TRUCKEE MEADOWS WATER AUTHORITY

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June 2015

Five Year Capital Improvement Plan

Fiscal Year 2016 - 2020

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

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INTRODUCTION

The Truckee Meadows Water Authority's (TMWA's) Five-Year Capital Improvement Plan (2016-2020 CIP), describes all infrastructure construction and major capital outlays that will take place between July 1, 2015 and June 30, 2020. Guidance for identifying and scheduling projects in the 2016-2020 CIP is provided by TMWA's 2010-2030 Water Facility Plan (WFP) and the 2010-2030 Water Resource Plan (WRP). Both these Plans are being formally updated in calendar year 2015 from a consolidated utility perspective and will be the cornerstone of future CIPs. In addition to the WFP and WRP, TMWA incorporated capital project schedules for the consolidated utilities the Washoe County Water Utility (WCWU) and the South Truckee Meadows General Improvement District (STMGID). These former utilities capital improvement plans are also based on various WCWU and STMGID facility plans and construction/capital outlay analyses.

On January 1, 2015, TMWA, the WCWU and STMGID consolidated to create a regional water system under TMWA. The 2016-2020 CIP is the first CIP that provides a comprehensive compilation of water system improvements for TMWA and the former WCWU and STMGID water systems. A major feature of the 2016-2020 CIP is the construction of a number of projects that will expand the conjunctive use of the region's water resources. The philosophy behind connective use of local water resources is to maximize the use of surface water while preserving the integrity of groundwater resources which are preserved and can be drawn upon during periods of persistently dry weather. Another aspect of the 2016-2020 CIP is to expand the Aquifer Storage and Recovery Program (ASR Program) which is the recharge of groundwater basins with treated surface water. This activity is normally performed during the winter months when there is excess surface water treatment capacity.

The 2016-2020 CIP constitutes an essential component in TMWA's system of planning, monitoring and managing the activities of purveying water and generating hydroelectric power. This introduction will summarize projects and capital outlays for the ensuing five years including the explanation of prioritization of projects, and methodology for assigning the cost of projects to existing customers, development, also referred to as new and expanded service, or drawing on cash reserves transferred from WCWU and STMGID. A condition of consolidating STMGID into TMWA was that the former STMGID treasury be used only for infrastructure improvements in the former STMGID service area. The current 2016-2020 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 2016-2020-Year CIP.

The 2016-2020 FP indicates that TMWA can fund the CIP with only a modest $15.0 million new money loan through the State of Nevada Drinking Water State Revolving Loan Program (DWSRF) Program. Otherwise there appears to be adequate treasury and revenues from various sources to fund operations, pay principal and interest on existing debt, principal and interest on future financing activities, and capital improvements as presented in the 2016-2020 CIP.

The 2016-2020 CIP envisions a total of $167.1 million of spending with approximately 66% or $110.5 million of this total amount dedicated to upgrades or replacement of existing infrastructure, and approximately 34% or $56.6 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/capital outlays associated with the former STMGID service area are estimated to be approximately 7% or $11.4 million of total spending over the fiscal year 2016-2020 periods. Of the total projected spending over the next five years $8.1 million is considered contingency spending which is dependent on certain events occurring to trigger spending. The $167.1 million in projected spending is categorized in nine broad categories of improvements and spending outlays. These nine categories are:

1. Raw Water Supply Improvements
2. Groundwater Supply Development
3. Treatment Plant Improvements
4. Distribution System Improvements
    a. Pressure Improvements
    b. Water Main Distribution Service Line Improvements
5. Potable Water Storage Improvements
6. Hydroelectric Improvements
7. Customer Service Outlays
8. Administrative Outlays.
9. Water Rights Acquisition and Water Meter Retrofit

The ninth category *Water Rights Acquisition and Water Meter Retrofit* 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.

A broad description of each category is provided next with detailed project descriptions to be found in the Project Description Section of the 2016-2020 CIP.

The first category, *Raw Water Supply Improvements*, contains 2.4% or approximately $4.1 million of total spending in the 2016-2020 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 stored water (POSW) and expenses associated with the implementation of the Truckee River Operating Agreement (TROA). Implementation of TROA will be invaluable to TMWA since it will allow for the modification of river operations to expand upstream storage in the federal reservoir system for increased drought storage.

The second category, *Ground Water Supply Improvements*, contains 6.9% or approximately $11.5 million of total spending in the 2016-2020 CIP. These projects focus on preserving

existing well capacities, drilling and equipping of new wells and at times complete replacement of existing wells.

The third category, *Treatment Plant Improvements*, contains 11.7% or approximately $19.6 million of total spending in the 2016-2020 CIP. This 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. Another significant planned investment is the Mt. Rose Surface Water Treatment Plant which will provide additional critical water supplies on the Mt. Rose Fan from creek resources. 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.

The fourth category, *Distribution System Improvements*, contains 56.9% or approximately $95.1 million of total spending and is the most significant spending category in the 2016-2020 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 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, and three major conjunctive use projects to extend surface water supplies to the areas that rely heavily on year round groundwater pumping.

The fifth category, *Potable Water Storage Improvements*, contains 7.7% or approximately $12.9 million of total spending in the 2016-2020 CIP. These projects are comprised mainly of new treated water 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.

The sixth category, *Hydroelectric Improvements*, contains 2.1% or approximately $3.4 million of total spending in the 2016-2020 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.

The seventh category, *Customer Service Outlays*, contains 5.3% or approximately $8.9 million of total spending in the 2016-2020 CIP. Spending in this category focuses on meter reading device replacements and meter replacement if required. This spending is on an as needed basis. Also in this category is a spending provision for new business meters which is paid by development. Also as meter pit failures occur in the former merged water system service areas those meter pits are converted to TMWA material standards.

The eighth category, *Administrative Outlays*, contains 4.6% or approximately $7.6 million of total spending in the 2016-2020 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.

The ninth category, *Water Meter Retrofit and Water Right Purchases*, contains 2.4% or approximately $4.0 million of total spending in the 2016-2020 CIP.

DEFINITIONS

Capital Improvement Program Definitions

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

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

Definition of Capital Outlays

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

PRIORITIZATION OF PROJECTS/OUTLAYS

TMWA may not have sufficient funding to meet all its capital needs each year or may divert funding to meet unexpected capital improvements. If such conditions arise, projects are prioritized based on the effect each project has on TMWA's ability to meet customer demand and maintain water system reliability. TMWA's updated Five-Year FP is used to analyze overall total spending, identify various funding alternatives, and help 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 2016-2020 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 2016-2020 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. When return on investment is a determining factor, projects in this category must have a payback of less than five years. 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 cannot 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 2016-2020 CIP the likelihood spending will occur may be remote and is based upon future conditions that are difficult to predict.

FUNDING OF CAPITAL SPENDING

Funding Sources

The 2016-2020 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 been at historical lows since the inception of TMWA. TMWA has not been reliant on these fees to fund operations or fund annual principal and interest payments on TMWA's outstanding debt. In fiscal year 2015 residential, and to some extent commercial development activity, has accelerated providing financial resources to fund projects listed in the 2016-2020 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 2016-2020-Year CIP does anticipate reliance on funding from a new money debt issuance in fiscal year 2016. 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. TMWA's Rule 5 proceeds are used to support new capacity construction and 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. These fees are subject to periodic review for funding adequacy.

Bonds and Other Financing/Funding Tools

New money revenue bond issuance has been historically an integral part of funding construction spending. TMWA prefers to not use senior lien debt, but rather rely on subordinated debt financing obtained through the Drinking Water State Revolving Loan Fund and the tax-exempt commercial paper program. 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 (SRP), 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. 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 of 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 drawn $4.4 million on this facility and de-obligated the remaining authorization. TMWA extended its tax-exempt commercial paper program in fiscal year 2012 and completed the process of extending the direct pay liquidity facility with two banks, Wells Fargo N.A and J.P. Morgan N. A. to substitute Lloyds TSB, the originator of the first liquidity facility. Subsequently in fiscal year 2014 TMWA extended the tax-exempt commercial paper program again and replaced Wells Fargo N.A and J.P. Morgan N. A. liquidity facility with an expanded Liquidity facility with Bank of Tokyo-Mitsubishi UFJ. The new liquidity facilities provide for a direct-pay letter of credit to support remarketing of TMWA's commercial paper and also supports an A-1/P-1 rating (highest rating) for TMWA's short term variable rate debt program. This has resulted in favorable interest rates, at times less than 1/10 of 1%. In the fourth quarter of fiscal year 2015, TMWA has applied for a Drinking Water State Revolving Fund Loan for $15.0 million to fund the construction phase of the North Valleys Integration 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 stages. 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 these retail water-service providers. There are no expectations of any need for reimbursement from this source in the 2016-2020 CIP although historically SVGID has made contributions to TMWA.

Reserves from the Water Utility Consolidation

TMWA, the WCWU and STMGID consolidated on January 1, 2015. As a result of the consolidation, the respective treasuries of the WCWU and STMGID were transferred to TMWA. The WCWU treasury that was transferred to TMWA amounted to approximately $35.5 million while the STMGID treasury transferred to TMWA was approximately $15.7 million. These cash and investment reserves will 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 an Aa2/AA-/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 another general 3.4% water rate increase in February 2014. Prior to any additional review of water rate adjustments TMWA would like to have at least one year of operating history as a consolidated water utility. Water rate increases are essential for TMWA to

maintain sound credit ratings, to insure that the liquidity facility that supports TMWA's commercial paper program can be successfully extended and preserve access to other opportunities in the capital markets.

FISCAL YEAR 2016 CAPITAL SPENDING-THE CAPITAL BUDGET

TMWA expects to spend $52.4 million for fiscal year 2016, the first year of the FY 2016-2020 CIP. Of this total 51.1% or $26.8 million will be focused on water system rehabilitation while 48.9% or $25.6 million is dedicated to water system expansion, limited opportunistic acquisition of water rights and some water meter retrofit activities as funding allows. Distribution system improvements are expected to account for approximately 70% or $36.7 million of the total projected spending for fiscal year 2016. Two major projects make up most of the capital spending in this category. These projects are the North Valleys Integration Project for $17.8 million and the remaining portion of the Stead Transmission Main Replacement Project for $5.0 million. Groundwater supply improvements are expected to account for approximately 9.1% or $4.8 million of annual spending. Primary focus will be on drilling and/or equipping three wells for $3.0 million to further drought hardening and various rehabilitation projects to preserve well capacities for $1.8 million. Treatment plant improvements are expected to account for approximately 6.5% or $3.4 million of total projected annual spending. Water treatment plant and system control upgrades are expected to be $2.4 million with a new design of a new surface water treatment plant on the Mt. Rose Fan for $1.0 million. System controls and associated telemetry transport is reaching its technological service life and upgrades will be necessary to stay current but not to the extent of being cutting edge technology. All other capital spending and outlays are expected to be 13.0% or $6.8 million among a number of various smaller projects. Residential-housing growth and commercial-construction activity, which slowed in late fiscal year 2007, declined to a virtual standstill in fiscal years 2009 through 2013. Some residential and commercial construction activity revived in fiscal year 2014 and to a greater extent in fiscal year 2015. Based on current new business applications growth appears to be accelerating in fiscal year 2016 which is now driving more attention to projects for new and expanded service.

In fiscal year 2010, TMWA began capitalizing expenditures for the implementation of TROA. TROA activities address the agreement's provisions directly related to the successful expansion of upstream storage in federal reservoirs. TMWA anticipates spending of approximately $0.2-0.3 million per year for the next several of years. TMWA was awarded $2.0 million in federal grant funding for this effort of which approximately $1.6 million remains available for this future spending.

SUMMARY OF PROJECTS FOR THE FISCAL YEAR 2016 BUDGET

Total construction spending, acquisition spending, and capital outlays are expected to be $52.4 million for the fiscal year 2016. TMWA has established the following projects for the capital budget in fiscal year 2016:

Category 1 Raw Water Supply Improvements $1,550,000:

- Highland Canal Upgrades – Downstream of CB – $225,000
- Highland Canal Upgrades – Mesa Park - $1,000,000
- Donner Dam Improvements - $150,000
- TROA Drought Storage/Implementation – $175,000

Category 2 Groundwater-Development $4,750,000:

- Well Rehabilitation and Improvements – $850,000
- Well Bypass and Chlorine Room Improvements– $50,000
- Double Diamond Well #3 Equip – $1,000,000
- Air Guard Well Replacement (drilling) – $500,000
- Old Washoe #1 Replacement– $350,000
- Innovation Well (drill & equip) – $1,000,000
- Huffaker Well (drill & equip) – $1,000,000

Category 3 Treatment-Improvements $3,415,000:

- Glendale/Chalk Bluff Fix and Finish Projects – $1,000,000
- SCADA Rehab/Plant Operating Software - $915,000
- Orr Ditch Pump Station Upgrades - $500,000
- Mt. Rose Surface Water Treatment Plant (design) – $1,000,000

Category 4 Distribution-Improvements $36,665,000:

Category 4a Pressure Improvements Subtotal $4,090,000

- Pressure Regulator Rehabilitation – $500,000
- Pressure Reducing Valve (Roll Seal) Removal & Replacement– $400,000
- Land Acquisitions – $500,000
- D'Andrea #3 Pump Station (developer reimbursement) – $100,000
- Pump Station Oversizing– $250,000
- Pump Station Rebuilds/Rehabilitations – $1,350,000
- NAC Deficiencies Saddlehorn, Upper Toll Rd. – $340,000
- Standby Generators – $650,000

Category 4b Water Main Distribution Service Line Improvements Subtotal $32,575,000

- Street & Highway Main Replacements – $4,500,000
- North Valleys Integration Project – $ 17,800,000
- Stead Main Replacement Project– $ 5,000,000

- Hidden Valley Intertie Pumping Capacity (design) – $ 100,000
- Juniper Hill Modifications – $ 500,000
- Verdi 18" Main Oversizing – $ 375,000
- Spanish Springs-SC South Zone Conversion – $ 700,000
- STMGID (former) Conjunctive Use Facilities (design) – $ 200,000
- Arrowcreek-Mt Rose Conjunctive Use Ph 1-$ 2,800,000
- Arc Flash Improvements – $ 100,000
- General Waterline Extensions – $ 100,000
- Galvanized./Polybutylene Service Replacements – $ 400,000

Category 5 Storage–Improvements $1,030,000:

- D'Andrea #3 Tank (design)– $ 100,000
- Former STMGID Tank Recoats – $170,000
- Other Storage Tank Recoats, Access & Drainage Improvements– $760,000

Category 6 Hydroelectric – Improvements $ 515,000:

- Flume, Forebay, Diversion and Canal Improvements – $365,000
- Hydro Plant Equipment Replacement/Upgrades – $150,000

Category 7 Customer Service $1,760,000:

- Meter Reading Equipment – $60,000
- New Business Meters – $250,000
- Mueller Pit Replacements (former Washoe County service area) – $125,000
- Mueller Pit Replacements (former STMGID service area) – $75,000
- Meter ERT-RTR Replacements – $1,250,000

Category 8 Administrative $1,959,000

- GIS System Mapping Equipment - $30,000
- Desktop Computers New & Refresh – $100,000
- Network Server / Storage / Operating System Software Upgrades – $275,000
- Network Security Upgrades – $150,000
- Application Software Acquisitions– $150,000
- Furniture – $25,000
- Dump Trucks/Vac Trucks/Backhoe Replacements– $270,000
- Light Crew Trucks-Vehicles – $709,000
- Security-Monitoring Equipment – $250,000

Category 9 Special Projects Funded by Development $800,000:

- Water Meter Retrofit – $300,000
- Water Right Purchases – $500,000

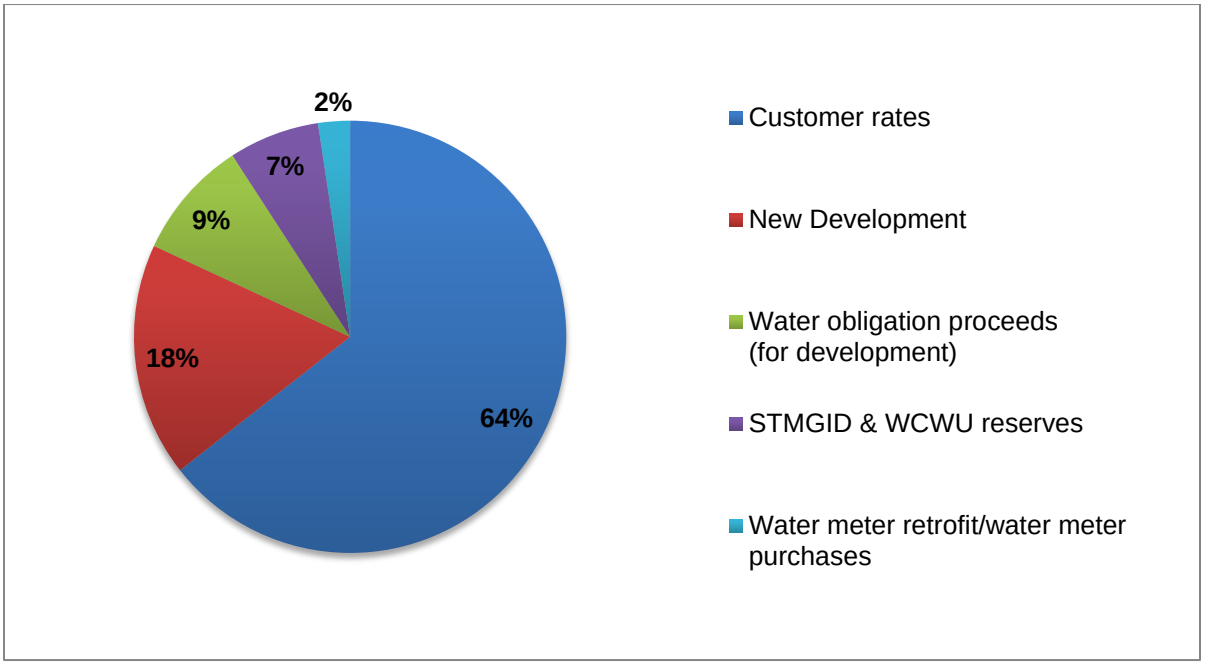
Detailed project descriptions are provided for all projects in the 2016-2020 CIP. These descriptions cover the fiscal year 2016 capital budget as well as the four additional years from 2017-2020.

Capital Expenditures by Function
(Amounts in thousands of dollars)

Summary of Capital Expenditures by Function	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Five Year CIP Total
Raw Water Supply Improvements	$1,550	$1,325	$550	$325	$325	$4,075
Ground Water Supply Improvements	4,750	2,660	1,050	1,110	1,900	11,470
Treatment Plant Improvements	3,415	8,775	4,265	1,790	1,340	19,585
Distribution System Improvements	36,665	16,010	14,430	12,700	15,280	95,085
Potable Water Storage Improvements	1,030	6,280	2,830	1,600	1,200	12,940
Hydroelectric Improvements	515	510	980	680	750	3,435
Customer Service Outlays	1,760	1,700	1,760	1,950	1,760	8,930
Administrative Outlays	1,959	1,595	1,353	1,350	1,302	7,559
Sub-Total TMWA Construction Spending & Outlays	**51,644**	**38,855**	**28,018**	**21,505**	**23,857**	**163,879**
Water Meter Retrofit/ Water Right Purchases	800	800	800	800	800	4,000
Total Projected Capital Spending	**$52,444**	**$39,655**	**$28,018**	**$22,305**	**$24,657**	**$167,079**

Preliminary Funding Plan
Funding Sources
(Amounts in thousands of dollars)

Summary of Funding Sources	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Five Year CIP Total
Capital Improvements Funded by Customer Rates	$26,796	$25,810	$21,796	$16,130	$19,982	$110,513
Capital Improvements Funded by Development	6,038	6,525	2,653	2,850	3,450	21,516
Capital Improvements Funded by Grants	175	275	225	-	-	675
Construction Funded from Water Obligation Proceeds (for development)	15,000	-	-	-	-	15,000
Capital Improvements Funded with former STMGID & WCWU Reserve Funds	3,635	6,245	2,545	2,525	425	15,375
Water Meter Retrofit/ Water Right Purchases	800	800	800	800	800	4,000
Total Projected Capital Spending	**$52,444**	**$39,655**	**$28,018**	**$22,305**	**$24,657**	**$167,079**



Funding by Priority
(Amounts in thousands of dollars)

Summary of Funding by Priority	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Five Year CIP Total
Priority 1 – Mandatory Spending, Projects in Progress, Regulatory	45,150	27,450	16,055	13,950	11,840	114,445
Priority 2 – Necessary Spending	6,609	11,580	10,928	6,585	8,807	44,509
Priority 3 – Contingency Spending	685	625	1,035	1,770	4,010	8,125
Total Projected Capital Spending	**$52,444**	**$39,655**	**$28,018**	**$22,305**	**$24,657**	**$167,079**

PROJECT FUNCTIONS AND DESCRIPTIONS

Raw Water Supply Improvements
Summary

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	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	1,000	225	100	100	100	1,525
1	Customer Rates	Donner Dam Improvements	150	600	-	-	-	750
1	Customer Rates	TROA Drought Storage/Implementation	175	275	225	-	-	675
Subtotal			1,550	1,325	550	325	325	4,075

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


LASSEN SIERRA
Loyalton
HUNGRY VALLEY
Reno Stead Airport
Cold Spring Valley
Granite Hills
LEMMON VALLEY
US-395-S US-395-N
BALD MOUNTAIN RANGE
2664 m
2514 m
CALIFORNIA
NEVADA
Sun Valley
Sparks
Reno
HIGHLAND CANAL
Verdi
I-80-W
Reno-Tahoe Int'l Airport
STAMPEDE RES.
INDEPENDENCE LAKE
Sagehen Hills
BOCA RES.
PROSSER CREEK RES.
Floriston
I-80-E
Arrowcreek Country Club
Thomas Creek
Whites Creek
Steamboat Hills
Galena Creek
Toiyabe National Forest
3284 m
Scenic Byway I-80
Truckee
DONNER LAKE
Truckee-Tahoe Airport
PLACER
Bald Mountain
Mount Baldy
2827 m
Incline Village
Crystal Bay
Tahoe Vista
Kings Beach
Carnelian Bay
Mount Pluto
Washoe Valley
WASHOE VALLEY
Washoe Lake State Park
Olympic Valley
2751 m
Burton Creek State Park
Tahoe City
WASHOE
Carson City
TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.
FY 2016-2020 CIP
RAW WATER SUPPLY IMPROVEMENTS
SUMMARY
DATE 05/05/2015
MAP BY: JK
REQUESTED BY: LK
SCALE: 1 inch equals 4.34 miles
NORTH
NAD 83 NEVADA STATE PLANE WEST FEET
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Raw Water Supply Improvements
Highland Canal-Upgrades-Downstream FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Highland Canal – Upgrades - Downstream	225	225	225	225	225	1,125

PROJECT DESCRIPTION: The improvements that are reflected in this capital project(s) item are for betterments along the canal downstream of the Chalk Bluff Water Treatment Plant to the Rancho San Rafael Park. These efforts are rehabilitative in nature and may address access and security concerns.

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

PROJECT:

Raw Water Supply Improvements
Highland Canal – Upgrades – Diversion to Chalk Bluff FY2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Highland Canal – Upgrades-Diversion to Chalk Bluff	1,000	225	100	100	100	1,525

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. Also included in the FY 2016 budget is construction of the Mesa Park Drainage Improvements project.

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

PROJECT:

Raw Water Supply Improvements
Donner Dam Improvements FY 2016 – 2017

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Donner Dam Improvements	150	600	-	-	-	750

PROJECT DESCRIPTION: During the annual inspection of the Donner Dam facility the Division of Safety of Dams (DSOD) noted areas of the structure that are suffering from deteriorating concrete. TMWA has yet to design the repairs and actual costs may vary based upon the final design. TMWA will need to coordinate this activity with the other owner of Donner Lake storage.

SCHEDULE: Anticipated design and bidding phase to be completed in FY 2016 and construction phase will occur in 2017.

PROJECT LOCATION:

Raw Water Supply Improvements
TROA Drought Storage/Implementation FY2016 - 2018

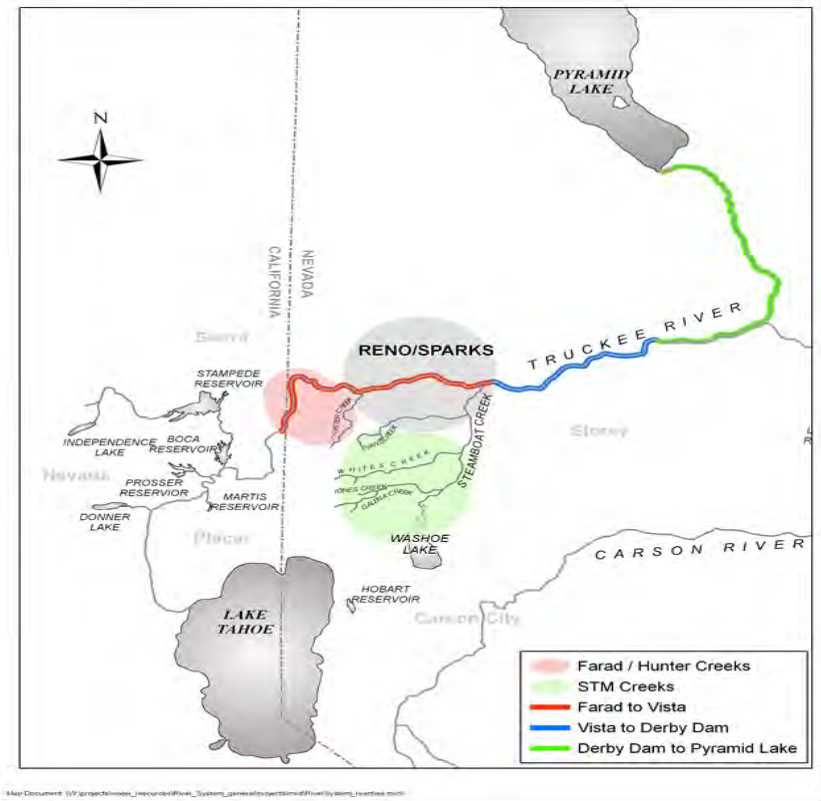
FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	TROA Drought Storage/Implementation	175	275	225	-	-	675

PROJECT DESCRIPTION: The Truckee River Operating Agreement (TROA) was signed by the mandatory parties in September 2008. Since then activities have centered on transferring water rights upstream to federally controlled reservoirs to provide for future drought storage and also to implement the operating regime of TROA. Future activities include construction of flow measuring/recording facilities and development of computerized flow models. TMWA has in the past obtained and will continue to pursue federal grant funding to offset the costs of these activities.

SCHEDULE: Final date for implementation of TROA appears to be very soon.

PROJECT LOCATION:

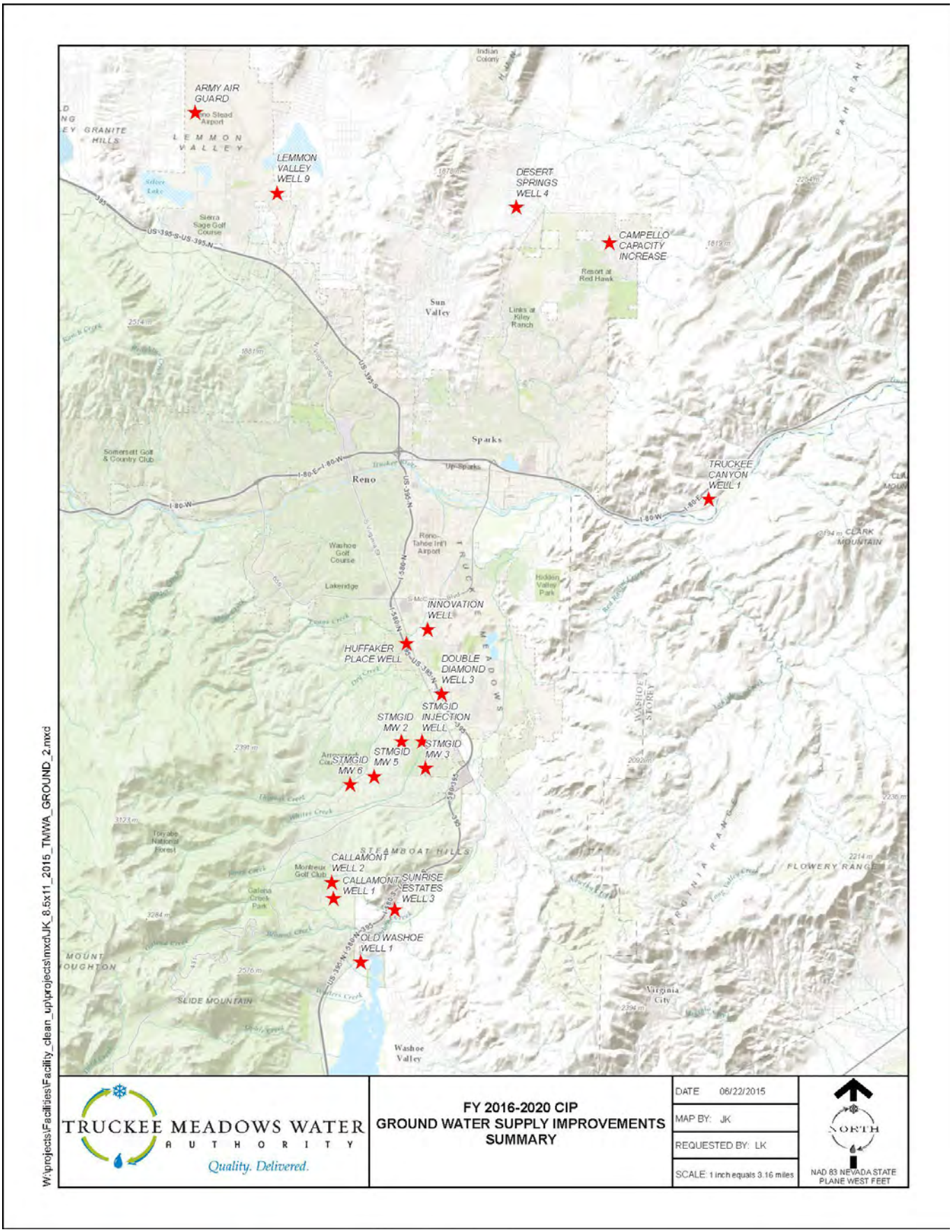


Ground Water Supply Improvements
Summary

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Well Rehabilitation Improvements	850	850	850	850	850	4,250
2	Reserves	Well Bypass and Chlorine Room Improvements (former STMGID)	50	110	50	50	50	310
1	Developer Fees	Double Diamond Well #3 (Equip)	1,000	-	-	-	-	1,000
1	Developer Fees	Lemmon Valley #9 Electrical tie in	-	50	-	-	-	50
2	Customer Rates	Campello Capacity Increase	-	-	150	-	-	150
3	Developer Fees	Callamont Well Equip	-	-	-	-	1,000	1,000
2	Developer Fees	Truckee Canyon Well (Equip)	-	-	-	80	-	80
1	Customer Rates	Air Guard Well Replacement	500	900	-	-	-	1,400
2	Customer Rates	Desert Springs Well # 4 Recharge	-	-	-	130	-	130
2	Customer Rates	Sunrise #3 Replacement	-	750	-	-	-	750
1	Customer Rates	Old Washoe #1 Replacement	350	-	-	-	-	350
1	Developer Fees	Innovation Well (Drill & Equip)	1,000	-	-	-	-	1,000
1	Developer Fees	Huffaker Place Well (Equip)	1,000	-	-	-	-	1,000
Subtotal			**4,750**	**2,660**	**1,050**	**1,110**	**1,900**	**11,470**

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

*If the project is too general in description and/or location, it will not be identified in the map nor have a picture in the individual Project Description.


ARMY AIR GUARD
LEMMON VALLEY WELL 9
DESERT SPRINGS WELL 4
CAMPELLO CAPACITY INCREASE
TRUCKEE CANYON WELL 1
INNOVATION WELL
HUFFAKER PLACE WELL
DOUBLE DIAMOND WELL 3
STMGID INJECTION WELL
STMGID MW 2
STMGID MW 3
STMGID MW 5
STMGID MW 6
CALLAMONT WELL 2
CALLAMONT WELL 1
SUNRISE ESTATES WELL 3
OLD WASHOE WELL 1
Reno
Sparks
Sun Valley
Washoe Valley
Virginia City
W:\projects\Facilities\Facility_clean_up\projects\mxd\JK_8.5x11_2015_TMWA_GROUND_2.mxd
TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.
FY 2016-2020 CIP
GROUND WATER SUPPLY IMPROVEMENTS
SUMMARY
DATE 06/22/2015
MAP BY: JK
REQUESTED BY: LK
SCALE: 1 inch equals 3.16 miles
NORTH
NAD 83 NEVADA STATE PLANE WEST FEET

Ground Water Supply Improvements
Well Rehabilitation Improvements FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Well Rehabilitation Improvements	850	850	850	850	850	4,250

PROJECT DESCRIPTION: Funds are budgeted to rehabilitate TMWA production wells as required. Typically for subgrade rehabilitation efforts, four to six 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 other enhancements to maintain well quality and capacities. Spending in fiscal years 2016-2020 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 90 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: Four wells have been targeted for rehabilitation improvements in FY2016: Hunter Lake, Reno High, Galetti, and Corbett.

PROJECT:

Ground Water Supply Improvements
Well Bypass and Chlorine Room Improvements (former STMGID wells)
FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Reserves	Well Bypass and Chlorine Room Improvements (former STMGID wells)	50	110	50	50	50	310

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. Wells 6 & 12 also require isolation of the chlorine rooms to reduce corrosion issues.

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

Ground Water Supply Improvements
Double Diamond (#3 Equip) FY 2016

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Developer Fees	Double Diamond Well #3 (Equip)	1,000	-	-	-	-	1,000

PROJECT DESCRIPTION: Construct pumping facilities for the existing Double Diamond Well #3 including the pump house building, electrical power, pump/motor and valves and piping to provide an additional 1800 gallons per minute of peak period supply to the Double Diamond area.

SCHEDULE: The project schedule was accelerated in response to the current drought. The new groundwater supply should be available in the summer of 2016.

PROJECT:

Ground Water Supply Improvements
Lemmon Valley #9 Electrical Tie-In FY 2017

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Developer Fees	Lemmon Valley #9 Electrical tie in	-	50	-	-	-	50

PROJECT DESCRIPTION: Construct permanent underground electrical power to the existing Lemmon Valley #9 well. In the past this well was operated by a trailer mounted generator, but noise became an issue after a residential subdivision was constructed adjacent to the well site.

SCHEDULE: The project will be completed in FY 2017 to provide an additional 400 gallons per minute of peak period groundwater supply to the Stead/Lemmon Valley system.

Ground Water Supply Improvements
Campello Capacity Increase FY 2018

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Campello Capacity Increase	-	-	150	-	-	150

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 2018, but may be accelerated if the drought continues.

Ground Water Supply Improvements
Callamont Well Equip FY 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
3	Developer Fees	Callamont Well Equip	-	-	-	-	1,000	1,000

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 2020, but may be constructed sooner depending on the actual schedule for the proposed 210 unit Callamont residential development.

Ground Water Supply Improvements
Truckee Canyon Well FY 2019

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Developer Fees	Truckee Canyon Well (Equip)	-	-	-	80	-	80

PROJECT DESCRIPTION: Construct pumping facilities for the existing Truckee Canyon Well #3 including the pump house building, electrical power, pump/motor and valves and piping to provide an additional 100 gallons per minute of peak period supply to the Truckee Canyon system.

SCHEDULE: This project is currently scheduled for completion in FY 2019 but may be constructed sooner if growth occurs in the system. The groundwater supply in the area contains arsenic, iron and manganese; therefore, this project will require simultaneous expansion of the treatment process that currently treats water from Well #1.

PROJECT:

Ground Water Supply Improvements
Air Guard Well Replacement FY 2016 – 2017

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Air Guard Well Replacement	500	900	-	-	-	1,400

PROJECT DESCRIPTION: A complete replacement of the Air Guard Well in Stead is scheduled for fiscal years 2016 and 2017 to reduce sanding and provide additional capacity to the Stead system.

SCHEDULE: Dependent upon a successful bid, drilling and well construction will occur in FY 2016 and the pumping facilities will be constructed in FY 2017.

PROJECT:

Ground Water Supply Improvements
Desert Springs Well #4 Recharge FY 2019

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Desert Springs Well # 4 Recharge	-	-	-	130	-	130

PROJECT DESCRIPTION: This project involves development of an ASR program for Desert Springs Well #4. A blending water main from the well to the 20-inch blending transmission main in Pyramid Highway will be constructed, which will also allow for the injection of surface water from the distribution system in the off-peak season. Other improvements include the construction of two new monitoring wells in the vicinity and equipment to sample and test the water and analyze the results. It is anticipated that some hydrologic modeling and analysis will also be included in the project.

SCHEDULE: The improvements are currently scheduled for completion in FY 2019.

PROJECT:

Ground Water Supply Improvements
Sunrise #3 Replacement FY 2017

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Sunrise #3 Replacement	-	750	-	-	-	750

PROJECT DESCRIPTION: This project involves complete replacement of the existing Sunrise Well #3. The existing well is operated on an emergency basis only because it produces excessive sand and is located too close to an existing septic system.

SCHEDULE: The project is scheduled for completion in FY 2017.

Ground Water Supply Improvements
Old Washoe #1 Replacement FY 2016

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Old Washoe #1 Replacement	350	-	-	-	-	350

PROJECT DESCRIPTION: Due to poor water quality in existing Wells #1 & #2, the Old Washoe system currently has only one source of supply. A secondary source of supply with acceptable water quality is necessary to meet State Health regulations.

SCHEDULE: The project is scheduled for completion in FY 2016.

Ground Water Supply Improvements
Innovation Well (Drill & Equip) FY 2016

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Developer Fees	Innovation Well (Drill & Equip)	1,000	-	-	-	-	1,000

PROJECT DESCRIPTION: Drill and construct a new well and pumping facilities at a site off of Longley Lane in South Reno including the pump house building, electrical power, pump/motor and valves and piping to provide an additional 600 gallons per minute of peak period groundwater supply to the area.

SCHEDULE: The project schedule was accelerated in response to the current drought. The new groundwater supply should be available in the summer of 2016 assuming a successful drilling contract can be bid and awarded.

PROJECT LOCATION:

Ground Water Supply Improvements
Huffaker Place Well (Equip) FY 2016

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Developer Fees	Huffaker Place Well (Equip)	1,000	-	-	-	-	1,000

PROJECT DESCRIPTION: Construct pumping facilities for an existing well at a site on Huffaker Place in South Reno including the pump house building, electrical power, pump/motor, valves/piping and a new 8-inch discharge main connecting to the existing distribution system on South Virginia Street to provide an additional 600 gallons per minute of peak period groundwater supply to the area.

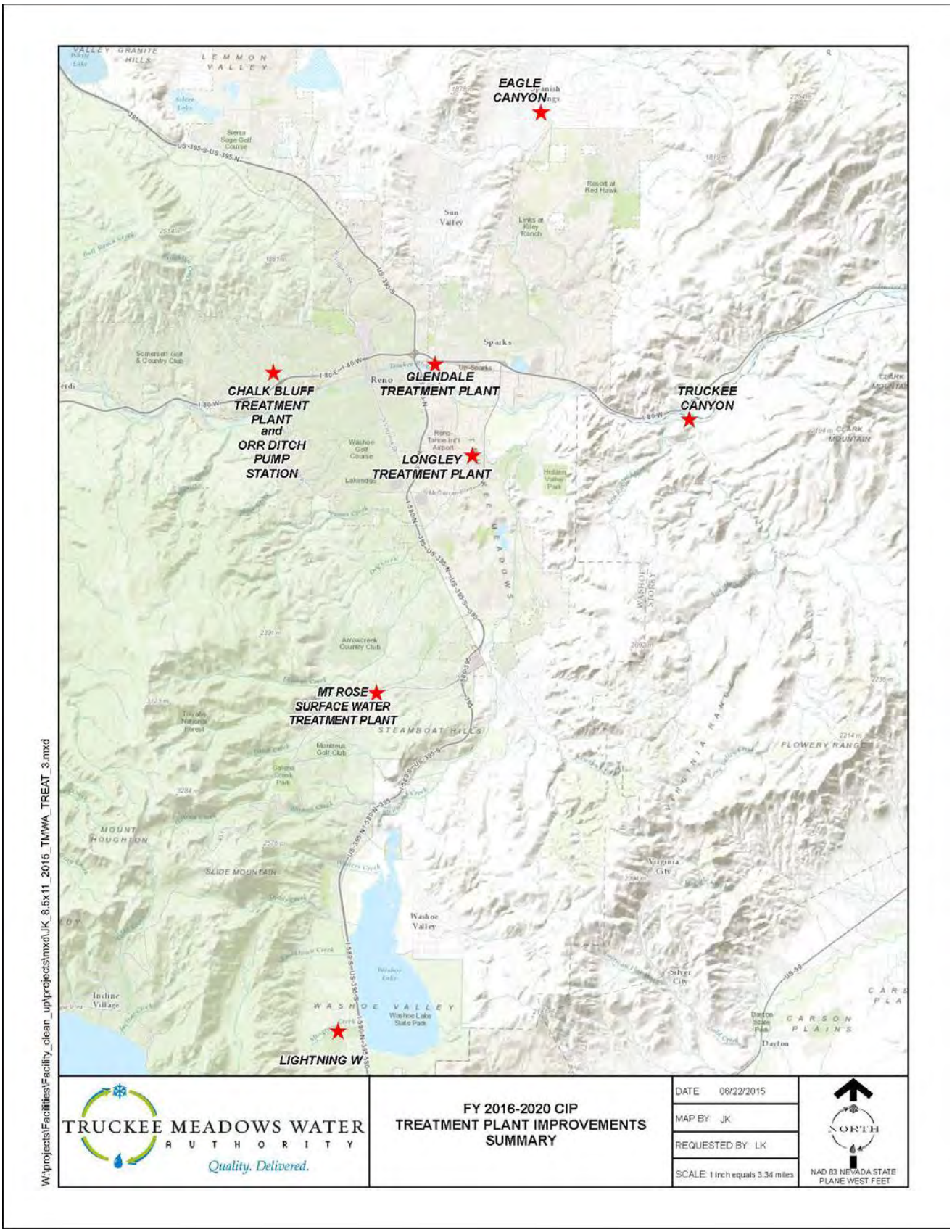
SCHEDULE: The project schedule was accelerated in response to the current drought. The new groundwater supply should be available in the summer of 2016.

Treatment Plant Improvements
Summary

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Treatment Plants- General Fix & Finish	1,000	1,000	1,000	1,000	1,000	5,000
2	Customer Rates	Emergency Operations Annex	0	1,200	0	0	0	1,200
2	Customer Rates	Eagle Canyon Transmission Main Phase 2	0	100	1,800	0	0	1,900
2	Developer Fees	Truckee Canyon Water Treatment Improvements	0	0	0	250	0	250
2	Developer Fees	Lightening W Treatment Improvements	0	0	0	200	0	200
1	Customer Rates	SCADA Rehab/Plant Operating Software	915	475	265	265	265	2,185
3	Customer Rates	Glendale Clearwell # 2 Install	0	0	0	75	75	150
2	Customer Rates	Orr Ditch PS Improvements	500	0	0	0	0	500
1	Developer Fees	Mt Rose Surface Water Treatment Plant	1,000	6,000	1,200	0	0	8,200
Subtotal Treatment Improvements			**3,415**	**8,775**	**4,265**	**1,790**	**1,340**	**19,585**

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

*If the project is too general in description and/or location, it will not be identified in the map nor have a picture in the individual Project Description.


EAGLE CANYON
GLENDALE TREATMENT PLANT
CHALK BLUFF TREATMENT PLANT and ORR DITCH PUMP STATION
LONGLEY TREATMENT PLANT
TRUCKEE CANYON
MT ROSE SURFACE WATER TREATMENT PLANT
LIGHTNING W
Reno
Sparks
Sun Valley
Somersett Golf & Country Club
Arrowcreek Country Club
Washoe Valley
Virginia City
Silver City
Dayton
Incline Village
MOUNT ROUGHTON
SLIDE MOUNTAIN
STEAMBOAT HILLS
FLOWERY RANGE
CARSON PLAINS
TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.
FY 2016-2020 CIP
TREATMENT PLANT IMPROVEMENTS
SUMMARY
DATE 06/22/2015
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NORTH
NAD 83 NEVADA STATE PLANE WEST FEET
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Treatment Plant Improvements
Treatment Plants General Fix & Finish FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Treatment Plants-General Fix & Finish	1,000	1,000	1,000	1,000	1,000	5,000

PROJECT DESCRIPTION: TMWA operates surface water treatment plants (WTP) at Chalk Bluff and Glendale and ground water treatment plants at Lightning W, Truckee Canyon and Longley Lane. Improvements are necessary from time to time to keep these facilities in good operating condition. The Chalk Bluff Treatment Plant is nearly 20 years old and the Glendale treatment plant and upgrades is over 35 years old. Each plant requires a certain amount of rehabilitation and improvements now and in the future. The Chalk Bluff plant can require raw water basin improvements, chemical system improvements, chlorine contact chamber/curtain replacements, finished water pump replacements, filter media change out, solids handling improvements, filter valve and actuator replacements, instrumentation and control upgrades, roof rehabilitation/replacement, additional standby generation capacity . The Glendale Treatment Plant can require similar improvements including replacement of turbidity meters, instrumentation upgrades, filter valve and actuator replacements, replacement of raw water and finished water pumps, filter media change out. Significant improvements have been made to the Glendale Treatment Plant over the past two years so most activity will be focused on the Chalk Bluff Treatment Facility. The Truckee Canyon WTP needs some improvements to improve arsenic and lead/copper compliance challenges. The Lightning W WTP is in need of filter media exchange and significant facility/structure improvements. The Longley WTP capacity is going to be utilized especially during drought condition and with required and instrumentation upgrades to the treatment process are necessary.

SCHEDULE: This spending is classified as necessary since specific projects are sometimes not identifiable until areas not normally observable are examined during downtime.

Treatment Plant Improvements
Emergency Operations Annex FY 2017

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Emergency Operations Annex		1,200		-	-	1,200

PROJECT DESCRIPTION: TMWA is currently in the planning and conceptual design phase for a Primary Emergency Operations Center (EOC) with potential for 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. Disaster Recovery includes providing a system to backup and restore all key operating systems to operational status.

SCHEDULE: Design, bid and build in FY 2017 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.

Treatment Plant Improvements
Eagle Canyon Transmission Main Phase 2 FY 2017 – 2018

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	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 is scheduled to be designed and bid in FY 2017 with construction in FY 2018.

Treatment Plant Improvements
Truckee Canyon Water Treatment Improvements FY 2019

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Developer Fees	Truckee Canyon Water Treatment Improvements	-	-	-	250	-	250

PROJECT DESCRIPTION: The current treatment system removes arsenic, iron, and manganese and consists of one well, one tank, a greensand treatment system and a percolation/evaporation pond for backwash water with a total capacity of about 50 gallons per minute. With the equipping of a second well, it will be necessary to expand the treatment facilities to provide additional treatment and solids handling capacity.

SCHEDULE: The improvements are scheduled for FY 2019, but may be needed sooner if growth occurs in the system. The additional treatment capacity will be required at the same time that the new well is equipped.

Treatment Plant Improvements
Lightening W Treatment Improvements FY 2019

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Developer Fees	Lightening W Treatment Improvements				200		200

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

SCHEDULE: The project is scheduled for FY 2019 but will ultimately be determined based on the remaining life of the ion exchange resin in the filter vessels.

PROJECT:

Treatment Plant Improvements
SCADA Rehab/Plant Operating Software FY 2016 - 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	SCADA Rehab/Plant Operating Software	915	475	265	265	265	2,185

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 is 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 program logic controllers (plc) and other equipment. Therefore, TMWA has settled on a systematic approach to updating the equipment/ and operating software in fiscal year 2015 with telemetry improvement in the ensuing four years to convert to wireless transmission of data feeds where possible.

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

Treatment Plant Improvements
Glendale Clearwell #2 Install FY FY2019 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
3	Customer Rates	Glendale Clearwell #2 Install	-	-	-	75	75	150

PROJECT DESCRIPTION: The current clearwell where treated water is staged before entering the distribution system will need to be expanded if water demand increases on this facility. This project is considered to be contingent spending if required but is completely dependent on development increasing significantly and impacting water demands. The second wet well may be required if Glendale is operated at its rated capacity of 34.5 MGD to allow for more disinfectant contact time at higher operating levels. The wet wells provide the necessary capacity for disinfectant contact time.

SCHEDULE: Anticipated schedule is FY19 and FY20. Preliminary investigative work and/or existing clearwell improvements will be undertaken in FY16 in the water treatment fix/finish budget due to necessary treatment plant WQ improvements.

Treatment Plant Improvements
Orr Ditch Pump Station Improvements FY 2016

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Orr Ditch PS Improvements	500	-	-	-	-	500

PROJECT DESCRIPTION: The Orr Ditch Pump Station has been relied upon in the past to provide part of the raw water feed to the Chalk Bluff Water Treatment Plant CBWTP. This facility is now only used intermittently since all capacity improvements have been completed on the Highland Canal which now completely supplies the CBWTP with raw water. However, the facility must be available at all times as a backup source to the Highland Canal. A provision has been made for pump station improvements involving valve replacement and piping improvements in the wet well since deteriorating valves caused flooding that impacted electrical circuits on the pumps necessitating expensive repairs. This project was deferred from last fiscal year.

SCHEDULE: The improvements are currently under design and will be constructed in FY 2016.

PROJECT:

Treatment Plant Improvements
Mt. Rose Surface Water Treatment Plant FY 2016 - 2018

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Developer Fees	Mt. Rose Surface Water Treatment Plant	1,000	6,000	1,200	-	-	8,200

PROJECT DESCRIPTION: TMWA staff has determined that sufficient evidence exists to conclude that the number of permitted groundwater rights in Area 15 is greater than the amount of actual physical water than can be extracted on a sustainable basis without impairing TMWA water rights used to meet existing commitments or impairing existing domestic wells. To mitigate the potential shortfall in real water in this area, TMWA has identified the need for additional infrastructure and facilities to take advantage of Galena, Thomas and Whites Creek resources to improve the long-term viability and sustainability of water 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 small 2 MGD treatment plant located near the Arrowcreek system to treat Whites Creek and Thomas Creek water is proposed. 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".

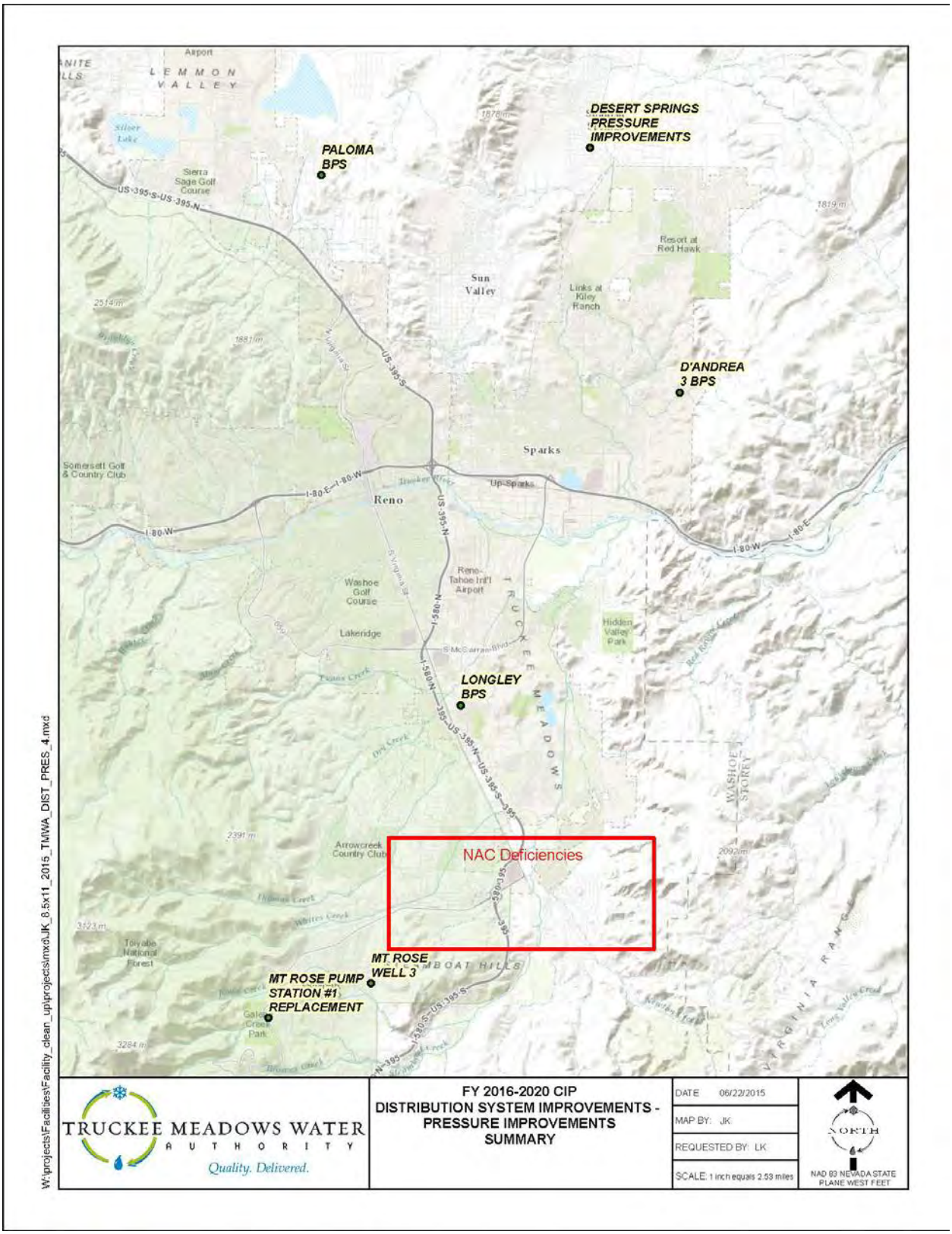
SCHEDULE: Planning, site selection / acquisition, permitting and design in FY 2016. Bidding and construction will occur in FY2017, and completion of construction in FY 2018.

Distribution System Improvements – Pressure Improvements Summary

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Pressure Regulators Rehabilitation	500	650	500	450	450	2,550
1	Customer Rates	Pressure Reducing Valve (Roll Seal) Removal	400	400	400	400	400	2,000
2	Customer Rates	Land Acquisitions	500	500	500	500	500	2,500
1	Customer Rates	Desert Springs Pressure Improvements	-	400	-	-	-	400
1	Customer Rates	Mt. Rose Pump Station #1 Replacement	-	50	1000	-	-	1,050
1	Developer Fees	D'Andrea #3 Pump Station (developer reimbursement)	100	-	-	-	-	100
2	Customer Rates	Paloma BPS/PRS/Main	-	-	-	750	-	750
2	Developer Fees	Longley BPS/Double R Capacity Increase	-	-	500	-	-	500
1	Customer Rates	Pump Station Oversizing	250	-	-	-	-	250
1	Customer Rates	Pump Station Rebuilds, Rehabilitations	1,350	1,900	1,000	1,000	1,000	6,250
1	Reserve	NAC Deficiencies-Saddlehorn, Upper Toll Road, STMGID East	340	360	100	2,400	-	3,200
2	Customer Rates	Standby Generator Replacements	650	650	150	150	150	1,750
Sub-Total Pressure Improvements			**4,090**	**4,910**	**4,150**	**5,650**	**2,500**	**21,300**

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

*If the project is too general in description and/or location, it will not be identified in the map nor have a picture in the individual Project Description.


DESERT SPRINGS PRESSURE IMPROVEMENTS
PALOMA BPS
D'ANDREA 3 BPS
LONGLEY BPS
NAC Deficiencies
MT ROSE WELL 3
MT ROSE PUMP STATION #1 REPLACEMENT
Airport
LEMMON VALLEY
Sierra Sage Golf Course
Sun Valley
Links at Riley Ranch
Resort at Red Hawk
Sparks
Somersett Golf & Country Club
Reno
Up-Sparks
Washoe Golf Course
Reno-Tahoe Int'l Airport
Lakeridge
Hidden Valley Park
Arrowcreek Country Club
Galena Creek Park
Toiyabe National Forest
TRUCKEE MEADOWS
WASHOE STOREY
VIRGINIA RANGE
I-80 E
I-80 W
US 395 S
US 395 N
I-580 N
I-580 S
TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.
FY 2016-2020 CIP
DISTRIBUTION SYSTEM IMPROVEMENTS - PRESSURE IMPROVEMENTS SUMMARY
DATE 06/22/2015
MAP BY: JK
REQUESTED BY: LK
SCALE: 1 inch equals 2.59 miles
NORTH
NAD 83 NEVADA STATE PLANE WEST FEET
W:\projects\Facilities\Facility_clean_up\projects\mxd\JK_8.5x11_2015_TMWA_DIST_PRES_4.mxd

Distribution System Improvements – Pressure Improvements
Pressure Regulators Rehabilitation FY 2016 - 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Pressure Regulators Rehabilitation	500	650	500	450	450	2,550

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 100 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. For fiscal year 2016 approximately 15 pressure regulating stations have been identified for varying levels of rehabilitation.

SCHEDULE: This is an ongoing rehabilitation project with 54 individual stations requiring rehabilitation or replacement having been identified for the next five years.

Distribution System Improvements – Pressure Improvements
Pressure Reducing Valve (Roll Seal) Removal FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Pressure Reducing Valve (Roll Seal) Removal	400	400	400	400	400	2,000

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

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

Distribution System Improvements – Pressure Improvements
Land Acquisition

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Land Acquisitions	500	500	500	500	500	2,500

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

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

Distribution System Improvements – Pressure Improvements
Desert Springs Pressure Improvements FY 2017

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Desert Springs Pressure Improvements	0	400	0	0	0	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 2017.

Distribution System Improvements – Pressure Improvements
Mt. Rose Pump Station #1 Replacement FY 2017 – FY 2018

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Mount Rose Well #1 Pump Station Replacement	-	50	1,000	-	-	1,050

PROJECT DESCRIPTION: The Mt. Rose Pump Station #1 houses both the booster pumps and Mt. Rose Well #3. The building and facilities are over 40 years old and are currently not in very good overall condition and reaching the end of their service life. In addition, the cast iron pipe and fittings in the station are not suitable for the 375 psi operating conditions.

SCHEDULE: The improvements are scheduled for design in FY 2017 and construction in FY 2018.

Distribution System Improvements – Pressure Improvements
D'Andrea #3 Pump Station (developer direct cost) FY 2016

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Developer Fees	D'Andrea #3 Pump Station (developer direct cost)	100	-	-	-	-	100

PROJECT DESCRIPTION: The project is a new developer funded booster pump station to serve a new phase of the D'Andrea residential development on the east side of Sparks. TMWA will design and construct the facilities on a site dedicated by the developer. The developer is responsible for 100 percent of the project. TMWA will be reimbursed for out of pocket expenditures as the project proceeds.

SCHEDULE: The developer has requested an in-service date in the fall of 2016 but the completion date is subject to change based on the developer's schedule.

Distribution System Improvements – Pressure Improvements
Paloma Booster Pump Station/Pressure Regulating Station/Main
FY 2019

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Paloma BPS/PRS/Main	-	-	-	750	-	750

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. Assuming the North Valleys Integration project is constructed in FY 2016 as planned, the improvements will consist of a pressure regulating station supplied by a main tie to the medium-high pressure 24-inch Lemmon Drive main.

SCHEDULE: The improvements are currently scheduled for construction in FY 2019, but the project may be considered for acceleration based on a review of all project priorities.

Distribution System Improvements – Pressure Improvements
Longley Booster Pump Station/Double R Capacity Increase FY 2018

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	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 2018 but are dependent upon growth. The improvements are necessary when supply through the Double R Intertie must exceed 5400 gallons per minute.

PROJECT:

Distribution System Improvements – Pressure Improvements
Pump Station Oversizing

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Pump Station Oversizing	250	-	-	-	-	250

PROJECT DESCRIPTION: The project consists 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 scheduled for construction in FY 2016 but the schedule is subject to change based on the developer's schedule.

Distribution System Improvements – Pressure Improvements
Pump Station Rebuilds, Rehabilitation FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Pump Station Rebuilds, Rehabilitations	1,350	1,900	1,000	1,000	1,000	6,250

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. For FY 2016 TMWA has identified Satellite Hills pump station for an above ground rebuild/replacement.

SCHEDULE: In FY 2017 the Lakeridge pump station will be relocated or replaced in an underground installation that will include a pressure regulator and main tie to correct pressure and fire flow deficiencies on Park Ridge Circle. The 2017 budget also includes a main tie from the new Satellite Hills pump station to eliminate the existing underground Spanish Springs #1 pump station.

Distribution System Improvements – Pressure Improvements
NAC Deficiencies-Saddlehorn, Upper Toll Road, STMGID East
FY 2016 - 2019

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Reserve	NAC Deficiencies-Saddlehorn, Upper Toll Road, STMGID East	340	360	100	2,400	-	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 in Saddlehorn, on Sioux Trail, on Geiger Grade, on Westwind Circle and Terry Way will be addressed in FY 2016-2018. The new pressure zone on upper Toll Road will be constructed in FY 2019 subject to acquisition of the tank site on BLM property.

Distribution System Improvements – Pressure Improvements
Standby Generator Replacements FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Standby Generator Replacements	650	650	150	150	150	1,750

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 Department requires additional 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.

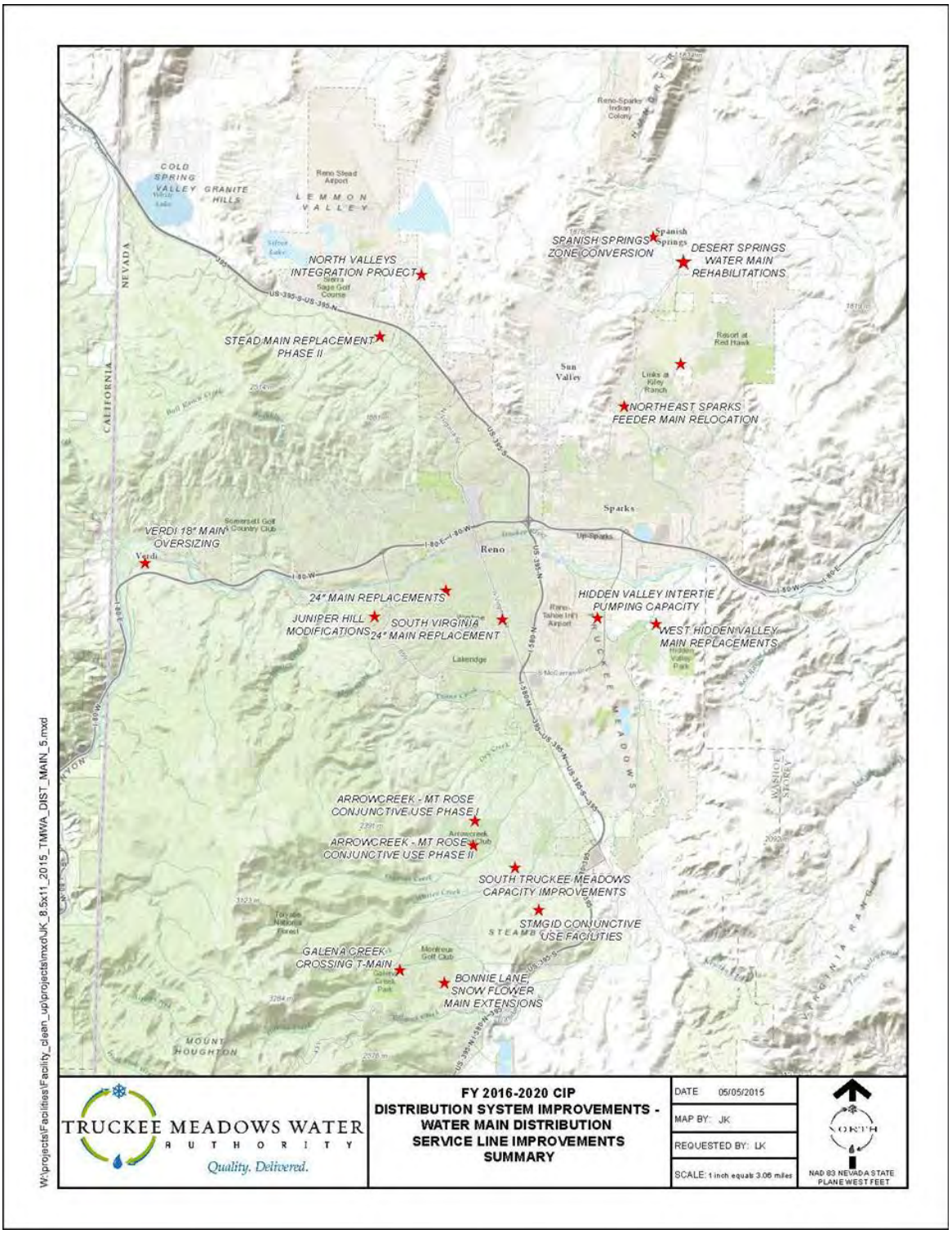
SCHEDULE: In FY 2016 a generator will be installed at the Glendale Water Treatment Plant to allow continued plant production at some defined level under emergency conditions. In FY 2017 a dedicated generator will be installed for the North Gate pump at Chalk Bluff.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
Summary

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Street & Highway Main Replacements	4,500	5,000	5,000	5,500	5,600	25,600
1	Developer Fees	North Valleys Integration Project	17,800	-	-	-	-	17,800
1	Customer Rates/ Developer Fees	Stead Main Replacement Phase II	5,000	-	-	-	-	5,000
1	Customer Rates	Hidden Valley Intertie Pumping Capacity	100	500	-	-	-	600
1	Customer Rates	California-Marsh 24" Main Replacement	-	100	900	-	-	1,000
2	Customer Rates	Booth, Sharon Way, Monroe 24" Main Replacements	-	-	-	100	3,100	3,200
2	Customer Rates	Juniper Hill Modifications	500	-	-	-	-	500
2	Developer Fees	Verdi 18" Main oversizing	375	-	-	-	-	375
3	Developer Fees	South Virginia 24" Main (Kumle to Peckham)	-	-	-	100	900	1,000
2	Customer Rates	NE Sparks Feeder Main Relocation	-	900	-	-	-	900
1	Customer Rates	Spanish Springs -SC south Zone Conversion	700	-	-	-	-	700
2	Customer Rates	West Hidden Valley, Surge St., Piping Rock Main Replacements	-	1,000	-	230	500	1,730
2	Customer Rates	Desert Springs Water Main Rehabilitations	-	-	1,280	-	1,280	2,560
2	Customer Rates	Galena Cr. Xing T-Main	-	300	-	-	-	300
3	Developer Fees	Bonnie Ln., Snow Flower, Main Extensions	-	-	-	620	900	1,520
2	Developer Fees	South Truckee Meadows Capacity Improvements	-	-	400	-	-	400
1	Reserve	STMGID Conjunctive Use Facilities	200	1,500	2,100	-	-	3,800
1	WC Reserve	Arrowcreek-Mt. Rose Conjunctive Use Ph 1	2,800	-	-	-	-	2,800
1	WC Reserve	Arrowcreek-Mt. Rose Conjunctive Use Ph 2	-	1,200	-	-	-	1,200
1	Customer Rates	Arc Flash Improvements	100	100	100	-	-	300
3	Developer Fees	General Waterline Extensions	100	100	100	100	100	500
2	Customer Rates	Galv/Poly Service Line Replacements	400	400	400	400	400	2,000
Subtotal Main-Distribution Improvements			**32,575**	**11,100**	**10,280**	**7,050**	**12,780**	**73,785**

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

*If the project is too general in description and/or location, it will not be identified in the map nor have a picture in the individual Project Description.



Distribution System Improvements – Water Main-Distribution-Service Line Improvements
Street & Highway Main Replacements FY 2016 - 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Street & Highway Main Replacements	4,500	5,000	5,000	5,500	5,600	25,600

PROJECT DESCRIPTION: Provision is made each year for water main replacements in conjunction with repaving efforts by the City of Reno, City of Sparks, 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 has planned for about $5.0 million annually for these efforts. The spending is reflective of historical activity. Levels of spending can vary year to year and are difficult to predict. These efforts by far are the most extensive for water system rehabilitation.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
North Valleys Integration Project FY 2016

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Developer Fees	North Valleys Integration Project	17,800	-	-	-	-	17,800

PROJECT DESCRIPTION: The project includes about 29,000 feet of 24-inch water main on Lemmon Drive between Waterash and Old North Virginia, 2,600 feet of 18-inch main on Old Virginia between Golden Valley Road and Hiendel Road and a SCADA controlled valve vault near Old North Virginia and Hiendel Road. The facilities will allow 100 percent of the Fish Springs groundwater supply (currently 6,500 gallons per minute) to be available for use within the North Valleys areas. This groundwater supply will offset an equal amount of surface water supplies that are normally pumped from the Truckee Meadows to the North Valleys areas and will help TMWA to conserve additional upstream drought reserves should the drought continue. TMWA expects to fund $15 million of this project with a Drinking Water State Revolving (DWSR) loan.

SCHEDULE: The $17.8 million project is currently under design with construction scheduled to begin sometime in the late summer or fall of 2015 with an in-service date of June 1, 2016.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
Stead Main Replacement Phase II FY 2016

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates/ Developer Fees	Stead Main Replacement Phase II	5,000	-	-	-	-	5,000

PROJECT DESCRIPTION: The Stead Main was originally constructed in the early 1950's to serve the Stead Air Force Base. Numerous leak repairs have been required in past years indicate that a significant amount of treated water has been lost through the pipeline. The pipeline is approaching the end of its service life and is in need of replacement.

Phase 2 includes replacement of the remaining 2.5 miles of the Stead Main between Golden Valley Drive and the Stead Tanks. This section of main is where the majority of the leaks have occurred and significant corrosion issues have been identified.

SCHEDULE: The project is scheduled for construction in FY 2016.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
Hidden Valley Intertie Pumping Capacity FY 2016 – 2017

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Hidden Valley Intertie Pumping Capacity	100	500	-	-	-	600

PROJECT DESCRIPTION: When Washoe County constructed the Longley Lane Groundwater Treatment Facility to serve Hidden Valley and Bella Vista, they severed interties with the TMWA gravity system. A small single unit booster pump station located at the Children's Cabinet was left intact, but it does not have the capacity to provide the required maximum day supply to the Hidden Valley area. The pump station also lacks reliability without a second pump. Since it is desired to serve the Hidden Valley system with surface water in non-drought years, a second pump station and intertie is necessary.

SCHEDULE: Design is scheduled for FY 2016 and construction is scheduled for FY 2017.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
California-Marsh 24" Main Replacement FY 2017 - 2018

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	California-Marsh 24" Main Replacement	-	100	900	-	-	1,000

PROJECT DESCRIPTION: When TMWA evaluated the alternatives to replacing the 66-year old 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. With that decision, it was necessary to develop an 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. The plan ultimately 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 2018 so that a significant amount of pipe can be replaced that is located under private property between California and Marsh.

SCHEDULE: The pipeline will be designed in FY 2017 and construction in fiscal year 2018.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
Booth, Sharon Way, Monroe 24" Main Replacements FY 2019 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	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 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 2019 and construction is scheduled for FY 2020. TMWA will attempt to coordinate construction with other municipal infrastructure projects if possible, but the existing pipes will be 72-years old by the proposed construction date.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
Juniper Hill Modifications FY 2016

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Juniper Hill Modifications	500	-	-	-	-	500

PROJECT DESCRIPTION: Construction of the Mayberry to Caughlin Parkway 24-inch main in 2012 (also associated with the 2012-13 Plumb Lane widening project) and the Zoe Lane conversion project in 2015 now allows retirement of the 66-year old existing 24-inch pipe from Hunter Creek Reservoir to Caughlin Parkway. Retirement of the pipe requires several piping modifications and a new section of parallel pipe on Juniper Hill Road.

SCHEDULE: The project will be constructed in FY 2016.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
Verdi 18" Main Oversizing FY 2016

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Developer Fees	Verdi 18" Main Oversizing	375	-	-	-	-	375

PROJECT DESCRIPTION: The project consists of oversizing of a developer installed main to serve a residential project on the east side of Verdi. To serve future demand in Verdi necessitates the construction of an 18" main. A developer who wants to develop near the Canepa Ranch area requires a 12" main. TMWA will work with the developer to install an 18" main and pay for oversizing. Development of this area has become more certain and the priority of this project was raised to necessary spending from contingency spending in the 2016-2020 CIP.

SCHEDULE: It is anticipated that the developer's project will move forward in FY 2016.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
South Virginia 24" Main (Kumle to Peckham) FY 2019 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
3	Developer Fees	South Virginia 24" Main (Kumle to 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.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
NE Sparks Tank Feeder Main Relocation FY 2017

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	NE Sparks Tank Feeder Main Relocation	-	900	-	-	-	900

PROJECT DESCRIPTION: The NE 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: The improvements will be constructed in FY 2017.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
Spanish Springs – Spring Creek South Zone Conversion FY 2016

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Spanish Springs –Spring Creek south Zone Conversion	700	-	-	-	-	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: The improvements are scheduled for construction in FY 2016.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
West Hidden Valley, Surge St., Piping Rock Main Replacements
FY 2017 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	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 2017, the Surge Street main is scheduled for FY 2019 and the Piping Rock main replacement is scheduled for FY 2020.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
Desert Springs Water Main Rehabilitations FY 2018 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Desert Springs Water Main Rehabilitations	-	-	1,280	-	1,280	2,560

PROJECT DESCRIPTION: The project involves bringing surface water to the area to blend down nitrate concentrations. Other alternatives are being explored at this time and the final plan may be available in fiscal year 2017.

SCHEDULE: Repairs will occur in FY 2018.

PROJECT LOCATION:

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
Galena Creek Crossing T-Main FY 2017

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Galena Cr. Xing T-Main	-	300	-	-	-	300

PROJECT DESCRIPTION: An existing transite transmission main of varying pressure classes is installed between Mt. Rose Well #3 and the Mt. Rose Tank #1. Due to the extreme elevation difference between the two terminal points, pressures in the lower portions of the pipeline range from 200-400 psi. Preliminary analyses indicate the lower portions of the pipeline may not provide adequate pressure ratings to provide for normal operational plus surge pressures. If detailed analysis indicates a high probability of a main break, the Galena Creek crossing would be a priority candidate for replacement.

SCHEDULE: Construction is currently scheduled for FY 2017 depending on the results of the detailed engineering evaluation of the pipeline.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
Bonnie Ln., Snow Flower, Main Extensions FY 2019 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	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 2019 and FY 2020.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
South Truckee Meadows Capacity Improvements FY 2018

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Developer Fees	South Truckee Meadows Capacity Improvements	-	-	400	-	-	400

PROJECT DESCRIPTION: The project consists of a 1,000 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 2018.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
STMGID Conjunctive Use Facilities FY 2016 – 2018

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Reserve	STMGID Conjunctive Use Facilities	200	1,500	2,100	-	-	3,800

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 $3.8 million will be used for "pipeline oversizing to be allocated to development. The facilities will provide off-peak supply which will allow TMWA to implement conjunctive use in the STMGID West system.

SCHEDULE: The facilities are scheduled for design in FY 2016 and construction in FY 2017 and 2018.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
Arrowcreek-Mt. Rose Conjunctive Use Phase 1 FY 2016

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	WC Reserve	Arrowcreek-Mt. Rose Conjunctive Use Ph 1	2,800	-	-	-	-	2,800

PROJECT DESCRIPTION: The major Phase 1 facilities consist of a new booster pump station on the STMGID Well #11 site, approximately 3,600 feet of 10-inch ductile iron discharge pipe on Zolezzi Lane between Well #11 and Welcome Way, a new booster pump station at the Arrowcreek Well #1 site and a rebuild of the existing Copper Cloud pump station to deliver conjunctive use water to the Arrowcreek #3 Tank. With the addition of SCADA control to the Tannerwood pressure regulating station, these facilities will be capable of providing off-peak supply to the Arrowcreek and lower Mt. Rose systems.

SCHEDULE: Design was initiated in FY 2015 and the facilities are scheduled for completion in FY 2016.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
Arrowcreek-Mt. Rose Conjunctive Use Phase 2 FY 2017

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	WC Reserve	Arrowcreek-Mt. Rose Conjunctive Use Ph 2	-	1,200	-	-	-	1,200

PROJECT DESCRIPTION: Phase 2 facilities consist of a new booster pump station at the Mt. Rose Well #5 site and a SCADA controlled intertie between the Mt. Rose and St. James systems to expand the delivery of off-peak conjunctive use water to the remainder of the water system on the Mt. Rose-Galena fan area.

SCHEDULE: These facilities are scheduled for construction in FY 2017.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
Arc Flash Improvements FY 2016 – 2018

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Arc Flash Improvements	100	100	100	-	-	300

PROJECT DESCRIPTION: This project involves performance of short circuit studies, breaker analysis and coordination studies and arc flash hazard studies for newly acquired County and STMGID facilities in conformance with National Electric Code (NEC), OSHA and National Fire Protection Agency regulations. Ultimately the results of the studies will allow identification of potential electrical hazards for workers so that they can utilize appropriate personal protective equipment.

SCHEDULE: Completion of the studies, adjustment or replacement of breakers and hazard labeling of electrical equipment will be phased over a three year period between FY 2016 and FY 2018.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
General Waterline Extensions FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
3	Developer Fees	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.

Distribution System Improvements – Water Main-Distribution-Service Line Improvements
Galvanized/Poly Service Line Replacements FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Galv/Poly Service Line Replacements	400	400	400	400	400	2,000

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.

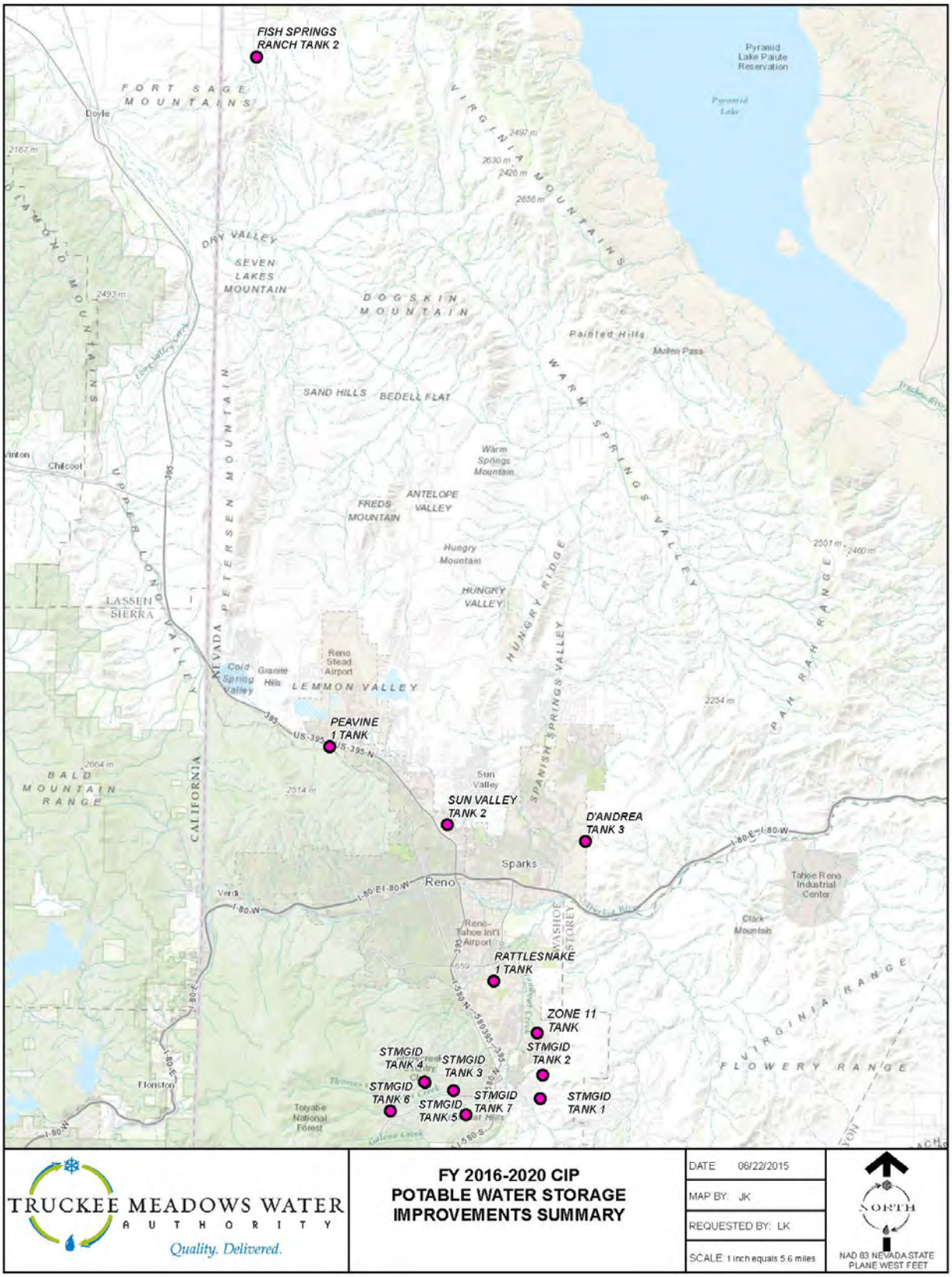
SCHEDULE: This is an ongoing annual project budget. Service lines will be replaced as they are identified.

Potable Water Storage Improvements
Summary

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Developer Fees	D'Andrea #3 Tank	100	-	-	-	-	100
2	Customer Rates	Peavine Tank Replacement	-	2,500	-	-	-	2,500
2	Developer Fees/ Customer Rates	Sun Valley #2 Tank	-	-	1,750	-	-	1,750
2	Developer Fees	Rattlesnake Ring Addition	-	-	-	800	-	800
1	Reserve	Zone 11 Tank	-	3,000	-	-	-	3,000
3	Developer Fees	Fish Springs Ranch #2	-	-	-	-	100	100
1	Reserve	Former STMGID Tank Recoats	170	-	220	-	300	690
1	Customer Rates	Storage Tank Recoats; Access; Drainage Improvements	760	780	860	800	800	4,000
Subtotal Storage Improvements			**1,030**	**6,280**	**2,830**	**1,600**	**1,200**	**12,940**

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

*If the project is too general in description and/or location, it will not be identified in the map nor have a picture in the individual Project Description.



TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.

FY 2016-2020 CIP
POTABLE WATER STORAGE IMPROVEMENTS SUMMARY

DATE	06/22/2015
MAP BY:	JK
REQUESTED BY:	LK
SCALE:	1 inch equals 5.6 miles

NORTH

NAD 83 NEVADA STATE PLANE WEST FEET

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Potable Water Storage Improvements
D'Andrea #3 Tank FY 2016

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Developer Fees	D'Andrea #3 Tank	100	-	-	-	-	100

PROJECT DESCRIPTION: The project is a developer design-build-dedicate storage tank in the D'Andrea development on the east side of Sparks. TMWA will perform design review and inspection during construction. The developer will reimburse TMWA for any costs incurred.

SCHEDULE: The project is currently scheduled for construction in FY 2016, but the schedule is subject to change depending on the progress of the residential development.

Potable Water Storage Improvements
Peavine Tank Replacement FY 2017

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Peavine Tank Replacement	-	2,500	-	-	-	2,500

PROJECT DESCRIPTION: The Peavine Tank is an existing 2.0 MG pre-stressed concrete tank constructed by the Silver Lake Water Company in 1978. A 2008 inspection of the tank interior revealed significant areas of concrete spalling and exposed reinforcing steel in the tank roof. Repairs were attempted in 2009. The repair process required chipping and cleaning of damaged areas which revealed much more extensive deterioration than was initially estimated. Over 1400 square feet of damage to the roof dome structure was actually repaired as compared to the original estimate of 400 square feet. Significant delamination of the roof structure is expected to continue. In addition, closer inspection during the roof repair work indicated moderate cracking of the dome ring and walls. Damage to the pre-stressed dome ring is of special concern since it resists the thrust of the arched roof in tension. The replacement tank will be a 2.5 MG above ground steel tank. The additional volume will accommodate future storage needs of the Stead system and eliminate a future storage tank project.

SCHEDULE: It was anticipated that the 2008 repairs would provide an additional 5-7 years of life for the existing structure; therefore, construction is scheduled for FY 2017.

Potable Water Storage Improvements
Sun Valley #2 Tank FY 2018

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Developer Fees/ Customer Rates	Sun Valley #2 Tank	-	-	1,750	-	-	1,750

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 2018 subject to successful acquisition of a suitable tank site which is elevation sensitive.

Potable Water Storage Improvements
Rattlesnake Ring Addition FY 2019

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	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 regulation 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 2019.

Potable Water Storage Improvements
Zone 11 Tank FY 2017

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Reserve	Zone 11 Tank	-	3,000	-	-	-	3,000

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 construction in FY 2017.

Potable Water Storage Improvements
Fish Springs Ranch #2 FY 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
3	Developer Fees	Fish Springs Ranch #2	-	-	-	-	100	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 2020 with construction to follow in FY 2021. The actual schedule will be dependent upon the rate of growth in the North Valleys.

Potable Water Storage Improvements
Former STMGID Tank Recoats FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Reserve	Former STMGID Tank Recoats	170	-	220	-	300	690

PROJECT DESCRIPTION: The former STMGID system included a total of seven 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.

Potable Water Storage Improvements
Storage Tank Recoats; Access; Drainage Improvements
FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Storage Tank Recoats; Access; Drainage Improvements	760	780	860	800	800	4,000

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 about six tanks per year having this work performed. The budget and plan also includes exterior painting of steel tanks and any replacement of any interior components that may be corroded.

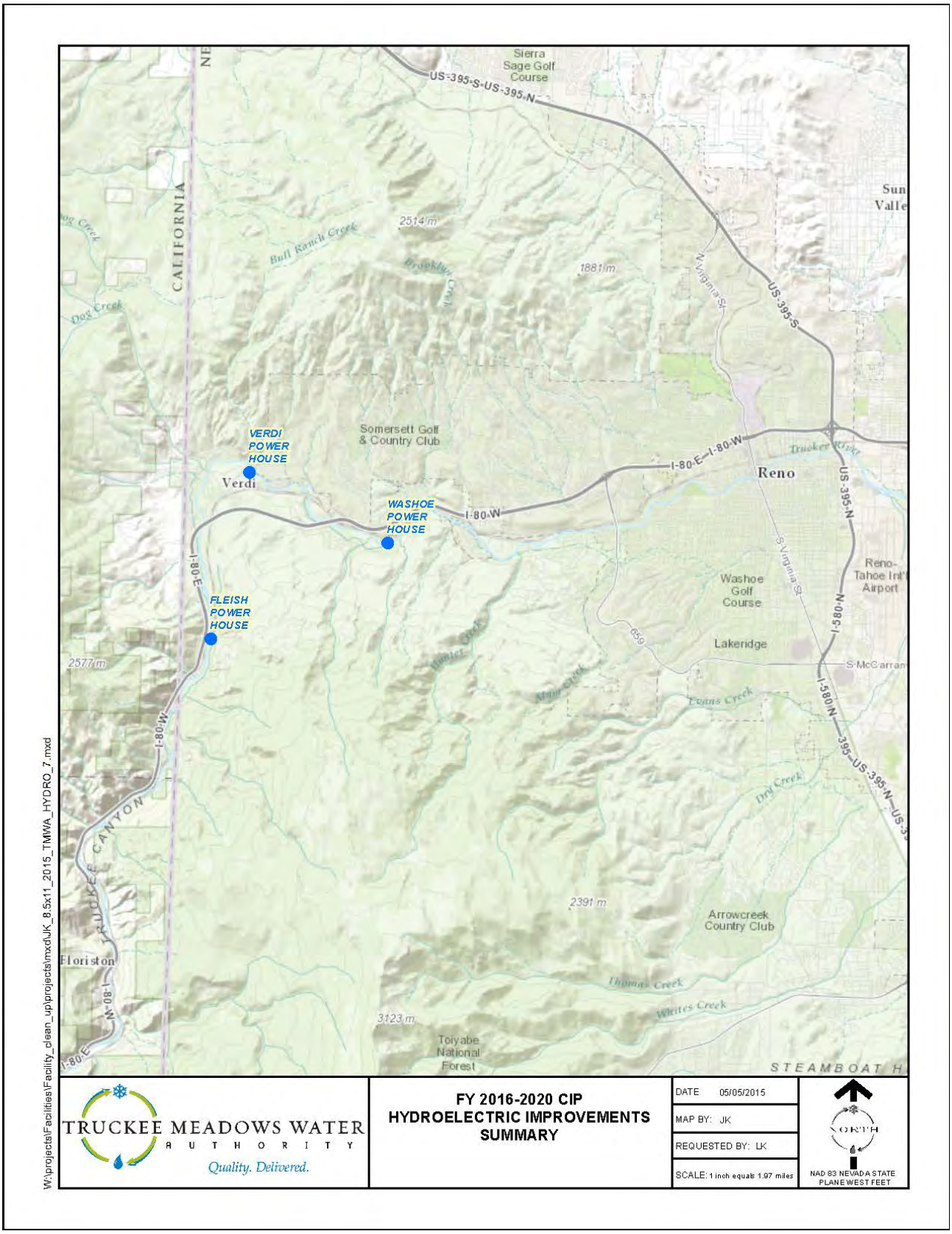
SCHEDULE: This is an ongoing annual project. It is anticipated that six tanks will need to be recoated approximately every year.

Hydroelectric Improvements
Summary

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Flume, Forebay, Diversion, and Canal Improvements	365	510	560	260	400	2,095
2	Customer Rates	Hydro Plant Equipment Replacement/Upgrades	150	-	70	70	-	290
3	Customer Rates	Hydro Plant Generator Rewinds	-	-	350	350	350	1,050
Subtotal Hydroelectric Improvements			**515**	**510**	**980**	**680**	**750**	**3,435**

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

*If the project is too general in description and/or location, it will not be identified in the map nor have a picture in the individual Project Description.


Sierra Sage Golf Course
US-395-S-US-395-N
CALIFORNIA
Bull Ranch Creek
Dog Creek
2514 m
1881m
Brooklyn Creek
N Virginia St
US-395-S
Somersett Golf & Country Club
VERDI POWER HOUSE
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I-80-E-I-80-W
Truckee River
Reno
US-395-N
WASHOE POWER HOUSE
I-80-W
I-80-E
FLEISH POWER HOUSE
S Virginia St
Reno-Tahoe Int'l Airport
Washoe Golf Course
I-580-N
Lakeridge
S McCarran
Hunter Creek
Evans Creek
Dry Creek
2577 m
TRUCKEE CANYON
I-80-W
Floriston
2391 m
Arrowcreek Country Club
Thomas Creek
Whites Creek
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STEAMBOAT H
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TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.
FY 2016-2020 CIP
HYDROELECTRIC IMPROVEMENTS
SUMMARY
DATE 05/05/2015
MAP BY: JK
REQUESTED BY: LK
SCALE: 1 inch equals 1.97 miles
NORTH
NAD 83 NEVADA STATE PLANE WEST FEET

Hydroelectric Improvements
Flume, Forebay, Diversion, and Canal Improvements
FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Flume, Forebay, Diversion, and Canal Improvements	365	510	560	260	400	2,095

PROJECT DESCRIPTION: Provision is made each year for hydroelectric flume reconstruction from unexpected rock falls, ice expansion damage, and penstock reconstruction. Operation of hydroelectric facilities provides power generation revenue, which significantly offsets the power costs of TMWA. TMWA's three operating hydroelectric facilities have nearly 12,150 feet of flume and 13,125 feet of canal combined. TMWA 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. A number of projects would be campaigned in fiscal year 2016 while river flows are at a minimum.

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

Hydroelectric Improvements
Hydro Plant Equipment Replacement/Upgrades

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Hydro Plant Equipment Replacement/Upgrades	150	-	70	70	-	290

PROJECT DESCRIPTION: Provision is made each year to provide expenditure authority for emergency replacements or betterments to hydroelectric plants and turbines. FY18 &19 is excitation upgrades that will be completed in conjunction with the two generator rewinds at the Washoe Hydro Plant. If no unscheduled replacements are required, spending will not occur. It is expected that these investments will provide a suitable return on investment

SCHEDULE: As needed due to equipment failure.

Hydroelectric Improvements
Hydro Plant Generator Rewinds

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
3	Customer Rates	Hydro Plant Generator Rewinds	-	-	350	350	350	1,050

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. We are currently monitoring this for any signs of failure (hot spots, loss of capacity, & any imbalance of phase amps). 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. Spending in fiscal years 18, 19 and 20 centers on rewinds of these generators which are expected to improve energy output. TMWA tries to schedule projects which require significant downtime in years of potential lower generation.

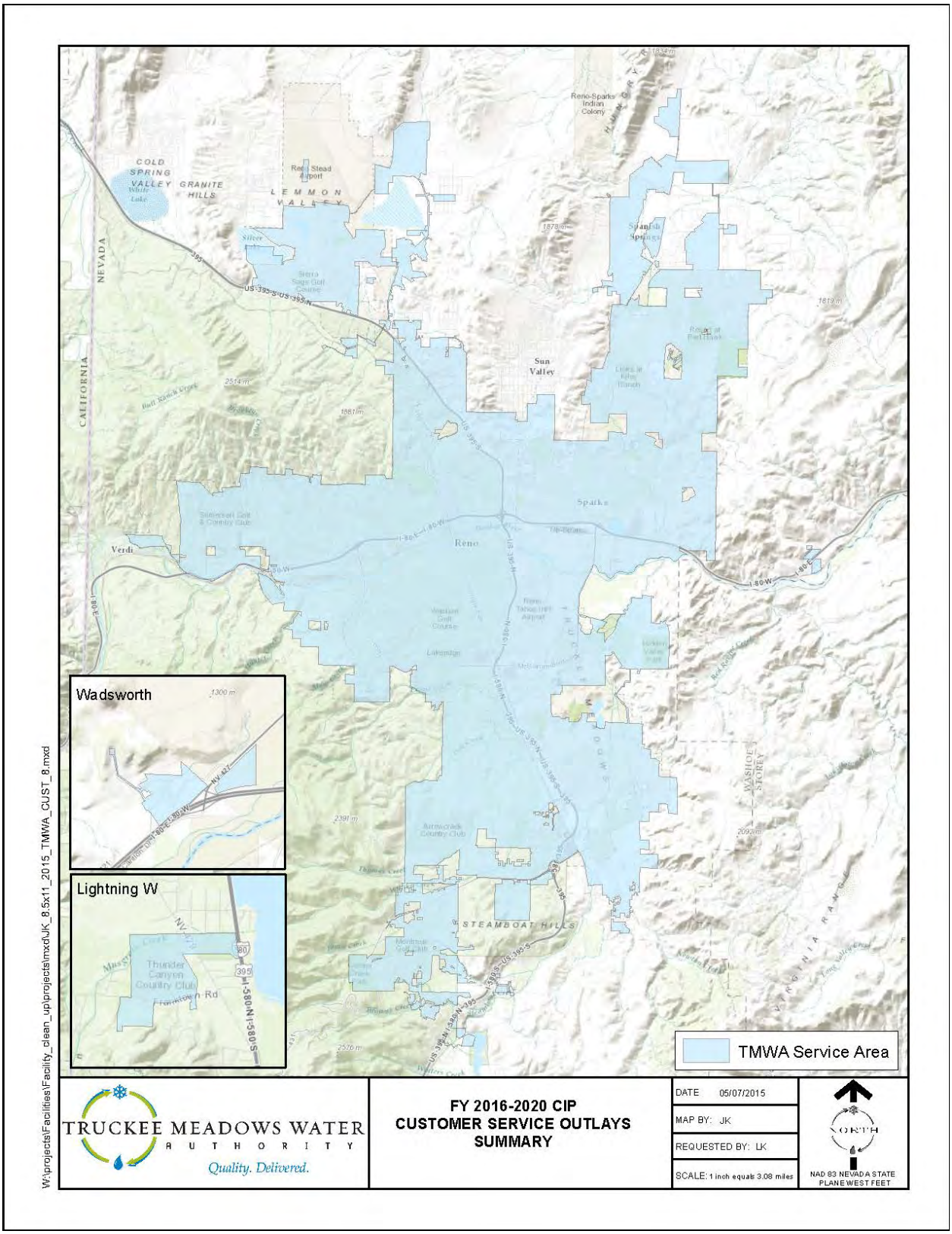
SCHEDULE: Washoe Hydro Plant generators FY18 & FY19, Fleish Hydro Plant generator FY20. This schedule may be adjusted depending on river flows and generator condition evaluation.

Customer Service Outlays
Summary

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
3	Customer Rates	Meter Reading Equipment	60	-	60	-	60	180
2	Developer Fees	New Business Meters	250	250	250	250	250	1,250
1	Customer Rates	Mueller Pit Replacements former Washoe County	125	125	125	375	125	875
1	Reserve	Mueller Pit Replacements former STMGID	75	75	75	75	75	375
1	Customer Rates	Meter -ERT-RTR Replacements	1,250	1,250	1,250	1,250	1,250	6,250
Subtotal Customer Service			**1,760**	**1,700**	**1,760**	**1,950**	**1,760**	**8,930**

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

*If the project is too general in description and/or location, it will not be identified in the map nor have a picture in the individual Project Description.


Wadsworth
Lightning W
TMWA Service Area
TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.
FY 2016-2020 CIP
CUSTOMER SERVICE OUTLAYS
SUMMARY
DATE 05/07/2015
MAP BY: JK
REQUESTED BY: LK
SCALE: 1 inch equals 3.08 miles
NORTH
NAD 83 NEVADA STATE PLANE WEST FEET
W:\projects\Facilities\Facility_clean_up\projects\mxd\JK_8.5x11_2015_TMWA_CUST_8.mxd

Customer Service Outlays
Meter Reading Equipment FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
3	Customer Rates	Meter Reading Equipment	60	-	60	-	60	180

PROJECT DESCRIPTION: In fiscal year 2015 TMWA will complete a major upgrade to the Customer Information System (CIS) with the current service provider. This upgrade will provide better customer service and improve certain back office efficiencies.

TMWA utilizes a drive-by meter reading system in which the transmitters attached to the meters send a signal out to be collected by a data collector. These collectors are mounted in the meter reading vehicles. TMWA is anticipating replacing units that have degraded.

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

Customer Service Outlays
New Business Meters FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Developer Fees	New Business Meters	250	250	250	250	250	1,250

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

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

Customer Service Outlays
Mueller Pit Replacements Former Washoe County FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Customer Rates	Mueller Pit Replacements former Washoe County	125	125	125	375	125	875

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

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

Customer Service Outlays
Mueller Pit Replacements Former STMGID FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
1	Reserve	Mueller Pit Replacements former STMGID	75	75	75	75	75	375

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**.**

Customer Service Outlays
Meter – ERT-RTR Replacements FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	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.

Administrative Outlays
Summary

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	GIS System Mapping Equipment	30	30	30	30	30	150
2	Customer Rates	Desktop Computer Upgrades	100	100	100	100	100	500
2	Customer Rates	Network Server/Storage upgrades	275	175	175	175	175	975
2	Customer Rates	Network Security Upgrades	150	150	150	150	150	750
2	Customer Rates	Application Software Acquisitions	150	150	150	150	150	750
3	Customer Rates	Furniture -Office Equipment	25	25	25	25	25	125
2	Customer Rates	Dump trucks/Vac Trucks/Backhoe Replacements	270	125	285	380	160	1,220
2	Customer Rates	Crew Trucks / Vehicles	709	690	288	190	362	2,239
2	Customer Rates	Security-ER Projects	250	150	150	150	150	850
Subtotal Administrative Outlays			**1,959**	**1,595**	**1,353**	**1,350**	**1,302**	**7,559**

*If the project is too general in description and/or location, it will not have a picture in the individual Project Description.

Administrative Outlays
GIS System Mapping Equipment FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	GIS System Mapping Equipment	30	30	30	30	30	150

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

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

Administrative Outlays
Desktop Computer Upgrades FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Desktop Computer Upgrades	100	100	100	100	100	500

PROJECT DESCRIPTION: TMWA utilizes a personal computer (PC) refresh program. TMWA has over 200 PC's in service with approximately one-quarter, or 50, to be changed out each year dependent upon warranty arrangements. TMWA annually completes a full inventory of all IT equipment and conditions.

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

Administrative Outlays
Network Server/Storage/Operating System Software Upgrades
FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Network Server / Storage / Operating System Software upgrades	275	175	175	175	175	975

PROJECT DESCRIPTION: TMWA currently has 40 physical network servers and 150 virtual servers hosting a variety of software applications. All servers require a license for Operating System Software. These physical servers normally come with three year warranties and would eventually require replacement on a three to four year cycle. Operating Systems Software are upgraded only when the current release is out of warranty or obsolete TMWA will seek out extended warranties if cost effective, rather than replace servers.

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

Administrative Outlays
Network Security Upgrades FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	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. TMWA also hosts its construction standards for builders and also allow customers access to their account information. Such dependency on the internet is also carries a degree of risk, as it makes TMWA a major target for external security threats looming within globalized networks. To offset the risk and combat the ever present threat a variety of security specific hardware and software solutions are used, building them in a layered strategy called Defense in Depth. In order to continually evolve and reinforce this Defense in Depth strategy and effectively fight new unforeseen threats, TMWA must continually acquire new security platforms that adapt to the continually changing security landscape.

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

Administrative Outlays
Application Software Acquisitions FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Application Software Acquisitions	150	150	150	150	150	750

PROJECT DESCRIPTION: In the modern computerized work place software applications are key to providing staff with the essential functionality to perform their job roles. TMWA must constantly seek out and procure the latest in innovative client and server based software applications in order to meet the evolving efficiency and productivity demands of staff.

SCHEDULE: Application software is updated as needed.

Administrative Outlays
Furniture – Office Equipment FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
3	Customer Rates	Furniture -Office Equipment	25	25	25	25	25	125

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.

Administrative Outlays
Dump Trucks/Vac Trucks/Backhoe Replacements FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Dump trucks/Vac Trucks/Backhoe Replacements	270	125	285	380	160	1,220

PROJECT DESCRIPTION: TMWA employs dump trucks with backhoe trailers to move backhoes to water main leak sites, meter retrofit sites and other tasks reducing travel wear and tear on backhoes. Dump truck/backhoe equipment configurations are essential for efficient field tasks. TMWA will eventually need to replace backhoes purchased early in TMWA operations. This equipment is used daily and may be reaching performance handbook life cycles although moving this equipment by trailer extends the life of this equipment considerably.

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

Administrative Outlays
Crew Trucks/Vehicles FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Crew Trucks / Vehicles	709	690	288	190	362	2,239

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

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

Administrative Outlays
Security-ER Projects FY 2016 – 2020

FUNDING TIMELINE:

Priority	Funding Source	Description	FY16	FY17	FY18	FY19	FY20	CIP Total
2	Customer Rates	Security-ER Projects	250	150	150	150	150	850

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 2016.

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