii) the right to access the Grantor Property to the extent required to conduct such inspection and maintenance services. Nothing herein shall obligate Grantee to conduct such inspection and maintenance, such provisions to be set forth, if at all, in a separate agreement between the parties. All of the above-described fire hydrants located on Grantor Property shall remain private property and Grantor shall retain ownership of, and shall be solely responsible for, all other testing, inspections, repairs, replacement, costs, permitting and liability with respect to such fire hydrants. Grantor shall indemnify, defend, and hold Grantee harmless from any liability, action, damages, losses, or expenses arising from or related to the above-described fire hydrants, excluding claims to the extent caused by the negligence of Grantee in performing the routine maintenance and inspection, such claims against Grantee at all times limited by immunity available under NRS Chapter 41.

2. Access. Grantee shall have at all times ingress and egress to the Easement Area, including over the Grantor Property to the extent necessary, for the purposes set forth above.

3. Hold Harmless. Subject to the limitation of NRS Chapter 41 and Paragraph 4 below, Grantee shall be responsible for any loss, damage or injury suffered or sustained by Grantor for any damage to the personal property or improvements located on the Grantor Property, to the extent directly caused by any negligent act or omission of Grantee in constructing, maintaining, and operating the Water Facilities in the Easement Area.

4. No Interference. Grantor shall not, without Grantee's prior written consent (which consent shall not be unreasonably withheld), plant, erect or construct, nor permit to be planted, erected or constructed, within the Easement Area, any shrubs, trees, buildings, fences, structures, or any other improvement or obstruction which in the reasonable judgment of Grantee interferes with Grantee's access to and use of the Easement Area for the intended purposes, nor shall Grantor engage in or permit any activity to occur within the Easement Area which in the reasonable judgment of Grantee is inconsistent with Grantee's use of the Easement Area.

Notwithstanding the foregoing, Grantor may install or construct asphalt paving or standard concrete for purposes of providing parking within the Easement Area with Grantee's consent, which shall not be unreasonably withheld. Except as to landscaping, pavement or concrete otherwise permitted by Grantee pursuant to this Section, Grantee shall have the right, without payment, liability or notice to Grantor, to remove or clear any and all buildings, fences, structures, paving, combustible materials, trees, brush, debris, or any other obstruction from the Easement Area, which in the reasonable judgment of Grantee may interfere with or endanger Grantee's access to or use of the Easement Property or the constructing, altering, maintaining, inspecting, repairing, reconstructing and operating of the Water Facilities.-Except for the rights of Grantee contained herein, Grantor retains all rights of use and enjoyment of the Easement Area.

5. Reimbursement for Grantor Breach. Grantor shall reimburse Grantee for the reasonable costs incurred by Grantee as a result of Grantor's breach of any covenant of Grantor set forth herein.

6. Relocation of Easement Area and Water Facilities. Grantor may, at any time, request the relocation of the Easement Area and Water Facilities to a new location on the Grantor Property, and Grantee agrees to perform such relocation provided (i) such new location is suitable to Grantee for Grantee's intended purposes; (ii) Grantor convey to Grantee an equivalent easement in the new location; and (iii) Grantor pay for all reasonable out-of-pocket costs and expenses incurred by Grantee arising from or related to the relocation of the Water Facilities, whether on or off the Grantor Property, including design costs and retirement of existing facilities.

7. Grantor Warranties. Grantor warrants and represents to Grantee as follows:

a. Title to Grantor's Property. Grantor owns fee title to Grantor's Property and the Easement Area and there are no prior encumbrances, liens, restrictions, covenants or conditions applicable to the Easement Area which will frustrate or make impossible the purposes of the easements granted herein.

b. Authority. The person(s) signing this Easement on behalf of Grantor is duly authorized to so sign and has the full power and authority to bind Grantor, to sell and convey the Easement Area to Grantee, and to enter into and perform the obligations hereunder.

c. Defects. Grantor has no knowledge of any defects or conditions of the Easement Area or Grantor's Property which would impair Grantee's ability to enjoy the use and purpose of this Easement.

d. Legal Access. Legal and sufficient access to this Grant of Easement exists through either the access easement granted hereunder, another easement transferred to Grantee or from a public road.

e. Contracts or Leases. There are no leases, licenses, permits or other contracts with third parties which adversely affect any portion of the Easement Area to the extent that such would impair Grantee's ability to enjoy the use and purpose of this Easement.

f. Pending Litigation. Grantor is not aware of any pending or threatened litigation or regulatory actions regarding the Easement Area and the Easement Area is not subject to any foreclosure or deed in lieu of foreclosure.

THIS GRANT OF EASEMENT and the terms contained herein are granted in gross for the benefit of Grantee and shall run with the land and shall be binding upon and shall inure to the benefit of Grantor and Grantee and the successors, agents and assigns of Grantor and Grantee, and all rights herein granted may be assigned.

TO HAVE AND TO HOLD all and singular the said premises, granted together with the appurtenances, unto said Grantee, its successors, agents and assigns forever.

IN WITNESS WHEREOF, Grantor has caused these presents duly to be executed the day and year first above written.

GRANTOR

By: _____

Name: _____

Title: _____

[Notary Acknowledgement Follows]

STATE OF NEVADA)

) ss.

COUNTY OF WASHOE)

This instrument was acknowledged before me this _____ day of _____,
201____, by _____ as herein named.

Notary Public

Exhibit 3.5
Form of General Assignment and Bill of Sale

GENERAL ASSIGNMENT AGREEMENT AND BILL OF SALE

THIS GENERAL ASSIGNMENT AND BILL OF SALE is made effective the ____ day of _____, 2018 (“Effective Date”) by and between the BT SOUTH, LLC, a Nevada limited liability company (“Assignor”) and TRUCKEE MEADOWS WATER AUTHORITY, a joint powers authority created pursuant to NRS Chapter 277 by the Cities of Reno and Sparks, and Washoe County (“Assignee”).

WITNESSETH:

Reference is made to that certain Agreement Regarding West Reno Water System Acquisition dated _____, 2018 (“Agreement”) by and between Assignor and Assignee, pursuant to which Assignor agreed to dedicate and convey to TMWA, at no cost, all right, title and interest, if any, of Assignor in and to the Water Facilities owned as of the date thereof by Assignor, entered into in connection with that certain Agreement for Water System Acquisition entered between Assignee and West Reno Water Company, Inc., pursuant to which West Reno agreed to sell and Assignee agreed to purchase certain water system facilities and assets in connection with the operation of a retail water sale and delivery system in or near Verdi, Nevada. As used herein, the term “Water Facilities” means all water supply, distribution and storage assets, including all mains, markers, conduits, pipes, pump stations, valve boxes, meters, fixtures, pipes, service lines, backflow prevention equipment, tanks, wells, and any other facilities or appurtenances used or intended to be used in connection with the operation of the West Reno water system.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignor hereby grants, assigns, transfers, conveys and delivers to Assignee, without representation or warranty except as otherwise provided in the Agreement, any and all of Assignor's right, title, interest, benefits and privileges, in and to the following:

1. All of Assignor’s right, title, and interest which Assignor may have in and to all of the Water Facilities to have and to hold the same unto Assignee, its successors and assigns, forever, and Assignee hereby accepts the sale, transfer, conveyance, and delivery of the Water Facilities, together with any assignment of existing and assignable third party warranties and representations that relate to completed or ongoing construction, reconstruction, upgrading, installation, expansion and repair of the Water Facilities.
2. All records, plans, plats, engineering and other drawings, designs, blueprints, plans, specifications, maintenance and operating manuals, engineering reports, calculations, computer models and studies relating to the Water Facilities, whether in written form or otherwise, in the possession of Assignor.
3. All electronic data, computer models and /or databases used to create geographic information, data and maps, distribution system design drawings, and as-built drawings with respect to the Water Facilities.
4. All necessary regulatory authorizations, governmental requirements, permits or approvals, permits, inspections, occupancy certificates, and similar approvals or documents issued by any applicable governmental entity or body, subject to all conditions, limitations or restrictions contained therein, necessary to construct, expand, repair, update, operate or maintain the Water Facilities.

Assignor hereby constitutes and appoints Assignee the true and lawful attorney of Assignor, with full power of substitution, in the name of Assignor or Assignee, but on behalf of and for the benefit of Assignee: (i) to demand and receive from time to time any and all of the Water Facilities and to make endorsements and give receipts and releases for and in respect of the same and any part thereof; (ii) to institute, prosecute, compromise and settle any and all actions or proceedings that Assignee may deem proper in order to collect, assert or enforce any claim, right or title of any kind in or to the Water Facilities; (iii) to defend or compromise any or all actions or proceedings in respect of any of the Water Facilities; and (iv) to do all such acts and things in relation to the matters set forth in the preceding clauses (i) through (iii) as Assignee shall deem desirable. Assignor hereby acknowledges that the appointment hereby made and the powers hereby granted are coupled with an interest and are not and shall not be revocable by it in any manner or for any reason.

This Assignment shall be binding upon and inure to the benefit of the successors, assigns, personal representatives, heirs and legatees of the respective parties hereto.

In the event of the bringing of any action or suit by a party hereto against another party hereunder by reason of any breach of any of the covenants, conditions, agreements or provisions on the part of the other party arising out of this Assignment, then in that event the prevailing party shall be entitled to have and recover of and from the other party all costs and expenses of the action or suit, including reasonable attorneys' fees.

This Assignment shall be governed by, interpreted under, and enforced and construed in accordance with the laws of the State of Nevada.

IN WITNESS WHEREOF, the parties hereto have executed this instrument as of the date first hereinabove written.

DATED effective as of _____, 2018.

ASSIGNOR: BT SOUTH, LLC, a Nevada limited liability company By: _____ Its: _____ Dated: _____	Acknowledged and accepted: TRUCKEE MEADOWS WATER AUTHORITY By: _____ Its: _____
--	---

Exhibit 4.1

Form of Annexation Agreement

APN: 038-090-61, 038-120-12, 038-120-13, 038-120-03,
038-120-10 and APN 038-132-25

When Recorded, Return to:

Truckee Meadows Water Authority
Attn: Amanda Duncan, ARWP, Land Agent
P O Box 30013
Reno, NV 89520-3013
TMWA WO: _____

RETAIL WATER SERVICE AREA ANNEXATION AGREEMENT

THIS AGREEMENT, entered into this _____ day of _____, 20____ (“Effective Date”), by and between **TRUCKEE MEADOWS WATER AUTHORITY** (the “Authority”), a Joint Powers Authority entity created pursuant to a cooperative agreement among the cities of Reno, Nevada, Sparks, Nevada and Washoe County, Nevada pursuant to N.R.S. Chapter 277, and **BT SOUTH, LLC**, a Nevada limited liability company,, (referred to as “Developer” or ”Owner” in this Agreement and exhibits attached hereto, and together with Authority collectively hereinafter referred to as “Parties”);

WITNESSETH:

WHEREAS, Owner owns certain real property more particularly described on Exhibit “A” attached hereto and incorporated herein by this reference and comprised collectively of APN 038-090-61, 038-120-12, 038-120-13, 038-120-03, 038-120-10 and APN 038-132-25 (“Property” or “Owner’s Project”), located outside of Authority’s current retail water service area.

WHEREAS, Owner anticipates developing the Property in separate projects or phases as set forth on the conceptual site plan attached as Exhibit “B” (the “Site Plan”).

WHEREAS, Owner desires the Authority to expand its retail water service area to provide water service to the Property.

WHEREAS, Authority has determined it is willing to provide water service to the Property, and accordingly, Owner’s Property may be annexed into Authority’s retail water service area, on the terms and conditions set forth herein.

WHEREAS, on _____, Authority entered into an Agreement for Water System Acquisition (“West Reno Agreement”) with West Reno Water Company (“West Reno”) pursuant to which the Authority acquired and agreed to annex into the Authority system the water facilities assets of West Reno (the “West Reno System”), which system is located near or on portions of the Owner’s Property.

WHEREAS, on _____, 2018, Authority entered into an Agreement Regarding West Reno System Acquisition with Reno Land Development Company (“RLD”) and Owner (“WR Ancillary Agreement”), pursuant to which Owner agreed to convey certain real property and easements utilized in connection with the West Reno System.

WHEREAS, the West Reno System together with interconnections into and enhancements to TMWA's surface water system, when constructed, can be utilized by Authority as part of an integrated system to provide capacity for water service to residential and commercial development in the former West Reno service area and to Owner's Property. Without improvements to and interconnection into TMWA's surface water system, the West Reno System will have limited capacity for new services.

WHEREAS, for and in consideration of the performance of obligations under the WR Ancillary Agreement, Authority is willing to reserve 124 GPM of capacity in the West Reno System for service to a portion of the Property and to expand its retail water service area to include water service to the Property, and Owner agrees to the expansion of Authority's retail water service area upon the terms and conditions set forth in this Agreement, subject to and on the express condition that Owner fully and completely perform the terms and conditions set forth in this Agreement and the WR Ancillary Agreement.

NOW, THEREFORE, in consideration of the mutual covenants and conditions herein contained, the Parties agree as follows:

1. Expansion of Water Service area. Authority agrees to expand its retail water service area as set forth in Exhibit "A" attached hereto to provide water service for the Property; provided, however, that such expansion of the Authority's retail water service area is specifically conditioned upon execution of this Agreement by Owner and the Authority, and the complete and satisfactory performance of the terms and conditions in Section 2 herein. Owner agrees, for itself and its successors and assigns, that water service to and on the Property and Authority's obligations to provide new or modified water service to and on the Property shall be governed exclusively by this Annexation Agreement, Authority Rules and other written agreements between Authority and Owner. Except as expressly provided otherwise herein, applications for new or modified water service to any project on the Property shall be processed solely under Authority Rules. Provided that Authority performs its covenants and obligations in accordance with this Agreement and the WR Ancillary Agreement, Owner agrees that Authority shall have no liability, obligation or responsibility under any entitlements or any other agreements between West Reno or its predecessors, on one hand, and Owner and/or its predecessors, on the other, with respect to water service to the Property and, subject to the foregoing, Owner hereby releases and agrees to hold harmless Authority from and against any and all claims, liabilities, losses, damages, actions, or causes of action (in law or equity) of any kind or nature whatsoever, relating to arising directly or indirectly from or incident to any such agreements in connection with water service to the Property.

2. Conditions to Annexation. The Authority has determined that improvements and/or modifications to its Water System Facilities and/or certain conditions are required to expand its retail water service area to include the Property, and the following conditions in this Section 2 must be satisfied before water service is provided by Authority.

2.1 West Reno System Capacity Reservation And Intertie Facilities Improvements. Owner acknowledges that the West Reno System provides a finite capacity, the exact amount of which has not been determined by Authority and of which 483 GPM of maximum day demand ("MDD") is committed to existing or future West Reno Customers, excluding the Property. Subject to Section 2.3 of this Agreement, Authority agrees to reserve the first 124 GPM of MDD capacity remaining in the West Reno System, to the extent such capacity exists, for service to the projects described as South Village 1, South Village 2, South Village 3, Public Facility and Arterial Commercial on the Site Plan (the portion of the Property on which such projects are located referred to herein as the "Eastern Property"). The balance of available capacity within the West Reno System, if any, shall be available on a first come, first served basis to applicants for water service connecting into the West Reno System. Except as otherwise provided in Section 2.1.1, Authority's obligation to provide water service to the Property shall be limited to and in no event exceed the sustainable capacity of the West Reno System, whether through existing groundwater

wells and/or in conjunction with constructed, in-service Intertie Facilities Improvements or constructed, in-service Backbone Facilities Improvements, to produce water supply which meets or exceeds Authority's water quantity and quality requirements as determined in Authority's reasonable discretion. For purposes of this Agreement, i) the term "Intertie Facilities Improvements" means interconnections into Authority's surface water supply system intended to provide limited off-peak conjunctive use capacity, such improvements generally consisting of approximately 1,800 linear feet of 16" water main between Riverbelle mobile home park and the West Reno water system, a booster pump station and jack and bore under the UP railroad; and ii) the term "Backbone Facilities Improvements" means improvements to Authority's water system facilities intended to provide full design capacity to the Verdi area and provide a fully operation and a fully operational water distribution system, such improvements generally consisting of a 24" main across the Truckee River at Mayberry, expanded capacity at the existing US 40 Pump Station, approx. 6,600 feet of 16" main from Mesa Park/Mae Anne to Mogul, the Verdi Pump Station at Mogul, approx. 9,750 feet of 18" discharge main from the Verdi Pump Station to the Riverbelle Mobile Home Park including utilization of an existing casing under the Truckee River between River Oak and Riverbelle MHP and the proposed 1.5 MG Lower Verdi Tank including approx. 4,400 feet of 18" feeder main. Owner acknowledges and agrees that except as otherwise provided in Section 2.1.1, the water quality, quantity and capacity of the West Reno System must be tested and accepted by Authority, and developed and capable of being placed into service prior to and as a condition precedent of Authority entering any Water Service Agreement for an application for new water service to any portion of Owner's Property.

2.1.1 Service to First 124 GPM of MDD to the Eastern Property. Authority agrees that the Specified Rights (as defined in the WR Ancillary Agreement) shall be acceptable for dedication for the issuance of will-serve commitment letters for the first 124 GPM of MDD service to the Eastern Property, and further agrees Authority will not require dedication of additional surface or ground water rights to supplement the Specified Rights in excess of Rule 7 dedication requirements as of the Effective Date of this Agreement for service of the first 124 GPM of MDD to the Eastern Property, provided: 1) the application(s) for will-serve commitments using the Specified Rights are received by TMWA within three (3) years of the recordation of this Agreement; 2) marketable title to the applicable Specified Rights is conveyed to TMWA free and clear of liens and encumbrances; and 3) the underlying permits for the Specified Rights remain in good standing with the Nevada Division of Water Resources are the time of dedication. Any water resource offered for dedication for a will serve commitment, whether Specified Rights or otherwise, not dedicated in full conformance with the requirements in the preceding sentence will be subject to Authority's rules in effect at the time of dedication. In addition, and notwithstanding anything in this Agreement to the contrary, Authority agrees that the First 124 GPM of MDD to the Eastern Property shall not be subject to any charges, reimbursements, contributions or connection fees payable by BT South or its successors and assigns for the Intertie Facilities or Backbone Facilities, and the completion of the Intertie Facilities or Backbone Facilities will not be a required condition for service of the First 124 GPM of MDD to the Eastern Property. For purposes of this Section, the term "First 124 GPM of MDD to the Eastern Property" means the first 124 GPM of MDD supply sought or provided from the West Reno System to the Eastern Property and for which a corresponding will serve commitment has been issued on Specified Rights dedicated in accordance with the first sentence of this Section 2.1.1.

2.2 Additional Conditions Regarding Western Property. The Authority has determined that additions, improvements and/or modifications to the West Reno System and Authority's water system facilities are required to expand its retail water service area to that portion of the Property other than the Eastern Property (such portion referred to as the "Western Property"), the specific details of which have yet to be identified. In addition to the other conditions set forth in this Agreement, Authority's obligation to provide water service to the Western Property shall be conditional upon the following: 1) the Intertie Facilities Improvements shall be completed, dedicated and in service prior to execution of a Water Service Agreement for new service to or on the Western Property; 2) development of the Western Property

shall be subject to, and all applicants for new service on the Western Property shall pay, all applicable Authority WSF Water System Facility Charges, including without limitation the Area 7 Facility Charge, in effect at the time of execution of a Water Service Agreement; 3) the Western Property shall be subject to and all applicants for new service to the Western Property shall be required to pay at the time of execution of a Water Service Agreement a prorated share of other water system facilities additions, improvements or modifications to the West Reno System required to expand service to the Western Property and adjoining properties to the south and west (referred to herein as the “West Reno Expansion Facilities”); and 4) Owner shall dedicate to Authority such easements and other property located on the Western Property necessary for the construction and operation of the West Reno Expansion Facilities, such dedications to be made in accordance with Authority’s Rules.

2.3 WR Ancillary Agreement. Owner and RLD shall each have fully and timely performed all obligations required of each of them under the WR Ancillary Agreement.

2.4 Additional Conditions Regarding Authority’s Water System Facility Charges (“WSF Charges”). Subject to Section 2.3 of this Agreement, Authority agrees that in lieu of WSF Fees otherwise applicable under Authority Rules, a modified connection fee shall apply to the first 124 GPM of MDD (“GPM Limit”) developed on the Eastern Property, such modified connection fee equal to \$4,866 per Residential Unit and \$16,521 per GPM for commercial uses (“Modified BT South Connection Fee”). The Modified BT South Connection Fee shall be paid no later than ten (10) days prior to the date a meter is to be installed for water service to the applicable parcel receiving residential or commercial service, and must be paid prior to and as a condition of Authority having any obligation to commence water service to the applicable parcel. Any new or modified service on the Property which in the aggregate (considering all service to the Property) exceeds the GPM Limit shall be subject to all fees and charges, including WSF Charges, applicable to new development under Authority Rules. The Modified BT South Connection Fee is appurtenant to, and may only be used in connection with development on, the Property, and is not transferrable or assignable for use on any other property. For purposes of this Agreement, the term “Residential Unit” means: i) one (1) single family dwelling or building (commonly referred to as a single family residence), whether attached or detached; ii) one (1) apartment unit; iii) one (1) condominium unit; or iv) one (1) of such other building occupied for residential purposes.

3. Conditions of Water Service. Owner acknowledges and agrees that this Agreement merely addresses conditions required for the expansion of Authority’s retail water service area, and that Owner must independently comply with all applicable requirements in Authority’s Rules before the Authority has any obligation to provide water service to the Property, including without limitation (i) submitting and receiving approval from the Authority of appropriate applications for service; (ii) dedicating sufficient Water Resources to the Authority and receiving a Will Serve Commitment for service to the Property; (iii) in addition to any dedication requirements in Section 2 of this Agreement, dedicating appropriate easements and other real property required for service; (iv) in addition to any dedication requirements in Section 2 of this Agreement, installing, constructing and dedicating subdivision or on-site water system facility additions, improvements or modifications or, except as otherwise provided in Section 2.1.1 above, further additions, improvements, extensions or modifications to Authority’s Water System Facilities as necessary to provide the requested new service(s) or modification of service(s) to the Property (excluding, with respect to the first 124 GPM of MDD supply to the Eastern Property, the Intertie Facilities Improvements and Backbone Facilities Improvements); and (v) satisfying such other terms and conditions pursuant to the Authority’s Rules and any requirements of any local governmental entity with jurisdiction over the Property as necessary to obtain a Will-Serve Commitment letter from the Authority for the delivery of water to the Property. Owner shall submit such applications and execute such other documents required by Authority’s Rules and procedures prior to being eligible for the delivery of water to the Property. All such conditions, dedications, additions, improvements, extensions and modifications shall be made in accordance with the

Authority's Rules and regulations in effect at the time Authority and Owner enter into any agreement or agreements for the specific dedication, additions, improvements or modifications required to provide water service to the Property.

4. General Terms

4.1 Owner acknowledges and agrees that it is entering this Agreement voluntarily, that the expansion of Authority's service area is specifically conditioned on Owner's performance of all terms and conditions contained herein, and that if any of the provisions of this Agreement are deemed unenforceable or if Owner fails to perform any of its obligations hereunder, Authority is under no obligation to expand its service area to include any portion of the Property for which the Authority has not previously entered an agreement to provide water service. Nothing in this paragraph shall be construed to grant Owner a right, and Owner specifically waives any right, if any exists, to dispute any of the terms and conditions of this Agreement under Rule 8 in Authority's Rules. Upon annexation of the Property, the Parties acknowledge and agree that both are bound by the terms and conditions of the rules and regulations adopted by Authority, as the rules and regulations may be amended from time to time, and as such rules may exist at the time service is applied for or requested for the Property or certain phases of the Property.

4.2. Any written notices or communications required hereunder shall be served by placing such notices in the U.S. Mail, postage prepaid, properly addressed to:

To: Authority	Attn. General Manager P.O. Box 30013 Reno, NV 89520-3013
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To: Owner	Attn.: Chip L. Bowlby 6001 Talbot Lane Reno, Nevada 89509
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4.3. This Agreement shall inure to and be binding upon the parties, their respective successors and assigns.

4.4. This Agreement shall not be modified except in writing, signed by all parties.

4.5. This Agreement represents the entire agreement between the Parties related to the expansion of the Authority's retail water service area and supersedes all prior representations and agreements whether written or oral with respect to the covenants and conditions provided herein; provided, however, that the obligations set forth in this Agreement shall be in addition to, and do not supersede or replace, any obligations that may be imposed upon Owner under Authority's Rules.

4.6 This Agreement and terms and conditions herein shall run with the land and be binding upon and inure to the benefit and burden of the parties to the agreement and their heirs, successors and assigns and any future owners of the Property.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement the day and year first above written.

**TRUCKEE MEADOWS WATER
AUTHORITY**

BT SOUTH, LLC

By: _____

By: _____

Name: _____

Name: _____

Title: _____

Title: _____

STATE OF NEVADA)

) ss

COUNTY OF WASHOE)

This instrument was acknowledged before me on _____, 20____, by
_____ as _____, TRUCKEE
MEADOWS WATER AUTHORITY, on behalf of said Joint Powers Authority therein named.

NOTARY PUBLIC

STATE OF NEVADA)

) ss

COUNTY OF WASHOE)

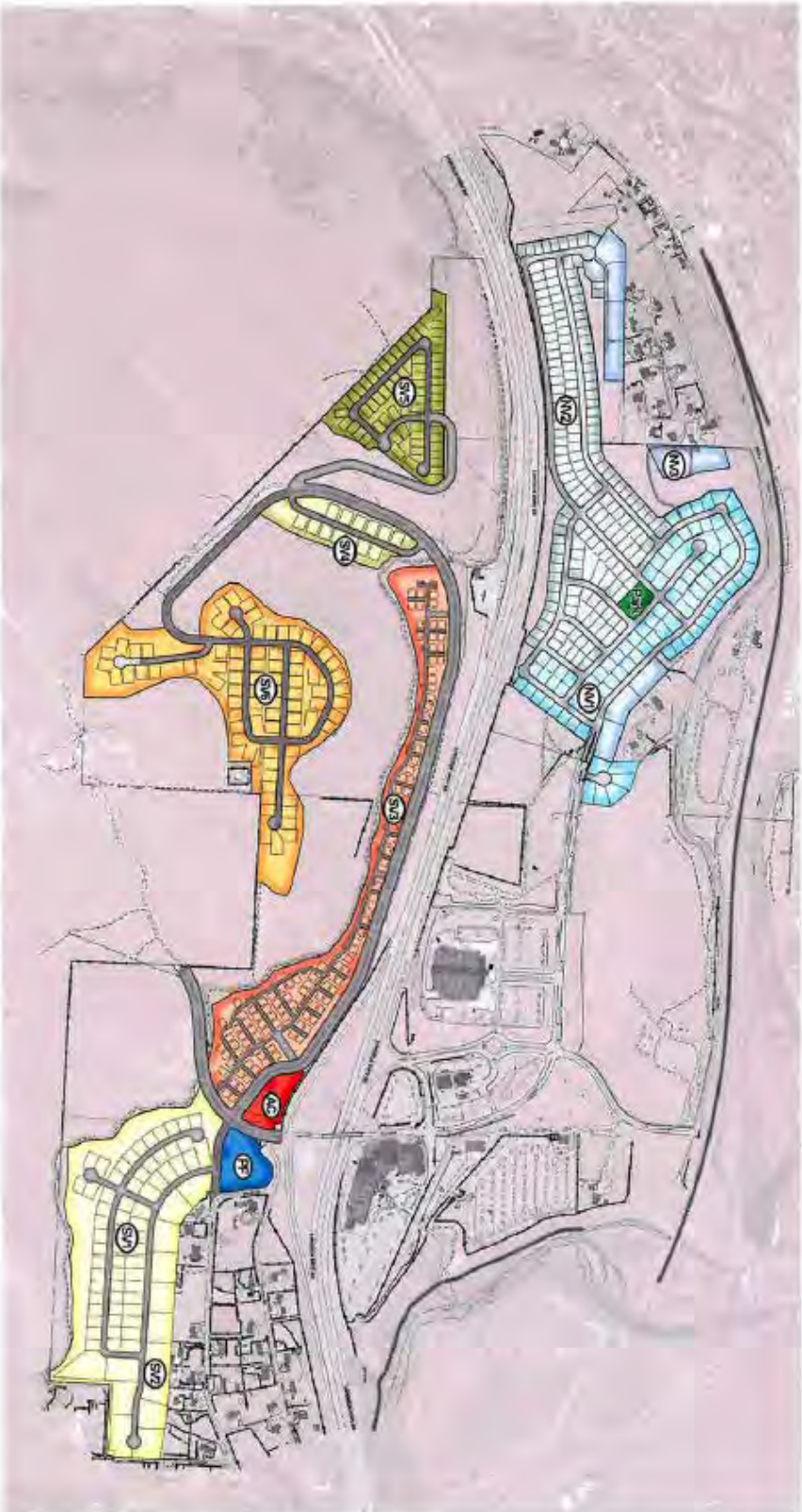
This instrument was acknowledged before me on _____, 20____, by
_____, as _____, of
_____ on behalf of said _____ therein named.

NOTARY PUBLIC

Exhibit "A" to Annexation Agreement
Description of Annexed Property

Exhibit "B" to Annexation Agreement
Site Plan

RENO LAND DEVELOPMENT CO
CONCEPTUAL SITE PLAN
MERIDIAN 120
RENO, NEVADA



South Total Units = 563
North Total Units = 273
Total Units = 836

- (SV1) South Village 1 (SFR-985x110)
25.3 acres - 64 lots - 23 d.u.
- (SV2) South Village 2 (LLR 1 acre)
16 acres - 14 lots - 09 d.u.
- (SV3) South Village 3 (AC - Triplex)
28.9 acres - 380 Units - 11 d.u.
- (SV4) South Village 4 (SFR-985x110)
7.1 acres - 13 lots - 16 d.u.
- (SV5) South Village 5 (SFR-660x100)
16 acres - 62 lots - 39 d.u.
- (SV6) South Village 6 (SFR-985x110)
39 acres - 87 lots - 2 d.u.
- (NV1) North Village 1 (SFR-660x100)
28.6 acres - 88 lots - 31 d.u.
- (NV2) North Village 2 (SFR-660x100)
38.4 acres - 176 lots - 45 d.u.
- (NV3) North Village 3 (LLR 1 acre)
97 acres - 516 lots - 09 d.u.
- (AC) Arterial Commercial
2.3 acres
- (PF) Public Facility
3.1 acres





STAFF REPORT

TO: Board of Directors
FROM: Mark Foree, General Manager
DATE: March 12, 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*), and the Customer Services Report (*Attachment C*).

Also included in your agenda packet are press clippings from February 15, 2018 through March 14, 2018.

Water Project Review Update: Meetings regarding changes to NAC regulations are ongoing.



STAFF REPORT

TO: Board of Directors
THRU: Mark Foree, General Manager
FROM: Scott Estes, Director of Engineering
BY: Bill Hauck, Senior Hydrologist
DATE: March 12, 2018
SUBJECT: March 2018 Operations Report

Summary

- Although not completely over, this winter will go down in the books as a dry one
- Snowpack is still significantly below normal and runoff projections are below average
- All federally-operated reservoirs are still at maximum flood control elevations
- TMWA's TROA storage provides the region a huge buffer against dry years like this one
- Normal Truckee River flows are expected over the course of the next two years
- TMWA is positioned exceptionally well from a water supply perspective (despite snowpack conditions this year)
- Hydro revenue for February 2018 was \$253,585

(A) Water Supply

- **River Flows** - Truckee River flows at the CA/NV state line were approximately 500 cubic feet per second (CFS) this morning. Flows are expected to remain in this range either until springtime runoff occurs or the region experiences a significant precipitation event.
- **Reservoir Storage** - The elevation of Lake Tahoe is currently 6228.00 feet. This is 1.10 feet from completely full (6229.10 feet). In addition to Donner and Independence lakes, all federally-owned and operated reservoirs are still at their respective wintertime operating elevations. Storage values as of 3/12/18 are as follows:

Reservoir	Current Storage (Acre-Feet)	% of Capacity (Percent)
Tahoe	609,300	82%
Boca	25,679	63%
Donner	3,922	41%
Independence	14,837	85%
Prosser	9,414	32%
Stampede	205,216	91%

Besides the storage in Donner and Independence lakes, TMWA has approximately 12,600 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 31,180 acre-feet as of this morning.

- **Snowpack** - Sierra snowpack is still significantly below normal for this time of the year. The region got a solid boost from a series of winter storms at the beginning of the month which improved conditions noticeably, but snowpack is still only 54% of normal in the Truckee Basin and 42% of normal in the Lake Tahoe Basin as of this morning. With the winter winding down and spring around the corner it is safe to say that the winter of 2017-2018 will go down in the books as below average. How much below average remains to be seen as another series of winter storms is slated to roll through the Sierra over the next five to seven days. But at this point it is statistically improbable that the region will end up with an average snowpack by April 1st.
- **Outlook** - Despite the less than stellar snowpack and the correspondingly low projections for springtime runoff, the region is still positioned extremely well from a water supply perspective for 2018 and beyond. Lake Tahoe is still as high as is practical for this time of the year, and all other federally-operated reservoirs have as much water in storage as is legally permissible (at flood control levels). So, with full reservoir storage upstream, we can still expect normal Truckee River flows at the CA/NV state line for the next couple of years (regardless of the how much snow we end up with on April 1st).

(B) Water Production

Demand - Customer demands are still at wintertime lows. Consumption averaged 34 MGD last week. Year-to-date consumption is 101.3% of 2017. Surface water made up 95% of TMWA's raw water supply and groundwater the other 5% from production wells located throughout TMWA's service territory. Recharge averaged 2.1 MGD last week.

(C) Hydro Production

Generation - Average Truckee River flow at Farad (CA/NV state line) for the month of February was approximately 405 cubic feet per second (CFS). All three of TMWA's hydropower plants were on-line and available for the entire month. Statistics for February are as follows:

Hydro Plant	Days On-Line	Generation (Megawatt hours)	Revenue (Dollars)	Revenue (Dollars/Day)
Fleish	28	1,427	\$ 102,393	\$ 3,657
Verdi	28	1,254	\$ 89,181	\$ 3,185
Washoe	28	863	\$ 62,011	\$ 2,215
Totals	84	3,544	\$ 253,585	\$ 9,057



STAFF REPORT

TO: Chairman and Board Members
THRU: Mark Foree, General Manager
FROM: John Zimmerman, Manager, Water Resources
DATE: 12 March 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	5,409.41 AF
Purchases of water rights	0.00 AF
Refunds	0.00 AF
Sales	— 78.28 AF
Adjustments	0.00 AF
Ending Balance	5,331.13 AF

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

WATER SERVICE AREA ANNEXATIONS

There have been no annexations since the date of the last report.



STAFF REPORT

TO: Board of Directors
THRU: Mark Foree, General Manager
FROM: Marci Westlake, Manager Customer Service
DATE: March 21, 2018
SUBJECT: February Customer Service Report

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

Ombudsman

Customer called and was unhappy that we shut her water off due to leak, we called and explained our process. Still not happy that we turned her water off.

Customer called and wanted to tell us that he appreciated our professionalism and TMWA rates. Two people called and did not leave messages.

Communications

Customer outreach in February included:

- Shawn Stoddard presented to the Sparks Kiwanis Club at Denny's about Drought and Growth, 20 people attended.
- Scott Knecht presented to the Mountain View Montessori School at Chalk Bluff about water treatment/quality, 8 kids and 2 adults attended.
- John Enloe presented to the Multi-State Salinity Coalition in Las Vegas about Nevada reclaimed water issues/IPR, 75 people attended.

Conservation (January 1 – February 28)

- 3 Water Watcher Contacts
- 185 Water Usage Reviews

Customer Calls – February

- 7,009 phone calls handled
- Average handling time – 4 minutes, 34 seconds per call
- Average speed of answer – 15 seconds per call
-

Billing – February

- 126,977 bills issued
- 4 (<.1%) corrected bills
- 16,308 customers (12.9%) have signed up for paperless billing to date.

Service Orders –February (% is rounded)

- 6,142 service orders taken
- 3,442 (56%) move-ins / move-outs
- 554 (9%) cut-out-for-non-payment and cut-in after receiving payments, including deposits and checks for tamper
- 736 (12%) zero consumption meter checks
- 275 (5%) re-read meters
- 313 (5%) new meter sets and meter/register/ERT exchanges and equipment checks
- 266 (4%) 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
- 494 (8%) various other service orders

Remittance – February

- 22,535 mailed-in payments
- 22,178 electronic payments
- 23,316 payments via RapidPay (EFT)
- 15,689 one-time bank account payments
- 5,614 credit card payments
- 3,083 store payments
- 1,773 payments via drop box or at front desk

Collections –February

- 11,366 accounts received a late charge
- Mailed 5,719 10-day delinquent notices, 4.5% of accounts
- Mailed 1,137 48-hour delinquent notices, 0.9% of accounts
- 176 accounts eligible for disconnect
- 172 accounts actually disconnected (including accounts that had been disconnected-for-non-payment that presented NSF checks for their reconnection)
- 0.14% write-off to revenue

Meter Statistics – Fiscal Year to February 28

- 0 meter retrofits completed
- 914 meter exchanges completed
- 1,483 new business meter sets completed
- 124,309 meters currently installed



TMWA Board Meeting

Wednesday, March 21, 2018

Press Clippings

February 15, 2018 – March 14, 2018



Volunteers protect Truckee River ecosystem by removing invasive plants

by Kristen
Edwards

*Volunteers digging up invasive
trees.jpg*



[VIEW PHOTO GALLERY](#)

4 photos

AA

RENO, Nev. (News 4 & Fox 11) —

About 60 volunteers gathered Saturday morning to rip out invasive plants along the Truckee River.

Executive Director of the [Truckee Meadows Park Foundation](#), Nathan Daniel, said that the two invasive species along the river bank are the Tree of Heaven and the Siberian Elm.

He noted that they're well-adapted to live in the area, but they displace the native species and hurt the ecosystem.

The Siberian Elm will produce millions of seeds soon, so volunteers focused on removing their seeds to prevent further reproduction.

They also removed the trees themselves, some of which were only small sprouts.

Nevada's Water Needs in Winters Like These

Posted: Feb 19, 2018 1:54 PM PST Updated: Feb 19, 2018 1:57 PM PST
By John Potter

CONNECT



Even though Sunday night's snow was nice, we're still down 1.40" of liquid precipitation at the Reno-Tahoe International Airport since the beginning of the water year...and we're running out of time before it ends. This winter we're coming up short again, bringing above-average concern.

Does it seem to you that too-dry conditions are the rule and not the exception? It sure does to green guru and urban farmer Tom Stille, co-owner of Reno's River School Farm. That snow Sunday night? Tom says it wasn't enough: "That snow is not going to be worth very much precipitation when it gets into the soil. Spring seasons are coming early and Autumns are coming later, so water's a real issue for the Truckee Meadows in the high desert."

This is the season Tom takes it easy...it's typically the wettest time of the year. But it seems a wet winter is becoming an aberration. And your landscaping needs water...now. As he told us, "Some of the evergreen trees that need some more water in the wintertime, they're the ones that are more critical."

When it comes to our own little pieces of paradise, our gardens and trees, Tom says two big things come into play. Even though trees and shrubs are dormant, they still need water. He says on the first warm day, "Turn your water system back on and then irrigate through the day. Water all your valves really well and then turn it off at night and drain it again." Second, your choice of plants is also a low water strategy. Nevada's native plants are the hardiest when it comes to dry winters like these.

On dry winters this passionate plant guru goes into survival mode, with a simple yet ingenious water capture system. As Tom showed us, "Water comes off the roof, and it's stored in this tank...which we paint black on the south side of the house for solar heat. So here we have water in the wintertime that we water our plants with."

Yes for most this winter, you and I have to pick up the slack...and at least water our trees. Here's hoping for a 2018 "Miracle March."

Report: TMWA Can Feasibly Operate Through a Drought

February 21, 2018 Carla O'Day

Advertisement



The Truckee River during a drought year.

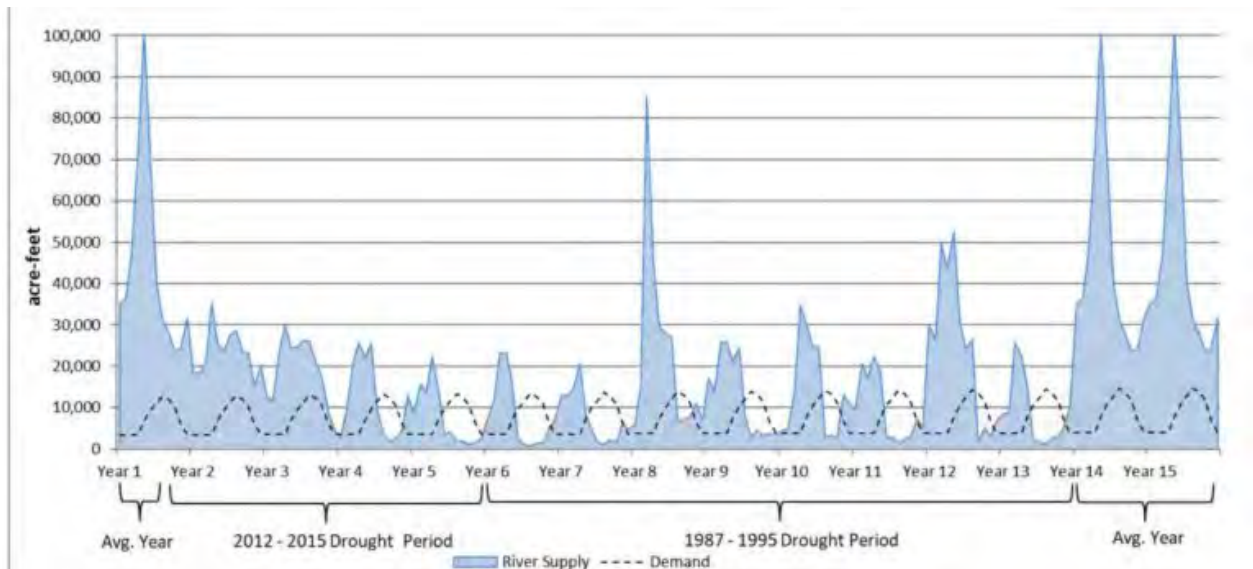
A drought contingency project that contains information about how climate change may impact regional water supplies, among other things, was heard Wednesday by the Truckee Meadows Water Authority (TMWA) board.

TMWA recently completed a two-year response plan with help from a Bureau of Reclamation grant. The bureau manages water and power in the western United States.

TMWA can feasibly operate throughout a drought by relying on reserves, groundwater, and sufficient upstream storage, said Laine Christman, TMWA resource economist and conservation coordinator.

"It's a stress test of TMWA's system based on a hydraulically-plausible scenario that could occur as a result of climate change," Christman said.

The project was a technical assessment of TMWA's resiliency to simulated extreme droughts that could be related to global warming. The study evaluates the drought scenario within a decision support system model that balances monthly water supplies against customer demands.



Monthly Floriston rate water flows and TMWA customer demands. Image: TMWA

Christman said the study used projected population data through 2031 published in its water resource plan.

"The results suggest that regardless of customers' ability to reduce water usage, available water supplies would be sufficient to meet demands over the 15-year simulated drought," a report summary said. "The model indicates TMWA can feasibly operate through a drought due to climate change.

"While groundwater is a critical resource during drought there is still potential for recharge in every year of study period. Despite reduced inflows into reservoirs, accumulation of upstream storage is projected to still occur."

Data on recent drought periods show drought reserves are typically not required until the third year of a multi-year drought, the summary said.

The project was funded jointly by TMWA and the Bureau of Reclamation under the WaterSMART Grant. The project's report will be submitted to the bureau next month to complete the financial assistance agreement.

TMWA, University of Nevada, Reno, and Desert Research Institute conducted the study.

Formerly known as Challenge Grants, WaterSMART Grants provide 50/50 cost share funding to water districts or local governments with water or power delivery authority. Projects should seek to conserve and use water more efficiently, increase the use of renewable energy, protect endangered species, or facilitate water markets, according to the Bureau of Reclamation

Tahoe Ski Resort Develops Plan to Adapt to Low-Snow Seasons

A Lake Tahoe ski resort is developing a plan to improve skiing during low-snow seasons by removing boulders and trees from several runs.

Feb. 21, 2018, at 4:18 p.m.

AP

RENO, Nev. (AP) — A Lake Tahoe ski resort is developing a plan to improve skiing during low-snow seasons by removing boulders and trees from several runs.

Heavenly Mountain Resort's plan calls for widening a dozen trails and removing potentially hundreds or even thousands of trees.

The hope is to reduce skier and snowboard traffic bottlenecks on busy days at the South Lake Tahoe resort straddling the [California-Nevada](#) line. Low-snow seasons are expected to become more common due to climate change.

The Forest Service is currently reviewing the plan. It determined in a draft environmental assessment the plan would have no significant environmental impacts. The assessment is now subject to a 45-day public comment period.

Lewis Feldman of Zephyr Cove is among those who support the move.

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Feldman, a Heavenly pass-holder for 40 years, told the Reno Gazette Journal that he's witnessed firsthand how climate change has reduced the reliability of ideal ski conditions at Tahoe.

"The snow levels have risen, the amount of accumulation has become far more variable and the ski experience has been significantly impacted," Feldman said.

Removing boulders and downed trees will make additional runs skiable even in low-tide conditions.

"This isn't rocket science," Feldman said.

In the hazard removal areas, boulders would be blasted with explosives to a height of 12 to 18 inches (30 to 46 centimeters) and moved by hand or equipment. Stumps would be ground or cut to a height of less than 6 inches (15 centimeters).

By making terrain more skiable with less snow the operators reduce the amount of snowmaking necessary to open runs.

"The height of these natural features can require up to five feet (1.5 meters) or more of snow coverage before runs can be opened," the draft assessment states. "During low snow years, a great deal of energy and water resources for snowmaking is required to provide enough snow on these trails so they can be safely opened."

Twenty-two of the 25 public comments on the initial plan didn't include any objections.

But Elizabeth Kingsland of the Nevada Department of Conservation and Natural Resources questioned whether analysis of the potential impact on whitebark pine was sufficient. She said the project would result in the loss of more than 6 acres (2 hectares) of the trees.

"It appears that the impacts cannot be fully stated without properly evaluating the long-term effects of removing thousands of healthy whitebark pine trees from the part of the Lake Tahoe Basin with the healthiest whitebark pine population," Kingsland wrote.

The Forest Service responded by stating the removal would be a small portion of the total whitebark population.

"The proposed action may affect individuals, but it is not likely to accelerate the trend toward federal listing or result in loss of viability for whitebark pine," the agency said.

—

Information from: Reno Gazette-Journal, <http://www.rgj.com>

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Lahontan cutthroat returning to Fallen Leaf Lake



A tagged Lahontan cutthroat trout in Glen Alpine Creek in the Lake Tahoe Basin is documented by a U.S. Fish and Wildlife Service biologist. “Decades of over-fishing and habitat degradation in the Lake Tahoe Basin caused these unique native fish to vanish from the system all the way back in the 1930s, and now we’re working to bring them back where they belong,” said Stephanie Byers, a senior fisheries biologist for the Lahontan National Fish Hatchery Complex, in Gardnerville, Nevada. Credit: USFWS

“We knew early on that if our partners could get Lahontan cutthroat trout back into their historic habitat and work to give them a fighting chance, they’d possibly be able to recover on their own.”

**— Stephanie Byers, biologist,
Lahontan National Fish Hatchery**

By Dan Hottle
February 22, 2018

With a little help from state and federal fisheries biologists, highly-revered Lahontan cutthroat trout that disappeared from a California alpine lake more than 80 years ago are making their way back home.

“Decades of over-fishing and habitat degradation in the Lake Tahoe Basin caused these unique native fish to vanish from the system all the way back in the 1930s, and now we’re working to bring them back where they belong,” said Stephanie Byers, a senior fisheries biologist for the Lahontan National Fish Hatchery Complex in Gardnerville, Nevada, which has been raising a broodstock of the famed species since 1995.

Operating under a new fisheries conservation agreement with the California Department of Fish and Wildlife that was signed last May, the hatchery complex and its partners have ramped up efforts to reintroduce threatened Lahontan cutthroat trout back into the Fallen Leaf Lake watershed that neighbors Lake Tahoe. Restoring the fish in the lake began in 2002 as one of several short-term conservation tasks outlined in the multi-agency Truckee River Short-Term Action Plan.



Lahontan National Fish Hatchery Complex fishery biologists Jason Smith (left) and Thomas Bland search for Lahontan cutthroat trout in Glen Alpine Creek. Biologists use snorkeling equipment to learn more about the reintroduced species’ spawning behavior in the Fallen Leaf Lake system. Credit: Dan Hottle/USFWS

This year, the complex staff and partners are operating under a new, five-year action plan. According to biologists, returning the native trout species back into a high mountain lake has not been without challenges: The oligotrophic, or low nutrient production, characteristics of the crystal clear, 6,300-foot elevation lake means there’s less for newly-minted and stocked young Lahontan cutthroat trout to eat.

Additionally, the introduction of non-native species such as rainbow, brown and mackinaw, or lake trout, into the system nearly a century ago means there’s an increased risk of hybridization, along with an increased risk of the Lahontan cutthroat trout becoming food themselves.



Lahontan National Fish Hatchery Complex fishery biologists Jason Smith (left), Roger Peka and Thomas Bland (right) electrofish the mouth of Glen Alpine Creek that leads to Fallen Leaf Lake. The fisheries crews are hoping to learn more about the spawning behavior of reintroduced Lahontan cutthroat trout in the system. Credit: Dan Hottle/USFWS

“Lahontan cutthroat trout recovery in general is particularly challenging due to the large complex nature of the watersheds, especially in the Lake Tahoe Basin,” said Sarah Mussulman, the Department’s senior environmental scientist. “The number and diversity of non-native species present in the Lahontan cutthroat trout’s historic habitat and the ability for them to interbreed with other non-native trout species such as rainbow trout adds another layer of challenges.”

As part of the recent agreement, the California Department of Fish and Wildlife receives Lahontan cutthroat trout eggs from the hatchery and raises the species in its American River Hatchery in Gold River, California to help restore recreational fisheries in the eastern Sierra region.

“We knew early on that if our partners could get Lahontan cutthroat trout back into their historic habitat and work to give them a fighting chance, they’d possibly be able to recover on their own,” said Byers. “That meant suppressing non-native trout species and creating a niche for them in their native environment with improved stocking management.”

Several years of research showed that in order for young, reintroduced Lahontan to have a better chance at surviving, more strategic stocking methods needed to be incorporated.



A non-native lake trout that had recently preyed upon a juvenile Lahontan cutthroat trout is removed from a gill net by a biologist in Fallen Leaf Lake. Credit: USFWS

“Rather than stocking large numbers of Lahontan cutthroat trout at a time in one portion of the lake, our crews now stock smaller batches more frequently throughout areas of the lake where there is more natural refugia -- places for them to hide,” said Service fishery biologist Jason Smith. “In addition, we wait until the summertime so that we can stock larger Lahontan cutthroat trout into the warmer, upper thermocline layer of the lake at a time in the season when predatory lake trout are down deeper in colder waters.”

Smith said the changes in stocking locations and timing afforded fish a critical adjustment period to acclimatize to the lake and more quickly seek cover from predators, giving them a much-needed boost toward survival. The results paid off quickly. In 2012 after reintroduction approaches were refined, the lake’s population numbers began to slowly turn in favor of Lahontan cutthroat trout.

That same year, biologists saw that stocked and tagged Lahontan cutthroat trout were observed attempting to spawn into Glen Alpine Creek at the lake’s inlet once again.

“This summer within three days of stocking, we observed hundreds of cutthroat gathering at the mouth of Glen Alpine Creek,” said Smith. “It was the first time we’d observed that many stocked Lahontan cutthroat trout migrating all the way across the lake to instinctually seek out their historic stream habitat.”

Not only are biologists excited, local residents who support the conservation effort to restore Fallen Leaf’s native fish are monitoring the success as well.



Lahontan National Fish Hatchery Complex crews install a weir at the mouth of Glen Alpine Creek. The fish barrier is installed once a year to prevent non-native rainbow trout from hybridizing with spawning Lahontan cutthroat trout upstream of Fallen Leaf Lake. Credit: USFWS

“The agency partners have taken great steps to work with local homeowners and other interested groups for the success of this effort as well as for other Lahontan cutthroat trout recovery efforts in the Tahoe Basin,” said Sarah Muskopf, an aquatic biologist with the U.S. Forest Service’s Lake Tahoe Basin Management Unit. “The long-term outcome of returning these large, lake-dwelling cutthroats is something we’re all excited to see.”



Erik Horgen (right), a Lahontan National Fish Hatchery Complex fishery biologist, delivers non-native lake trout removed from Fallen Leaf Lake to Raymond Trevino, director of Catholic Charities' St. Vincent Dining Room in Reno, Nevada. Trevino, who has been serving meals to the city’s less fortunate for the past 25 years, said he supports the hatchery’s conservation mission to restore native Lahontan cutthroat trout to California and Nevada waters. Credit: Dan Hottle/USFWS

"We're thrilled to be a small part of the effort to bring back the lake's native species," said Dave Bunnett, director of Stanford University's Sierra Camp, which incorporates information about the restoration project into naturalist programs it provides for more than 3,000 camp guests each year. The university owns lakefront property including portions of Glen Alpine Creek where the hatchery complex installs and monitors a fish barrier, called a weir, every season to block the spawning of non-native trout.

"It's always fun when we get to observe (U.S.) Fish and Wildlife Service biologists stocking fish from our sailing dock, knowing that we're helping to bring back a native fish that can only be found in this part of the world," Bunnett added.

Lake residents and other visitors who come from afar for the iconic species also have the chance to help the recovery effort by submitting fish measurements and other critical data on Lahontan cutthroat trout they catch to Service biologists.

Anglers can call a hotline to report Lahontan cutthroat trout catch in the lake at (775) 861-6355.

Returning Lahontan cutthroat trout to Fallen Leaf Lake revives a historic fishery, improves shoreline angling opportunities, and provides the chance to reinvigorate the watershed's ecosystem as a whole.

"The return of spawning Lahontan cutthroat trout is not only historic for the lake, it also means that nesting bald eagles and black bears may also return in greater historic numbers to Glen Alpine Creek one day," Muskopf said.



A young Lahontan cutthroat trout is caught by an angler in Fallen Leaf Lake. U.S. Fish and Wildlife Service fisheries biologists are hoping to return the native species to greater numbers in the lake and help benefit local recreational fishing. Photo courtesy of Clyde Zirbel

Lahontan cutthroat trout recovery partners include the Washoe Tribe, Tahoe Regional Planning Agency, California Tahoe Conservancy, Lahontan National Fish Hatchery Complex, California Department of Fish and Wildlife, Nevada Department of Wildlife and U.S. Forest Service Lake Tahoe Basin Management Unit.

More information on Lahontan cutthroat trout recovery can be found at www.fws.gov/lahontannfhc



Dan Hottle, Public Affairs officer, Reno Fish and Wildlife Office

About the writer...

Dan Hottle is a public affairs officer for the Reno, Nevada Fish and Wildlife Office and writes frequently about conservation issues in the Nevada's Great Basin.

Other stories by Dan:

[A cup full of seeds equals big success](#)

["Monster" Lahontan cutthroat trout swimming one step closer to native spawning home](#)

[Bi-state sage grouse get new home on Earth Day](#)

[Nevada's 'Shoesole' Ranchers Grazing Cattle For Sustainable Results, Not For Federal Regulations](#)

EDITOR'S PICK FEATURED

'Glimmers of hope' at Reno water conference

- [By HOLLY DILLEMUTH H&N Staff Reporter](#)

- Feb 25, 2018



- [\(0\)](#)

Dan Keppen

RENO, Nev. — U.S. Bureau of Reclamation Commissioner Brenda Burman met with a number of Klamath Basin irrigators gathered in Reno on Thursday, hearing directly about their concerns for the upcoming water year.

The Klamath Falls-based Family Farm Alliance hosts the annual conference and this year drew more than 200 attendees from all over the country to talk about solutions to some of water users biggest challenges in the West.

“I was very appreciative to get the chance to sit down with the water users yesterday and hear from them directly,” Burman told the Herald and News in between sessions at the conference.

“They are obviously a smart, dedicated, passionate group and they are very articulate, and they are looking for creative solutions, and so are we,” Burman added.

Alan Mikkelsen, special adviser to Department of the Interior Secretary Ryan Zinke, is a point person on the Klamath Basin and speaks directly with Zinke and parties in search of solutions, according to Burman. Though Mikkelsen was not in attendance, Burman was joined by David Bernhardt, deputy secretary of the Interior, Kiel Weaver, assistant to U.S. House Speaker Paul Ryan, and a number of Reclamation officials.

About 20 individuals from Klamath Falls attended the two-day conference, which drew ag people from Colorado, Kansas, Oklahoma, Nebraska, North Dakota, North Carolina, and the nation’s capital.

“They knew who was going to be here and it was an opportunity for (irrigators) to talk to them,” said Dan Keppen, executive director of the Family Farm Alliance. “We helped facilitate some of those meetings.

“The irrigators in Klamath got the attention of the highest policymakers in the land,” Keppen added. “There’s no other part of the country that’s getting direct attention from the Secretary of the Interior’s office.”

Irrigators also got a sneak peak of the proposed reorganization map from David Bernhardt, deputy secretary of the Department of the Interior, who spoke Friday morning at the conference.

“The Bureau’s got their boundary, Fish & Wildlife’s has their region,” Keppen said. “This would set up all these new, different areas based on watersheds and all these different Interior offices would be within those.”

“I think in concept, it’s an idea that a lot of people would support ... It’s going to be a big move.”

The Family Farm Alliance, based in Klamath Falls, is an Arizona corporation and a non-profit that represents irrigators in 17 western states, most of which were represented by attendees at the conference.

“That’s who we advocate for,” Keppen said. “We work with the key water committees in Congress.”

Keppen said the conference this year showcased what’s happened in Washington, D.C., during the past year since the Trump Administration took office.

The two-day conference was packed with seminars on how to navigate Endangered Species Act requirements, a round-table question and answer panel with BOR officials as well as efforts to highlight local sustainable food outreach, which included a presentation by Jessie DuBose, community program manager for Blue Zones Project in Klamath Falls.

“But the drought was part of it,” Keppen said. “It’s really dry right now.”

Bill Kennedy, chairman of the Family Farm Alliance, and a Klamath Falls irrigator, shared why he enjoys coming to the annual conference.

“Western-wide exposure to issues that put our local issues in true perspective,” Kennedy said on Friday.

“Here at this conference, there’s so much encouragement and glimmers of hope, not only from other producers but our relationships with the Department of Interior.”

For more coverage on the conference, check out Tuesday’s edition of the Herald and News or go online at www.heraldandnews.com.

hdillemath@heraldandnews.com

Public aims to solve mussel invasion

Six-figure prize offered for the best suggestion

Keith Ridler

ASSOCIATED PRESS

BOISE, Idaho – The invasive quagga and zebra mussels have a \$100,000 bounty on their “heads.”

The U.S. government is offering the six-figure prize for the best suggestion on how to stop their relentless and destructive spread because scientists say they are stumped.

“We might as well give it a try,” said Sherri Pucherelli, a biologist with the U.S. Bureau of Reclamation. “Open water. That’s really where the challenge is. Nothing has been developed right now that causes complete eradication in a large water body.”

The filter feeders that siphon in water to pluck out microscopic organisms can throw food chains out of balance, and their sheer numbers in attaching to surfaces can clog pipes at reservoirs and damage boat motors. Giant water bodies turning aquamarine blue is a sign that the base of the food chain is being depleted, risking starvation for other species, including sport fish.

Quagga mussels approach an inch in length, while zebra mussels can be about twice that size. The species are native to Russia and Ukraine, and are believed to have arrived in the U.S. in the 1980s aboard ships that released ballast water into the Great Lakes.

They attach to boats and trailers and travel long distances, and their microscopic larvae can survive in water inside a boat or even an angler’s wading boots. Also, the mussels can sense toxins and close their shells.

The Bureau of Reclamation first started dealing with the mussels after discovering them in 2007 in Lake Mead in southeastern Nevada and northwestern Arizona. They’ve multiplied so fast that scientists now estimate the entire volume of the lake is filtered by the mussels every five days.

Federal officials say the only area not yet invaded in the contiguous United States is the Columbia River Basin in the Pacific Northwest. The basin is heavily used for hydroelectric power, and officials estimate it will cost \$500 million annually to prevent the mussels from clogging pipes and infrastructure.

The environmental damage to the food chain could further strain struggling runs of salmon and steelhead in the basin, where more than a dozen species are listed under the Endangered Species Act.

The mussels are getting close to the basin. Sampling last fall found larvae of quagga or zebra mussels at Tiber Reservoir in north-central Montana. It was the first positive test in the state.

Federal and state agencies have mostly tried to contain the spread of mussels, typically with boat inspections. The goal of the prize competition is to eradicate mussels in large water bodies. The deadline for ideas is Feb. 28.

Specifically, federal scientists are seeking a solution that kills 100 percent of the mussels in large water bodies, is cost-effective and is environmentally sound. That means native species must survive whatever kills the invasive mussels.

"We can kill mussels," said David Raff, science adviser at the Bureau of Reclamation. "Chlorine is very effective. But you can't dump chlorine into a reservoir."

The bureau has been experimenting with ultraviolet light and substances that prevent the mussels from adhering to pipes and other infrastructure. Mussel infestations could increase costs that would have to be passed on to consumers. The agency has 53 hydroelectric projects supplying energy and delivers water to 31 million people each year. Also, with partners, it manages nearly 300 recreation sites.

The mussels "are a huge problem currently, and it has the potential to be a much bigger problem," Raff said.

That threat prompted the governors of 19 Western states in November to send a letter urging Interior Secretary Ryan Zinke to put in controls by spring to prevent the mussels, including mandatory inspections and decontamination of boats leaving infected water bodies.

Denise Hosler, a biologist with the Bureau of Reclamation who has been fighting the mussels since 2006, said boat inspections have had some success stemming the spread, even though it may only be temporary.

"But there is such a heroic effort being advanced at this point that, hopefully, we'll have success," she said.

It's called 'Miracle' March for a reason

Odds of a late-winter recovery to snowpack are slim

Benjamin Spillman

Reno Gazette Journal USA TODAY NETWORK

In late February of 1991, the snowpack in the Lake Tahoe, Truckee, Carson and Walker basins was about 16 to 20 percent of normal.

By April 1, after a month of seemingly non-stop snowstorms, the snowpack recovered to as much as 80 percent of normal in some places.

When looking at the dismal snowpack numbers from the winter of 2017/18, it's tempting to take comfort in the possibility of another "Miracle March," similar to 1991.

Tempting, but not very comforting when you consider the odds. There's a reason people called March 1991 a miracle.

"It is more unusual to get a really big March than any other month," said Jeff Anderson, hydrologist for the Nevada Natural Resources Conservation Service, which tracks snowpack in Nevada.

From 1981 through 2010, the median March snowpack gain in the Tahoe Basin is 1 inch of snow-water equivalent, a number that represents the amount of water in the snow.

In 1991, the snow-water equivalent surged 12.3 inches. There were snowier months of March in 1995 and 2011, but those seasons were already snowy and didn't require a late-winter surge to achieve close to normal snowpack.

Thus, "1991 really stands out as an unusual year," Anderson said.

The current season is similar to 1991 in one way: The snowpack at the end of February is dismal.

The Tahoe Basin snowpack was 23 percent of normal on Friday. The Truckee Basin was 36 percent, Carson was 25 percent and Walker was 37 percent.

The sorry snowpack makes sense given that, so far, this winter is one of the warmest on record. In Reno, the average temperature from Dec. 1 through Feb. 22 was 39.5 degrees, making it the second-warmest for that timeframe since 1937. The warmest was 2015.

In Tahoe City, the average temperature was 33.9 degrees, the fourth warmest on record and 4 degrees above the 1981-2010 winter average.

"If we had an average March or even above average ... we would still probably be well below what we consider average," said Dan McEvoy of the Western Regional Climate Center.

Although the odds don't favor a miracle snowpack recovery, it's not entirely impossible.

After a warm start to February, cooler temperatures and snow moved in for the latter half of the month.

The outlook for the next three to four weeks shows a higher chance of abovenormal precipitation and below-normal temperatures.

"We have had a few of these colder, drier storms with not a lot of moisture," McEvoy said of late February. "The storms could get wetter."

Still, it would take an incredible sequence of storms to replicate 1991 and finish this winter with a snowpack at or above normal.

"We could get a big recovery," McEvoy said. "I never like to count out winter until after March. The next two to four weeks are actually looking pretty favorable."

Greatest March Miracles

1995: March precipitation was 299 percent of average. Tahoe Basin snowpack went from 138 to 199 percent of median.

19 91: March precipitation was 260 percent of average. Tahoe Basin snowpack went from 17 to 79 percent of median.

2011: March precipitation was 225 percent of average. Tahoe Basin snowpack went from 146 to 213 percent of median.

Source: Nevada Natural Resources Conservation Service

Looming storm great for skiing but won't save winter

[Benjamin Spillman](#), bspillman@rgj.com Published 3:57 p.m. PT Feb. 28, 2018

Monday's winter storm left more than 7 inches of new snow at Northstar, shown on Tuesday, Feb. 27, 2018. Even more is set to come on Thursday. Wochit

It would take four to eight times the moisture to reach 'normal' Sierra snowpack



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(Photo: Tom Smedes/Special to RGJ, Tom Smedes/Special to RGJ)

STORY HIGHLIGHTS

- Cold temperatures will make for light, fluffy snow powder skiers love
- Projected water content won't be enough to bring snowpack close to normal peak
- Last January an entire winter's worth of snow fell in less than a month
- Coming storm 'pales in comparison' to last year's biggest

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A massive storm that's expected to bury the Sierra Nevada under several feet of snow should mean great powder skiing throughout the Lake Tahoe region and beyond.

But it won't be enough to elevate the snowpack anywhere close to what's considered normal for winter's end, according to projections.

Thanks to three months of abnormally warm and dry conditions the snowpack ranges from dismal in some places to nearly non-existent at lower elevations.

More: [Research shows global warming could melt Tahoe's winter Olympics hopes](#)

More: [Funding source for Tahoe protection would take hit under Trump plan](#)

More: [Tahoe gets blizzard warning as weather keeps aiming for Reno](#)

More: [Snowpack might grow in March, but don't expect miracles](#)

It would take four to eight times the amount of moisture that's expected in the coming storm for the snowpack to recover to what's normal for the end of March.

"It is not going to immediately bring us back to normal or above normal snowpack," said Tim Bardsley, hydrologist for the National Weather Service in Reno.

Through Saturday as much as three feet is expected to fall at Truckee and more than five feet at the Carson Pass just south of Lake Tahoe, although wind and consolidation will likely reduce total depths below forecast accumulation levels.

The extreme snow depths in the forecast, however, are largely a function of moisture colliding with temperatures that will be three to 10 degrees colder than normal.

The result will be light, fluffy snow that's perfect for powder skis but light on water content.

"The snow depths are going to be considerable, the densities are going to be low," Bardsley said.

While moisture levels will vary throughout the region, forecasters expect the storm will add from two to five inches of water content to the snowpack.

It's a nice boost considering the snowpack in the Tahoe and Truckee basins, for example, is at about eight inches of water content.

“It will only get us up to about 50 percent of normal snowpack from about 35 percent.”

Tim Bardsley, hydrologist, National Weather Service in Reno

Compared to a normal year when the snowpack peaks at about 24 inches of water content by the end of March, it means even after the storm the region needs a lot of moisture in a short amount of time to recover.

“If we add three to four inches to the basin on average it is a big deal,” Bardsley said.
“But it will only get us up to about 50 percent of normal snowpack from about 35 percent.”

To get an idea of just how wildly storms can vary when it comes to snow composition it helps to contrast projections of the coming storm to the massive storms that soaked the region in January 2017.

From Jan. 8-12 the snowpack at Mt. Rose gained about 15-16 inches of water, much more than the two to five predicted this week.

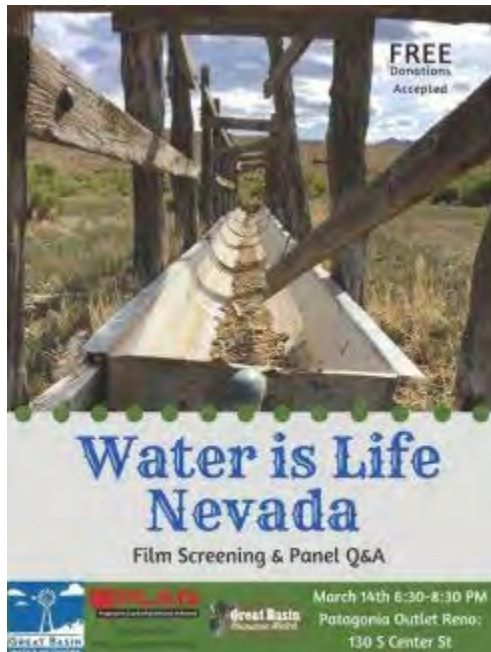
From Jan. 2 through Jan. 30 last year the water content increased 23 inches, meaning an entire winter’s worth of snow came in less than a month. Much of it fell as rain that soaked into the snow.

The coming storm, “feels unusual for this year because we haven’t had anything, but it kind of pales into comparison to what we had last year,” Bardsley said.

Free film screening March 14 in Reno to center on Nevada water fight

February 27, 2018

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"Great Basin Water Is Life," a short film produced by the Great Basin Water Network, will be screened March 14 at Patagonia Outlet Reno, 130 South Center St. in downtown Reno.

The film tells the story of the Nevada water fight in the words of those affected with footage of the eastern Nevada landscape and communities at risk.

The free event, from 6:30 to 8 p.m., also will feature a question and answer panel and Progressive Leadership Alliance of Nevada's video about water and mining.

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Health & Science

‘Cloud seeding’ may make it snow, but will it reduce droughts in the West?



“I’m just trying to make more snowflakes at a ski resort,” said Joe Busto, who oversees Colorado’s cloud seeding program. (Chelsea Self/Glenwood Springs Post Independent/AP)

By Sophie Quinton February 26

CHEYENNE, Wyo. — Machines that prod clouds to make snow may sound like something out of an old science fiction movie. But worsening water scarcity, combined with new evidence that “cloud seeding” can work, is spurring states, counties, water districts and power companies across the thirsty West to use the strategy.

Last month, a study funded by the [National Science Foundation](#) tracked for the first time how the technology works in

nature. The evidence for cloud seeding has been scarce, but recent research has encouraged officials and companies desperate to increase the amount of water in rivers and reservoirs.

In Colorado alone, more than 100 cloud seeding machines are set up in mountainside back yards, fields and meadows. Some older versions of the contraptions look like large tin cans perched on top of a propane tanks. New ones are large metal boxes festooned with solar panels, weather sensors and a slim tower.

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Their goal is the same: to “seed” clouds with particles of silver iodide, a compound that freezing water vapor easily attaches to. That combination makes ice crystals form, which eventually become snowflakes.

Colorado’s program, which costs \$1 million a year, is paid for not just by the state, ski resorts and local water users but also by water districts as far away as Los Angeles that want to increase snowmelt into the Colorado River, which sustains more than 30 million people across the Southwest. Most of the river basin is experiencing a drought.

“Everyone starts to get nervous when there’s no snow in Colorado,” said Joe Busto, the scientist who oversees Colorado’s cloud seeding program.

Major urban water districts in Arizona, California and Nevada have funded cloud seeding in the Rocky Mountains for more than 10 years and are now close to signing an agreement with officials in Colorado,

New Mexico, Utah and Wyoming to split the cost of nine more years of seeding.

Cloud seeding is a relatively cheap tool for bulking up the water supply in Lake Mead and other reservoirs, said Mohammed Mahmoud, a senior policy analyst for the Central Arizona Water Conservation District.

Yet it's hard to tell how much additional precipitation cloud seeding creates. The process works only when there are freezing, moist clouds in the air. And the technology can be controversial.

"The whole thing is propaganda," said Jamie Kouba, 32, a farmer from Regent, N.D., who argues that cloud seeding is decreasing rainfall in his area, rather than increasing it. He's organizing local farmers in a campaign against the practice.

A 20th-century technology

Cloud seeding machines generate smoke that floats into the air like incense. Some state programs rely on ground-based machines. Others use airplanes to drop flares that generate silver iodide smoke into clouds, or to fly into a storm with flares strapped to their wings.

The recent study, which was conducted in Idaho and published in the Proceedings of the National Academy of Sciences, was the first to show real-world observations of [silver iodide forming ice crystals](#) inside clouds and falling out as snow.

Such research has increased interest in cloud seeding, particularly among private companies and utilities, said Neil Brackin, president of Weather Modification, a North Dakota company that does cloud seeding.

Other recent studies have used computer modeling to estimate the increase in snowfall from cloud seeding. A 2014 study across two Wyoming mountain ranges found that cloud seeding **could increase snowfall by 5 to 15 percent** — but only when the right conditions for seeding were met, or during 30 percent of snow events.

Relatively small increases still matter. “People in the western United States — we’re always water-stressed out here,” said Frank McDonough, an atmospheric scientist in Nevada who oversees the cloud seeding program at the Desert Research Institute, part of the state university system. Along the Colorado River, more water is promised to people than is available.

Nevada’s cloud seeding program can increase the snowpack by up to 10 percent, McDonough said.

That translates into 80,000 more acre-feet a year of water, enough to sustain about 150,000 households.

Still, he said, cloud seeding programs are difficult to evaluate. “Ten percent of additional snowfall is within the natural variation of storms.”

Idaho Power, which serves customers in Idaho and Oregon, has been using cloud seeding to boost the volume of water moving through its hydroelectric dams since 2003. The company’s representatives say the \$3 million seeding program they oversee — which is partly funded by the state and other water users — generates billions of gallons of additional water for much less than 1 percent of the company’s operational budget.

Still, Busto warns that cloud seeding isn't a cure for drought. Take this winter, which has been too warm and too dry for seeding. "We have not been able to run our cloud seeding machines because there's been no storms coming through," he said; the machines have only run a handful of times so far.

Busto said he has been confronted by people who are worried that exposure to silver iodide will make them sick. But silver is a naturally occurring element that is not inherently harmful, he said. In the 2014 Wyoming study, scientists found that seeding added some silver iodide to the surrounding water and soil but far too little to pose a known threat to human health.

North Dakota's Kouba is one of the skeptics. He has compiled state rainfall data going back to the 1970s and concluded that cloud seeding has decreased rainfall, particularly in counties that are downwind of seeding operations. "I'm in a downwind county, and we have lost considerably," he said.

North Dakota officials say there's no evidence that cloud seeding caused last year's drought. If anything, cloud seeding in one place leads to more precipitation downwind, not less, said Darin Langerud, who oversees cloud seeding for the North Dakota Atmospheric Resource Board.

Busto said actual science fiction — such as "Geostorm," a 2017 movie about malfunctioning climate control satellites — fuels misperceptions about what states are trying to do.

"Every time something like that comes out, it feeds more conspiracy theories," he said. "I'm just trying to make more snowflakes at a ski resort."

Lemmon Valley Plaintiffs Get “Class Action” Status Vs. Reno

Posted on March 7, 2018

A Washoe District Court judge has approved allowing Lemmon Valley residents suing the city of Reno to get class action status. The plaintiffs say the city of Reno ignored a 2007 water study that showed any increase in water in the North Valleys would mean an increase in waste water and storm run-off. The study said water would end up in Silver Lake and Swan Lake. The suit charges the city continued to allow development in the area and pumped water from Silver Lake to Swan Lake. The suit says the city protects businesses near Silver Lake at the expense of Lemmon Valley.

Filed Under: [KOH Local News](#)

Nevada Attorney General Warns of Utility Impostor Scams

Posted: Mar 07, 2018 9:13 AM PST Updated: Mar 07, 2018 11:03 AM PST



Courtesy: Twitter, NV Emergency Mgmt

The Nevada Attorney General's Office is warning the public about scams involving utility companies.

The AG's Office says a caller claims to be from the utility company and threatens to shut off a property's supply of power, water or gas because the customer's account is past due. These scams take advantage of a homeowners need to access basic utilities such as heat, air conditioning or drinking water.

Faced with the possibility of losing access to these essential utilities, many consumers are quick to pay hundreds of dollars or more to scammers.

"These scams are advanced through scare tactics—where individuals and businesses are faced with the frightening prospect of losing access to heat, cooling or water," said Laxalt. "These impostors want you to act out of fear and immediate need. I encourage all Nevadans to take the time to pause and think about potential red flags before reacting to potential scams."

The AG's Office says a utility company should send at least two past due notices in writing before disconnecting or terminating service, and consumers should be suspicious if they receive a threatening phone call with no prior written notice. If you are receiving such a phone call, you are encouraged to hang up and call your utility company directly using the number of on your bill to discuss your account.

It is also important to note the timing of the call, as impostors will often call late in the afternoon and create a sense of urgency that the past due account must be resolved before close of business that day. This tactic causes the customer to focus on submitting their payment quickly, rather than confirming whether their account is actually delinquent.

It is also important to note how much information the impostor has regarding your referenced account. While it's possible that an impostor could have access to your full or partial account number, it is highly unlikely he or she would have the dates and amounts of prior invoices and payments. If the caller is unable or unwilling to provide details such as dates and amounts of prior invoices and

payments, the consumer is encouraged to hang up and call his or her utility company directly to discuss any potential issues with payment.

The Office of the Nevada Attorney General suggests the following additional tips to avoid utility disconnection scams:

- If you are being pressured to make an immediate payment, remain calm and ask questions to confirm your account status before making a payment.
- Don't agree to make payments by wire transfer or with a prepaid card over the phone. A legitimate utility representative will explain to a customer how a payment can be made using the utility's established payment options, and will not demand payment over the phone.
- Don't feel pressured by an upcoming weekend or holiday. [According to the Nevada Public Utilities Commission website](#), a utility company may not disconnect or terminate service the day before a weekend, on the weekend or on a State holiday, unless a safety issue requires disconnection.
- All the above tips also apply if a utility company representative comes to your home to demand payment for a past due account. In this situation, ask to view an identification badge with the representative's full name, and then call the utility company directly to discuss the status of your account.

The Office of the Nevada Attorney General welcomes information about impostor utility scams. Those who suspect they may have been victimized by a scam may [file complaints with our office here](#). The FTC also encourages consumers contacted by an impostor to report the conduct by using the [FTC's complaint assistant](#).

(Nevada Attorney General's Office contributed to this report.)

Property Tax Slated To Appear on November Ballot for Flood Project

March 7, 2018 [Bob Conrad](#) [Website](#) [Facebook](#) [Twitter](#) [LinkedIn](#)

Advertisement



Jay Aldean of the Truckee River Flood Management Authority pictured in 2017 with members of the newly created flood management project needs committee. Image: Bob Conrad.

A new tax is expected to appear on November's ballot.

A property tax was selected last week by the Truckee River Flood Control Project Needs Committee. The committee is **tasked with finding a new revenue source to come up with \$400 million for flood projects to protect the community from future river flooding.**

The committee was set up by legislation passed by the Nevada Legislature. The bill, AB 375, was sponsored by Assembly members Mike Sprinkle, Theresa Benitez-Thompson, Amber Joiner, and Skip Daly.

The committee was modeled in part by **WC1, which put up a sales tax to voters in order to fund school construction and repairs.**

"Our goal is to utilize the approved federal funding from the Army Corps of Engineers along with the additional local matching funds needed to construct the flood project," said Jay Aldean of the Truckee River Flood Management Project.

Aldean said that the committee ruled out three other tax options: a government services tax, real estate transfer tax, and a room tax.

"Polling data determined that a property tax was more popular of the four (options)," he added.

The property tax amount still has to be approved by the committee, which is expected to **be decided Thursday, March 15, at 9 a.m.**

What lies in the depths of Lake Tahoe's waters? (video)



Claire Cudahy
March 12, 2018



Provided / Dylan Silver |

Alana Cayabyab checks her dive computer before ascending during a dive near Rubicon Point during the summer of 2017.

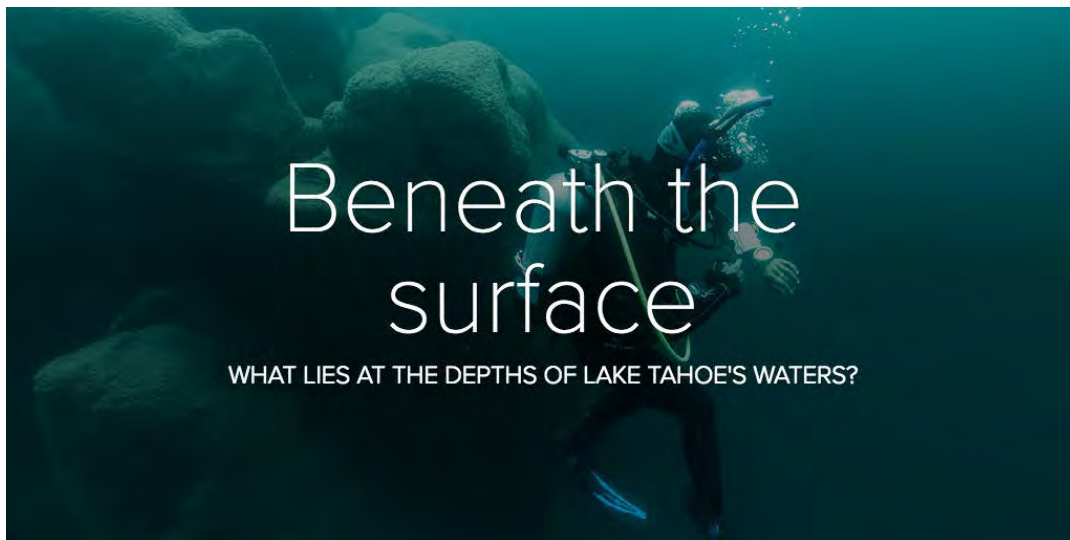
Lake Tahoe's cold, deep waters have long been the source of tall tales about death and hidden secrets. There are stories of bodies dumped by the Mafia floating in its depths, perfectly preserved by the cold temperatures, and others of Chinese laborers who were tied together and dropped into the icy waters to avoid payment for their work on the railroad.

Famed explorer Jacques Cousteau was rumored to have gone scuba diving in Lake Tahoe, emerging from the water only to utter, "The world is not ready for what I have seen."

The truth about what lies beneath the surface of the second deepest lake in the United States is arguably just as interesting. But to truly understand the intricacies of its underwater world, you have to start from the beginning.

SHAPED BY GEOLOGY

It's a common misconception that Lake Tahoe was formed by the collapse of a volcanic crater, like Oregon's Crater Lake. In fact, the basin was formed by the rise and fall of landscape due to faulting.



[District officials say threat will not interrupt Friday's scheduled dance at South Lake Tahoe Middle School](#)

Over the last two million years, hundreds of earthquakes stemming from three major fault lines have shaped the basin, which filled up with rain, snow and draining creeks and rivers. The lake owes its clarity to the large size of the lake relative to the overall size of the watershed.

A volcanic period then ensued where lava flowed from Mount Pluto, damming up the basin's ancestral outlet, the Truckee River, and raising the water level by several hundred feet before another outlet formed, the Lower Truckee River.

Next came the Ice Age.

Glaciers, slow-moving rivers of ice, gouged out huge valleys as they picked up rocks in their paths and piled them into ridges called moraines. The glacial activity is responsible for notable features in the basin like Fallen Leaf Lake, Emerald Bay and Angora Ridge.

"Then about 60,000 years ago there was a massive landslide on the West Shore in McKinney Bay due to a massive shelf collapse," explained Dr. Annie Kell, a seismologist at the University of Reno, Nevada Seismology Laboratory. "Thousands and thousands of cubic meters of material slide out into the lake. All these giant boulders and rubble you see in that area in the center of the lake almost all the way across, that's from the slide."

The landslide resulted in a tsunami that wiped out nearly every living thing close to the lake within 20 minutes.

Beneath the surface, this cumulative geological activity created an underwater landscape characterized by steep cliffs along the fault lines and large chunks of rock scattered across the bottom, the longest of which measures almost a mile and the tallest nearly 500 feet.

The West Tahoe Fault, the longest of the three faults, runs along the same path as the Rubicon Trail from Emerald Bay to D.L. Bliss. Over the last 40,000 years, the east side of the fault has dropped over 100 feet, creating a granitic wall the height of a 10-story building.

The Stateline Fault has created an underwater cliff that extends to the deepest part of the lake at 1,644 feet.

HUMAN IMPACT

Photographer Dylan Silver has captured the underwater landscape of Lake Tahoe at its shallower depths — above 100 feet — for nearly five years.

Though it was the lake's famous clarity that first drew him to try snorkeling and scuba diving there, he soon found an interest in the unique rock formations on the bottom, which became focal points in the pictures that he sells online and in shops around the basin.

"Most other locations you're diving because there's an abundance of life, but in Lake Tahoe, it's almost the opposite," said Silver. "There's a surreal emptiness that's interesting, but not the same as diving in any ocean or anywhere else. It's very monotone blue and you get big boulders looming out of that 70- to 100-foot visibility."

It didn't take many dives for Silver to realize how big of an influence humans have on the bottom of the lake.

"When I'm scuba diving I've found everything from cell phones to GoPros and anchors and fishing tackle and crawdad traps," said Silver.

He even has a collection of over 75 sunglasses that he's picked up from the sandy bottom.

Veteran scuba diver Martin McClellan estimates his dives in Big Blue number well over 4,000. His interest, however, is in discovering a much larger type of man-made object that rests on the bottom of the lake.

McClellan is part of a dive team known as New Millennium Dive Expeditions (NMDE). Back in 2002, McClellan and Brian Morris became the first divers to reach the S.S. Tahoe, a steamship that operated on the lake at the end of the 19th century and the first half of the 20th century. The boat was scuttled in 1940, and now lies in around 400 feet of water near Glenbrook.

Diving to this depth in Lake Tahoe was no easy feat. It took years of planning and training.

"A 400-foot dive at sea level with 30 minutes on the bottom would take around three hours total," said McClellan. "If I'm doing that dive at Lake Tahoe it will take me almost eight. The cold and the altitude are extremely stressful on the human body."

After successfully producing a 3D contour map of the ship, NMDE is now endeavoring to create a 3D model of the ship using 20,000-30,000 photographs pieced together. McClellan estimates it will take 8-12 divers anywhere from 20-26 dives to complete the project.

But the S.S. Tahoe is not the only ship that interests McClellan.

"Those are four iron-hulled ships at the bottom of the lake. Most people aren't aware of that," he said.

Launched in 1876, the S.S. Meteor was used to carry log booms from around the lake to Glenbrook for transportation to the mines of Virginia City. Later the boat became a passenger ship and a mail carrier before being towed between Tahoe City and Glenbrook and sunk in 1939. The location of the S.S. Meteor is unknown.

The 40-passenger S.S. Nevada was a luxury vessel turned mail carrier that now lies somewhere on the bottom of the lake. In 1940, after being dry-docked for two years, the ship was towed to the center of the lake and burned.

The fourth vessel, the Marion B, was the last mail carrier ship in Lake Tahoe. In 1941, the ship's captain, son and mail clerk set out on a stormy day, but did not return. The bodies of the clerk and young boy washed ashore, along with some charred pieces of wreckage, but the captain and the rest of the boat were never found.

"We'd love to find them all. Our goal would be to do so," said McClellan. "But the expense to map the Nevada and the Meteor, which are at the very bottom of the lake, well over 1,400 feet deep. We haven't located them yet. We know approximately where they are at, but they are so deep we'd have to use remote submarines and things of that nature."

UNDERWATER PARK

Off the shores of Emerald Bay State Park is another area rife with artifacts sitting on the lake's bottom.

In the turquoise waters rest two barges — one measures 106 feet, the other 85 — which were used on the lake to transport cargo.

"There are also 11 small recreational vessels — fishing boats with live-bait wells, hard chine row boats, a wooden lapstrake, a day sailor, a metal kayak, a 27-foot launch, and others — located around the bay that appear to have been owned by Emerald Bay Resort, a family-friendly resort that once operated where Emerald Bay State Parks' boat-in campground is now located," said Denise Jaffke, state archaeologist with California State Parks, Sierra District.

The area was named California's first underwater park in 1994. Divers may also be able to spot some of Tahoe's limited underwater wildlife — some there naturally, others invasive or introduced — like crayfish, lake trout, minnows, mysis shrimp, or Asian clams.

Nearby, a landslide that took place sometime in the 1950s created a sunken forest where old growth Ponderosa pines stand on end for divers to explore.

Beyond Emerald Bay there are other objects of intrigue scattered across the bottom. Divers have reported seeing an old car, and in Carnelian Bay, a 20-foot by 8-foot concrete fish —

which divers can swim through— rests in roughly 35-feet of water. It's believed the fish was discarded from a miniature golf course.

DANGEROUS DEPTHS

But exploring Tahoe's deep blue waters does not come without its risks. Many people have gone missing and lost their lives while out swimming, kayaking or stand-up paddleboarding.

And finding and retrieving them is not simple. That's where Keith Cormican of Bruce's Legacy steps in.

After losing his firefighter brother Bruce to a rescue mission in a fast-moving river, Cormican devoted himself to helping the families of other drowning victims find closure by locating their loved ones.

This past year, Cormican recovered two drowning victims from Lake Tahoe — a paddleboarder missing since June 2016 and a kayaker who disappeared in June 2017 — using sonar technology to "look" underwater. The victims were found at depths of 250 feet and 500 feet, respectively.

From a boat going 3 mph, Cormican drags a 4-foot "torpedo" 20 feet above the bottom. The sonar device emits pulses through the water and displays an image on the computer screen on the boat.

"Lake Tahoe is by far one of the more difficult search areas to do a tow-type sonar. On the bottom there is so many boulders and drop off and crevices," said Cormican. "We're looking for an image that is shaped like a body. We usually have a couple of legs that are pretty distinctive."

Next, a remote-operated vehicle goes down to retrieve the body with a mechanical arm.

In 2011, the body of a scuba diver was recovered from the bottom of the lake 17 years after he died in a diving accident, bringing new life to the tales of mass graves of perfectly preserved bodies in Lake Tahoe.

And while there is science behind the body staying submerged — cold water hindering the bacteria that breaks down our bodies and produces gases — the reason behind this particular victim's preservation was simple: a wet suit.

Local historian Mark McLaughlin is used to the ebb and flow of these rumors that comes with the retrieval of any body from Lake Tahoe. He's heard it all: the tales of Mafia members dumping bodies, Chinese laborers tossed in the lake to avoid paying wages, and the haunting words of Jacques Cousteau.

Not only does he take issue with the historical inaccuracies of these rumors, he says they just don't make logical sense.

"There's 200-plus million crayfish all over the bottom of Lake Tahoe to the shoreline to the deepest part. Any flesh type of organism that settles down to the bottom would be quickly consumed to just a matter of bones being left," said McLaughlin. "It doesn't make any sense at all that there would be suspended bodies."

And though McLaughlin says Frank Sinatra, a reputed mob affiliate, is known for his ties with the Cal Neva Lodge and Casino in Crystal Bay, he believes the majority of the mob activity was restricted to Southern Nevada.

McLaughlin also sees no truth in the rumors that Chinese railroad laborers were dumped in the lake to drown.

"I certainly don't believe it," said McLaughlin. "If you have Chinese men working on your railroad and they are doing a hell of a job, and you're paying them every month and this is a precious workforce for you, why would you ever kill them?"

McLaughlin said there is also no record that Jacques Cousteau ever visited Lake Tahoe in his lifetime.

"I called Dr. Charles Goldman, the main limnologist who studied Lake Tahoe in late 50s. He knew Cousteau," said McLaughlin. "Goldman said, 'We were all scientists struggling for money, and if Cousteau had seen anything remotely like that he would have gone back down and filmed it and made a documentary about that to raise money.'"

And as for Tahoe Tessie, the mythical lake-dwelling creature? Well, McLaughlin won't even go there.

CBS News March 13, 2018, 7:47 AM

Nashville school facilities director suggests plan to "bypass" lead filter in secret recording

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A school administrator is on leave after a secret recording revealed he suggested sabotaging plans to keep drinking water safe in Nashville area schools. CBS affiliate WTVF has reported on the dangerous levels of lead in some of the district's schools for nearly a year. In a new audio recording obtained by the station, the executive director of school facilities discusses not using water filters.

Metro Nashville public schools began voluntarily testing drinking water in 2016, after the water crisis in Flint, Michigan. About 30 schools then installed hydration stations that filter out lead, but a secret recording has parents worried their children's water is still not safe, reports CBS News' Anna Werner.

"It's just not acceptable," said Chelle Baldwin, whose two daughters attend Nashville's West End Middle School. She said after testing showed high levels of lead in their water, some parents bought water stations and filters.

"They're sitting in the school basement. And there was really no clear answer as to why they weren't being installed," Baldwin said.

In a secret recording, Dennis Neal, the executive director of facilities for Metro Schools, can be heard resisting use of the filters.

"They are adamant about them being filtered. I'm saying we can't -- we cannot support it," Neal is heard saying.

In the recording, Neal also responds to a suggestion to break the lights that show when the filters need to be changed.

"We've got to figure out what we are going to do with these hundred, or 97, filtered ones that we have out there," Neal says. Then, a woman's voice suggests: "Bust the light out....Take the light bulb out."

Neal responds, "Well, that's one thing. But we need to also probably, if we can, bypass the filter."

Spokeswoman Michelle Michaud says the district is "deeply concerned" about the recording. While they don't condone what was said on it, the filling stations are expensive and she claims the filters are less effective in filtering out lower levels of lead.

"It's a huge cost in the district. Hundreds of thousands of dollars," Michaud said.

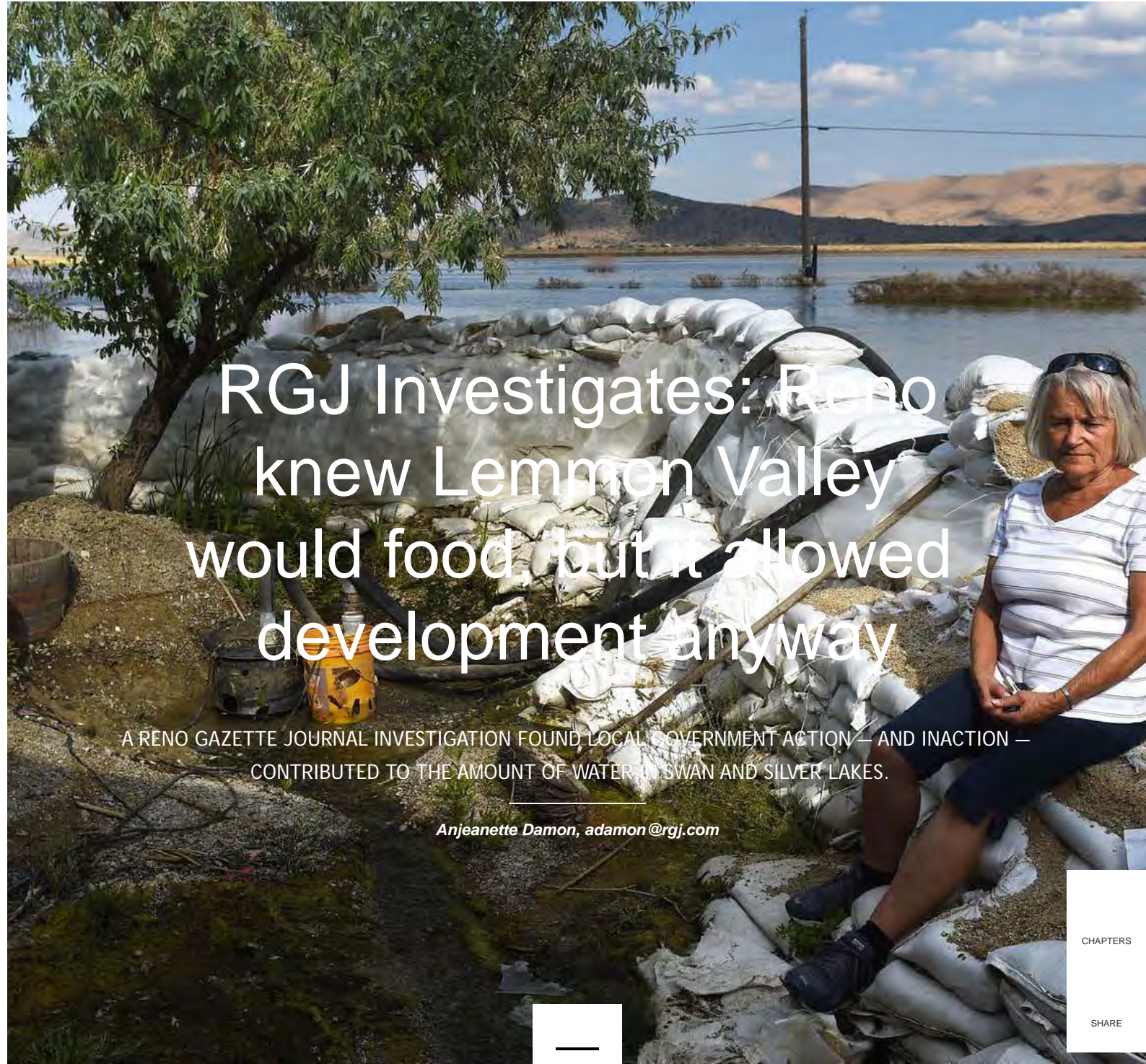
She says the 37 locations that had lead levels exceeding the EPA's recommended 15 parts per billion have been fixed. But she does admit some locations still show lead levels which exceed acceptable levels for kids, according to the American Academy of Pediatrics.

Parents like Chelle Baldwin say more needs to be done.

"This is children's developing brains and we cannot put money above their health and wellness," she said.

"CBS This Morning" reached out to Dennis Neal, but has not heard back. He is on administrative leave pending an investigation. Michaud told us the district is now embarking on random water quality testing, and if it says find anymore levels that exceed the EPA recommendation, they will remediate them.

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RGJ Investigates: Reno knew Lemmon Valley would flood, but it allowed development anyway

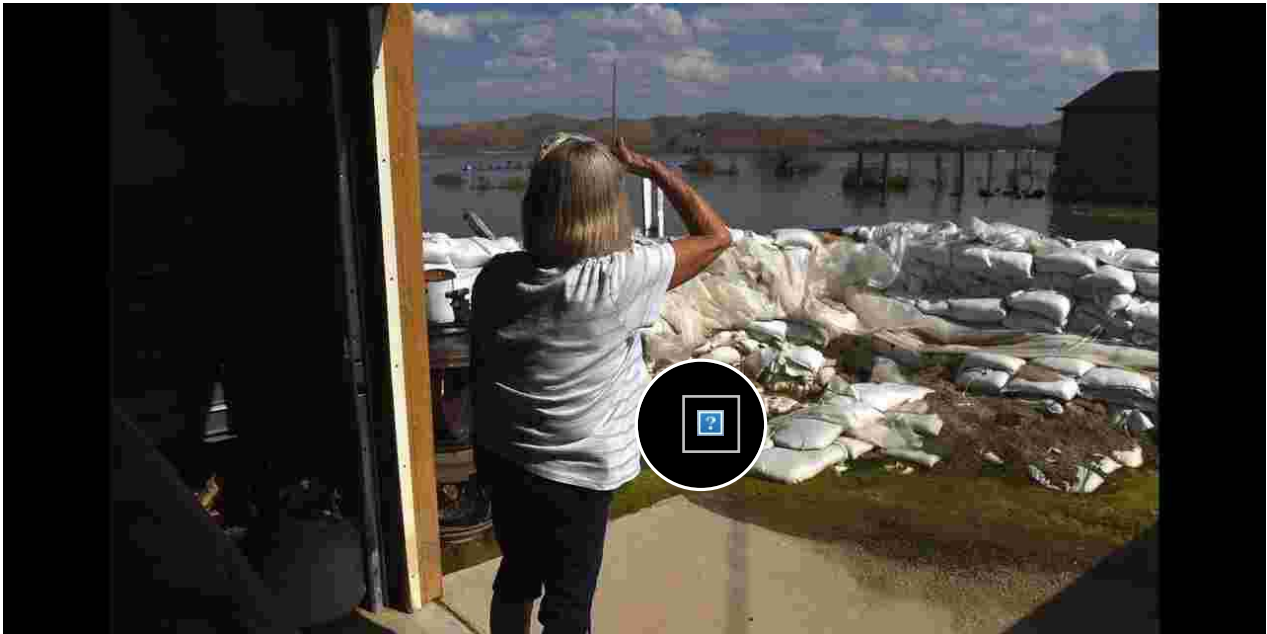
A RENO GAZETTE JOURNAL INVESTIGATION FOUND LOCAL GOVERNMENT ACTION — AND INACTION — CONTRIBUTED TO THE AMOUNT OF WATER IN SWAN AND SILVER LAKES.

Anjeanette Damon, adamon@rgj.com

CHAPTERS

SHARE

One year later: Homeowners remain surrounded by water



Thirteen months after a record winter fooded Swan Lake in Lemmon V alley, homes remain surrounded by water.

Jason Bean and Anjeanette Damon/RGJ

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Linda Walls is a naturally cheerful person, quick to laugh with dancing blue eyes.

At 71, she bounces around her property on white tennis shoes, easily climbing the mountain of sandbags that for months stood as a precarious barrier between her home and the rising waters of Swan Lake in Lemmon Valley.

Her husband Mike Walls, 77 and breathing oxygen from a tank because of a lung disease he acquired in the 1990s, is equally cheerful, if not as spry.

But when they think of their acre property on Pompe Way being swallowed by foodwater from last winter, leaving them in a hopeless situation, it's difficult to keep a cheerful disposition.

In 1978, the couple bought the property in the sleepy valley eight miles north of Reno. They added a modest mobile home and garage and raised their daughter there. They paid their mortgage every month until the property was paid off.

"We were going to retire here, it was so peaceful and quiet," Linda Walls said, her eyes dropping as they filled with tears.

Press Clips

She looks at the wreckage of a collapsed porch at the side of her house. It had broken off her neighbor's house and floated into her yard last winter. A constant whine of pumps could be heard throughout the property when a reporter visited in September. The pumps worked around the clock to return the water leaking through the sandbags to the lake.

"It's a stinky mess and it used to be so pretty," Walls said, looking at the pots that once held her blooming flowers. "Now we're part of the lake."

It's been thirteen months since Swan Lake inundated the Walls' property. Water still surrounds their land even though the county finally built temporary gravel barriers to replace the leaky sandbags. The couple has been living in a fifth-wheel trailer on a neighbor's property since February 2017.

The future looks bleak.

"We have nothing to look forward to," Linda Walls said. "I don't know what the future holds for my husband and I. We can't live in that fifth wheel on our friend's property forever."

A Reno Gazette Journal investigation found it may not be the sole fault of Mother Nature that the Walls and dozens of their neighbors had their homes irrevocably harmed by the flood.

Last winter yielded record precipitation. Strong early season storms left a significant snowpack on Peavine Mountain. Then, a series of nine atmospheric river rainstorms hammered Lemmon Valley, one after another.

The rain completely saturated the soil and the water poured into Swan Lake. In closed basins such as Lemmon Valley, Stead and Cold Springs, there is nowhere for the water to go but the lake and no way for the lake to empty but through the slow process of evaporation.

The RGJ's investigation, however, found the flood was not only predicted by studies paid for by the city of Reno and Washoe County, but that local government action — and inaction — also contributed to the amount of water in Swan Lake.

For example, Washoe County and the city of Reno ignored recommendations to build up to \$81 million in flood mitigation projects to prevent flooding at existing homes as new construction increased the volume of water in Swan Lake and neighboring Silver Lake in Stead. Any new construction both changes how water drains into the lake and reduces the amount of water that can soak into the ground.

The city of Reno also continues to pump more than 2 million gallons a day of effluent water from its sewage treatment plant into the flooded Swan Lake.

And while local governments opted not to invest in upfront costs to avoid flooding, they've spent more than \$14 million in flood recovery efforts. That number could grow substantially depending on the outcome of a class action lawsuit filed by homeowners in Lemmon Valley.

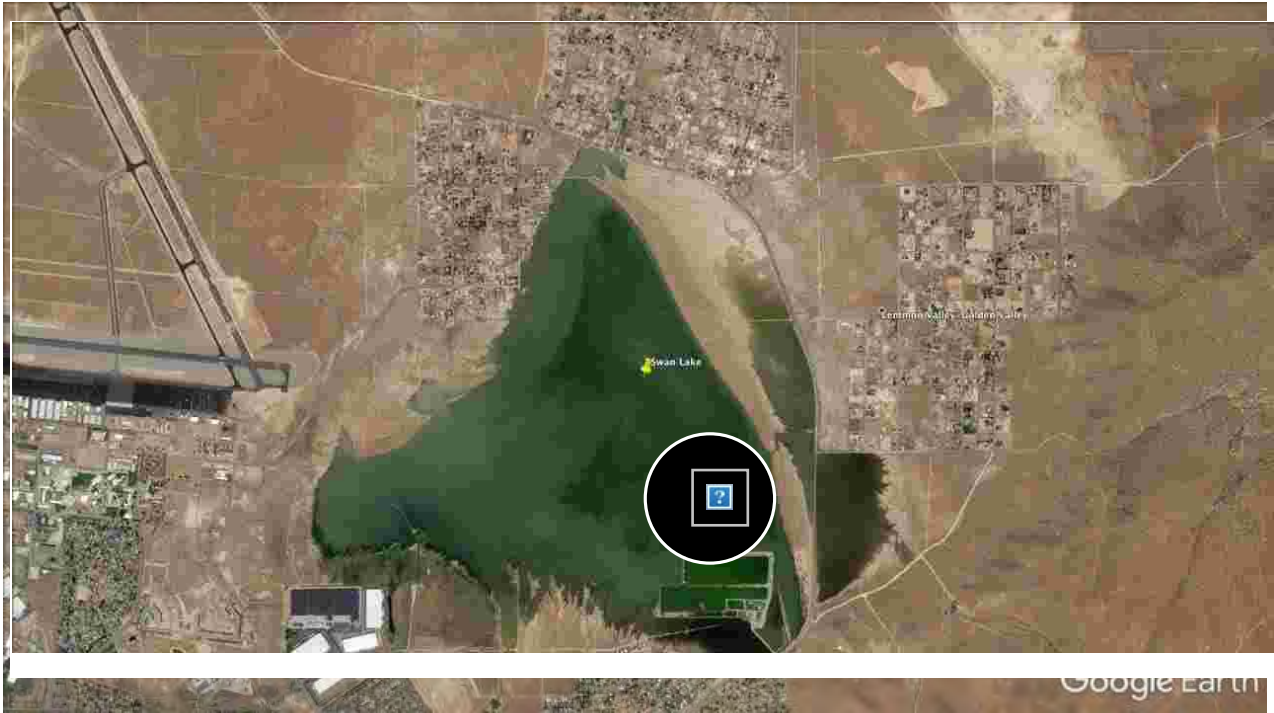
As the rebounding economy fuels a boom in new construction — much of it slated for the North Valleys, including areas currently underwater, and in other flood zones — city officials are grappling with how much to restrict developers in the closed basins so as not to make the flooding situation worse.

The Walls aren't the only victims of the Swan Lake flood.

Their westerly neighbors saw their home destroyed by water. To their east, two neighbors remain surrounded by water. Homes in the neighborhood on the northwest side of the lake remain red-tagged — uninhabitable and unsafe to enter.

"I have foundation damage where the foundation actually sank," said Danny Cleous, who has ignored the red tag adhered to his front window and is still living in a home deemed by inspectors to be unsafe. "I have cracks all the way around the foundation. I have a 2.5-inch gap in the master bedroom wall. The floors all buckled. The walls are all moved."

In all, more than 60 homes were affected by the flood. Twenty-five homes and one church were red-tagged or yellow-tagged, which denotes moderate damage that limits how the building can be used. A dozen remain in an unsafe condition, Washoe County officials said last month.



Take a two-minute tour of the three closed basins north of Reno.

Anjeanette Damon/RGJ



A slow response

'THIS HAS ALWAYS BEEN THE BASTARD VALLEY OF
WASHOE COUNTY'

Emergency officials knew water would be a problem for the North Valleys pretty early last winter.
In December 2016, Washoe County officials, who were keeping an eye on the mountain

snowpack, began to notify some Lemmon Valley residents that Swan Lake may rise high enough to flood their properties.

In January 2017, the rain began and didn't let up. By the end of the month, homeowners were chased from their residences by the rising lake.

Washoe County officials activated a traditional emergency response to the flood, contacting property owners about the danger, helping with evacuations, building sandbagging stations and helping those displaced with living assistance.

But in a typical flood, the water rushes in and then recedes, leaving victims to begin the rebuilding process. In Lemmon Valley, the water couldn't recede.

"They told us we just had to wait for it to evaporate," Cleous said.

Even after water crossed Lemmon Drive, surrounded dozens of homes and inundated living spaces, it took Washoe County two weeks to bring in the Army Corps of Engineers to help them decide how to deal with a lake that had taken over neighborhoods in the valley.

It wasn't until mid-March that state of Nevada crews built temporary barriers—gravel and sand-filled walls—to block the water from Lemmon Drive and the homes on the east side of it.

Unfortunately for the Walls and their neighbors on Pompe Way, the emergency crews deemed it too dangerous to construct walls to block the water from their properties. They didn't receive walls until December.

"There was a lot of talk about putting in barriers and dykes," Washoe County Assistant Manager Dave Solaro said. "But there were also fears about unintended consequences. If we did it in this area, are we sacrificing (another) neighborhood? Are we causing a problem somewhere else? Around that time, state management came in."

Solaro also acknowledged county officials were pulled in multiple directions responding to emergencies across the county. Just before the storms hit, the Little Valley Fire destroyed 23 homes and left 2,300 acres of charred hillside in Washoe Valley primed for flooding. The storms in January and February flooded creeks and streams both north and south of Reno.

"The ability of Washoe County to focus simply on this with everything going on in the county...lots of places were seeing flooding and we had to get to rebuilding some of that infrastructure," Solaro said.

That left Lemmon Valley residents feeling as if they were living in a forgotten community.

"This has always been the bastard valley of Washoe County," Cleous said. "We are out here in the middle of nowhere.

"We're just a bunch of dumb rednecks. What do we know?"

The county didn't put up the gravel-filled barriers to dry out the Pompe Way homes until December—after months of organized pleading by a cadre of Lemmon Valley residents led by Tammy Holt-Still for officials to address the long-term needs of flood victims.



Washoe County sets up barriers on the edge of Swan Lake floodwaters in Lemmon Valley on Dec. 19, 2017.

(Photo: Jason Bean/RGJ)



Lemmon Valley resident Danny Cleous looks out over a HESCO barrier on Aug. 16, 2017.

(Photo: Jason Bean/RGJ)

"We weren't getting any response so I started stomping my feet and being a pest to get somebody to start paying attention," Holt-Still said.

Holt-Still and other homeowners are now a regular presence at county and city public meetings.

"The water is still there, I'm still here," Holt-Still says at each meeting.

They homeowners had several adversarial encounters with elected officials.

In late December, for example, when Holt-Still stepped up to speak at a Washoe County

Commission meeting, Commissioner Marsha Berkbigler muttered into an open microphone: "Oh good, I can't wait."

And although temporary walls instead of sandbags now stand between the lake water and the Walls' home, they aren't willing to return to a house that may need to be evacuated again.

"We're not going back there," Mike Walls said, shuddering at the thought of the elderly couple reacting to another rushed evacuation. "Never."

North Valleys residents are in a tough spot.

The total amount of damage sustained in Lemmon Valley and Stead—where a handful of homes and some distribution warehouses saw fooded property—did not reach a level that would trigger individual assistance from the Federal Emergency Management Agency. So, homeowners have received no federal money either for repairs or to find another place to live.

Washoe County and the state of Nevada have tried to fill that need. Washoe County assigned social workers to each displaced family and helped them buy new furniture and household items. The state of Nevada paid the rent for 14 families for the better part of a year.

The five residents who so far have been unable to return to their homes and remain on housing assistance are now paying a share of the cost, said Washoe County Human Service Director Amber Howell.

Others, like Cleous, are caught in an insurance nightmare.

Cleous carries flood insurance. But he said his claim was denied because water didn't actually enter his home. His regular homeowner's insurance company has denied his claim arguing the flood did the damage, he said.

He's stuck.



Matt Bromley, @RemoteSci, of the Desert Research Institute compiled this time-lapse video of Swan and Silver lakes from images taken by the Sentinel 2 satellites. It shows water levels from December 2016, before the food happened, to December 2017.

Matt Bromley, @RemoteSci



Should it have happened in the first place?

CITY IGNORED RECOMMENDATIONS ON FLOOD PREVENTION

But Cleous and his neighbors also question whether the damage to their homes should have even happened in the first place.

In May, Cleous fled a lawsuit against the city of Reno. Last month, Washoe District Judge Barry Breslow recently certified the lawsuit as a class action. So far, four homeowners have joined.

The lawsuit alleges that the city of Reno engaged in an unlawful "taking" of property from Lemmon Valley residents by failing to follow the recommendations of their own 2007 study, which warned up to \$81 million in food control infrastructure was necessary, and by continuing to send treated wastewater into the fooded lake.

The Reno Stead Water Reclamation facility treats sewage from throughout the North Valleys and pumps the effluent directly into Swan Lake. The city of Reno, which operates the plant, is required to send a small amount of water into the lake to maintain wetlands at the southwest end of the playa.

During the food, water poured from the plant in amounts that exceeded the city's environmental permit.

Jo Ann Kittrell, a spokeswoman for the Nevada Division of Environmental Protection, said no action was taken against the city for exceeding the permit. She said that during a food, water infiltrates the sewer system, which isn't water tight, boosting the fows.

In 2017, the city of Reno put 1,573 acre-feet of water into the fooded 1,600 acre lake, according to data from NDEP. Under the permit, the city is allowed to pump up to 2,632 acre-feet a year into the lake.

Lemmon Valley residents are concerned about the city's plans to expand the sewage treatment plant to accommodate more development.

An expansion would increase the amount of effluent coming from the plant. Right now, the city can send an average of 2.35 million gallons a day into the lake, according to its permit.

Reno's Public Works Director John Flansberg, however, said the city is committed to fnding other ways of disposing or using the additional effluent rather than sending the excess into Swan Lake. Some effluent, for example, is already being used for landscaping in the valley.

"One of the options was to look at raising that to 2.5 million gallons a day (into Swan Lake), but that's just not going to be sustainable," Flansberg said. "We always had a component of looking at Stead knowing we have to do something for a beneficial use of that effluent."

The class-action lawsuit also claims that the city of Reno pumped water out of Silver Lake in Stead into Swan Lake to protect the city's industrial parks from fooding. City officials deny any pumping took place.

Closed basins are essentially geographic bowls, in which runoff from surrounding mountains and hills pool in the low-lying lake. Silver Lake is one basin. Swan Lake is in a neighboring basin. Water doesn't naturally fow between the two basins.

But Cleous and Holt-Still are adamant water made it from the Silver Lake basin into Swan Lake. They point to a culvert on the western edge of the Swan Lake basin that was a raging torrent of water during the storm—too much water, they argue, to be coming just from their own basin.

In fact, a drainage study from 2000 indicates one of the city of Reno's storm drain trunk lines carries water north along Stead Boulevard and the east into Swan Lake. Channeling the water into Swan Lake can reduce water levels near the warehouses in the Silver Lake basin.



This photo, showing the extent of the Swan Lake flooding in Lemmon Valley, was taken during a Nevada Army Guard Black Hawk training fight March 23, 2017.

(Photo: Tech. Sgt. Emerson Marcus/Nevada National Guard)

The lawsuit's argument that the government is responsible for the flooding relies heavily on a study commissioned in 2007 by the city of Reno as it pursued aggressive development in the North Valleys.

That study, performed by Roseville, Calif.-based Quad-Knopf, recommended the city build \$81 million worth of flood mitigation projects in Stead and Lemmon Valley to protect existing property owners from increased flood dangers brought on by development.

Similar studies commissioned by Washoe County also recommended flood mitigation projects.

Nothing, however, has been built. No retention ponds have been dug. No plants to reinject water into the ground have been constructed. Neither Swan Lake nor Silver Lake have been deepened to handle additional runoff from development.

Developments have not been required to adhere to "low-impact" design standards recommended in the report to mitigate storm water flows.

Flood mitigation projects have proven to work in Stead. For example, before the Quad-Knopf study, a channel was built to connect Silver Lake to a series of holding ponds to the northeast. Those ponds saved Silver Lake from about 10 percent of the water flooding into the playa, Flansberg estimated.

Similar retention ponds could help Swan Lake, he said.

Solaro said the decision to so far forgo flood mitigation projects likely comes down to one thing: money.

"There's really nothing to prevent this (flood) from happening," Solaro said.

"My guess is it's something to do with cost," he said when asked why nothing exists to protect homeowners. "Everything always comes down to money."

If the county were to assess a fee on existing homeowners to cover the cost of flood mitigation projects, it likely would be prohibitively expensive for individual property owners, Assistant County Manager Christine Vuletich said.

The Quad-Knopf study, however, recommended impact fees be levied on developers of new projects. For example, developers could be charged a fee for every acre they cover with impervious surfaces, which increase runoff into the lake, to fund the mitigation projects, the report said.

So far, however, neither the Reno City Council nor the Washoe County Commission has seriously considered impact fees on new development recommended by the studies.

Solaro believes it's difficult to raise revenue for projects to guard against flooding that doesn't occur often.

"We could spend an awful lot of money every 10 years and reach the point where you're burdening these homeowners for something that may or may not occur in the time they own the home," he said. Solaro said he wrestles with the question of how much responsibility government should bear to make flood victims whole.

"I don't want to sound callous, but I didn't make the choice to buy my property there," Solaro said. "I struggle with, does government come in to save everybody versus people's choices on where to live."

When the Walls selected their property in 1978, they knew they were building on the edge of a dry lake bed. They looked into getting flood insurance, but their parcel was not part of the federally designated flood zone.



Washoe County Assistant Manager Dave Solaro, left, and Aaron Kenneston, of the Washoe County Emergency Management team, talk to the RGJ about the flooding issues in Lemmon Valley on Sept. 7, 2017.

(Photo: Jason Bean/RGJ)

In fact, those FEMA flood maps often were wrong in the 1970s, based on rudimentary elevation measurements compared to technology available now.

New flood maps were drawn in 1994, which included the Walls' property. When they received a new quote for the insurance, Linda Walls said it would have cost them \$10,000 a year.

"We didn't even make that much money," she said. "We could never have afforded that."

Despite previously wet years, their property never flooded until 2017, they said.



Should building stop in closed basins?

ONUS IS ON THE DEVELOPER TO PROVE HOMES WON'T
FLOOD

Reno City Councilwoman Naomi Duerr, a geologist by training and former executive director of the Truckee River Flood Management Project, said Lemmon Valley homeowners shouldn't be to blame for buying homes in the 1970s when food maps suffered from accuracy problems.

But it's probably time for the government to relocate homeowners out of the danger zone, she said.

"You have two choices," she said. "You can move the water away from the people or move the people away from the water. In this case, given that the people are living in a lake bed, the best solution is not to try to engineer your way around the problem."

In the end, that may be the best answer for the Walls and their neighbors.

Washoe County officials have applied for a \$1.3 million federal grant to help the county buy flooded properties at market value and return the land to open space. The county would have to chip in about \$500,000 to meet the matching requirement.

The Walls said they will participate in the voluntary buyout program but said it could take as long as two years before their property is actually sold.

While the buyout program could help those with homes they can't return to, it doesn't answer the larger issue of developing in a closed hydrologic basin.

The maximum number of homes and warehouses predicted in the 2007 Quad-Knopf study haven't been built yet. But both the housing market and the industrial real estate markets have surged back to life in the economic rebound.

Massive housing developments and industrial parks are in the planning stages in each of the three closed basins north of Reno. In Lemmon Valley alone, 3,850 housing units are in the works.

One of the largest proposed developments, Prado Ranch, is planned for an area that remains underwater today.

As city and county officials contemplate approving these projects, they have a legal responsibility to ensure they don't hurt existing property owners, said Ed Thomas, a Massachusetts-based lawyer and president of Natural Hazard Mitigation Association.

"It is the developers' responsibility to build in such a way that they aren't changing natural conditions and moving water onto somebody else's property," Thomas said. "If you develop in such a way that by moving water that naturally would go into an aquifer, or run off naturally, (onto someone else's property) you are indulging in a form of trespass.

"And when government gives you permission to do that without requiring you to build safely and properly, it's possible the government is putting themselves at some degree of legal liability."

Thomas said he understands how difficult it is to persuade local governments to do the work, which can be expensive, to ensure a development doesn't harm others.

"We as a species have a hard time dealing with high-consequence, low-frequency events," he said.

Determining design standards for development in food zones is often a political exercise.

When Duerr managed the Truckee River Flood Management Project, she worked hard to convince the city to adopt a two-to-one ratio of removing a shovelful of dirt from the food plain for every shovelful of dirt added to it by a developer.

But it was a hard fight and the current one-to-one ratio resulted as the compromised standard. The more dirt a developer has to remove from a foodplain, the more expensive the project becomes.

"I've always viewed one-to-one as a bare minimum," Duerr said.

In the closed basins, however, both Flansberg and Solaro agree the one-to-one ratio is not enough.

"We thought we had it," Solaro said. "We have a mitigation ratio of one-to-one. That's the standard of practice. In this basin we now know that's probably not accurate."

Duerr agreed.

"In the basins to the north, it's easy to dismiss a study—and there were studies," Duerr said. "It's easy to say it was a theory or a calculation. Now we know it is very real. It can happen and has happened and it is tragic for those people who have experienced this kind of flooding."

The Reno City Council and its planning commission have taken a careful approach recently to approving development in Lemmon Valley.

They have not acquiesced to homeowner demands for a complete moratorium on construction. But the council denied a request by Prado Ranch to build houses in the foodplain and the city's new master plan strongly discourages allowing developers to build in foodplains.

Most recently, however, the council approved a 5,000-unit housing development in the Cold Springs closed basin on the edge of White Lake. The Stonegate project will be building in foodways and foodplains. Developers said they will dig out the east end of White Lake to accommodate higher flows.

Aric Jensen, Reno's community development director, said the city is developing new standards that don't rely on a uniform ratio for removing dirt when building in a foodplain. Rather, developers will be required to produce studies showing they know how runoff will be affected by their development and prove it won't harm adjacent landowners.

That can put policymakers in the awkward position of trusting a private developer. But Jensen said the city can also hire its own experts.

"The big debate is on the ratios," he said. "Everybody acknowledges that volume mitigation can work and does work if you do it right. So that's the big debate.

"I suspect you will see more third-party reviews. More expert opinions."

Jensen, who worked in the Salt Lake City area before moving to Reno, noted expensive flood mitigation projects aren't always long-lived. Particularly when a region experiences prolonged drought or development places demand on water supplies that dry up rather than fill desert playas. For example, in the 1980s, the state of Utah spent \$60 million on a giant pumping station to prevent the Great Salt Lake, which also sits in a closed basin, from swallowing up Interstate 80 and flooding surrounding communities. The pump operated for only two years before weather conditions changed and the lake shrank.

Jensen said drought tops his list of worries as the city expands.

"My biggest concern is that we are going to have a shortage of water, not an abundance," he said.



A sign advertising land for sale or lease is seen in the flooded Lemmon Valley on Aug. 16, 2017.

(Photo: Jason Bean/RGJ)

He also noted that sometimes storms can be big enough to overwhelm whatever mitigation has been put in place. City and county officials argue that's what happened in Lemmon Valley last winter.

"I know everybody likes to point to development and say that's the bad guy, that's what caused this," Solaro said. "But I go back to the fully saturated ground. It didn't matter if it was a building or asphalt or sagebrush. All that water ran to the basin."

In the case of the Swan Lake lawsuit, forensic hydrologists will likely work to determine whether the food was solely the result of Mother Nature or if development and treated wastewater contributed to the damage. The lawsuit will be long and expensive.

But local government officials can avoid future litigation with careful planning and making the difficult decisions to put well-researched requirements on developers, Thomas said.

Such planning can also save heartache.

"From the perspective of these 20 people, a disaster that affects one person is a catastrophe to them," Thomas said. "Is it the scale of a Hurricane Harvey? No. But they were harmed just as much as any individual victim of Harvey.

"And if someone made a deliberate decision that resulted in them getting flooded because they were not willing to recognize a problem, that's worse."