# DECADE PLAN FY2020-2029




Albuquerque Bernalillo County
Water Utility Authority

# Table of Contents

# Albuquerque Bernalillo County Water Utility Authority

# Decade Plan 2020 – 2029

## INTRODUCTION

### Background

The Decade Plan for the Water Authority is developed every two years and describes the proposed Capital Improvement Program (CIP) spending for the next ten years. The Decade Plan provides a direct link from the Water Authority's financial plan to the proposed capital needs. The Decade Plan outlines projects in the Basic Program, Special Projects and the Growth funding categories. The Decade Plan update now includes projects associated with Water 2120, the Water Authority's 100-year water resources plan.

The Basic Program provides renewal funding for water and wastewater plant and field assets throughout the service areas. Under existing financial policy, fifty-percent of the Basic Program funding is provided by water and sewer revenues with the balance obtained through revenue bonds, loan financing, or grant funding. Special Projects are projects that are funded outside of the Basic Program and therefore do not affect the total renewal spending. Growth related projects are funded through utility expansion charges (UECs), either by reimbursing capital investments made under the terms of a development agreement or by direct appropriations to a CIP project. Water 2120 Projects continue the Water Authority's strategy for managing water resources towards providing a sustainable water supply for its customers.

### Asset Management

The Decade Plan does not obligate current or future funds for individual projects or categories of projects. The Decade Plan is a CIP planning document to identify projects and proposed spending over the next ten years. The Water Authority staff identified and ranked projects in the Decade Plan using asset management principles. For each project, where appropriate, a risk analysis was completed and a risk ranking developed. The risk ranking is a figure from 1 to 100, with 100 having the highest risk and includes such things as safety, interruption of service, permit compliance, and other factors which were developed to compare the relative risk of one project to another.

Using asset management principles, a project's risk ranking provides the relative priority of the project as compared to other projects. As the Water Authority's Asset Management Program further develops and more detailed condition assessments are performed on individual infrastructure assets, project risk rankings and business case analyses will also be further refined.

### Decade Plan

The Decade Plan includes a set of spreadsheet tables with the project numbered and listed. Each project in the Decade Plan has a corresponding project summary sheet that describes the project, the proposed spending over the plan period, and the risk ranking. In general, the highest priority projects in terms of the risk factors have been targeted for funding first.

## Decade Plan FY 2020 - 2029: Summary of Projects

| Category No. | Category Descriptions | Carryover from FY 2019 | Projected Fiscal Year Revenue by Category (x $1000's) 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | Total[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Level 1 Priority Renewal Projects[2]:** | | | | | | | | | | | | | |
| 100 | Sanitary Sewer Pipelines | 1,900 | 9,525 | 11,000 | 15,000 | 17,720 | 19,170 | 20,470 | 20,400 | 21,690 | 21,690 | 21,690 | **180,255** |
| 200 | Drinking Water Pipelines | - | 6,150 | 6,050 | 9,850 | 9,750 | 11,350 | 26,250 | 24,250 | 27,250 | 27,250 | 27,250 | **175,400** |
| 300 | Southside Water Reclamation Plant | 2,600 | 23,220 | 23,340 | 20,930 | 18,730 | 13,230 | 13,080 | 18,150 | 13,860 | 13,860 | 13,860 | **174,860** |
| 400 | Soil Amendment Facility (SAF) | - | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | **500** |
| 500 | Lift Station and Vacuum Station | 6,000 | 2,950 | 3,205 | 1,765 | 1,300 | 1,300 | 1,300 | 1,300 | 1,300 | 1,300 | 1,300 | **23,020** |
| 600 | Odor Control Facilities | - | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | **2,500** |
| 700 | Drinking Water Plant: Groundwater | - | 4,775 | 8,125 | 7,700 | 11,370 | 18,120 | 5,070 | 5,070 | 5,070 | 5,070 | 5,070 | **75,440** |
| 800 | Drinking Water Plant: Treatment | - | 1,750 | 3,900 | 3,375 | 2,750 | 1,450 | 1,450 | 1,450 | 1,450 | 1,450 | 1,450 | **20,475** |
| 900 | Reuse Line and Plant | - | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | **1,500** |
| 1000 | Compliance | - | 390 | 390 | 390 | 390 | 390 | 390 | 390 | 390 | 390 | 390 | **3,900** |
| 1100 | Shared Renewal | - | 390 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | **750** |
| 1200 | Franchise Agreement Compliance | - | 3,950 | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 | **35,450** |
| 1300 | Vehicles and Heavy Equipment | - | 4,450 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | **13,450** |
| | **Total Level 1 Priority Renewal Projects** | **10,500** | **58,000** | **61,000** | **64,000** | **67,000** | **70,000** | **73,000** | **76,000** | **76,000** | **76,000** | **76,000** | **707,500** |
| **Water 2120 Projects:** | | | | | | | | | | | | | |
| 8000 | All Water 2120 Projects | 2,250 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | **5,250** |
| | **Total Special Projects** | **2,250** | **300** | **300** | **300** | **300** | **300** | **300** | **300** | **300** | **300** | **300** | **5,250** |
| **Special Projects:** | | | | | | | | | | | | | |
| 9400 | All Special Projects | 16,471 | 7,954 | 5,050 | 3,350 | 3,350 | 3,350 | 3,350 | 3,350 | 3,350 | 3,350 | 3,350 | **56,275** |
| | **Total Special Projects** | **16,471** | **7,954** | **5,050** | **3,350** | **3,350** | **3,350** | **3,350** | **3,350** | **3,350** | **3,350** | **3,350** | **56,275** |
| **Level 1 Priority Growth Projects[3]:** | | | | | | | | | | | | | |
| 2400 | Land and Easement Acquisition | - | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | **5,000** |
| 2700 | Development Agreements | - | 940 | 1,440 | 1,440 | 1,440 | 1,440 | 1,440 | 1,440 | 1,440 | 1,440 | 1,440 | **13,900** |
| 2800 | MIS/GIS | - | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | **20,000** |
| 3100 | Master Plans | - | 500 | - | - | - | - | - | - | - | - | - | **500** |
| 3200 | Miscellaneous | - | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | **600** |
| | **Total Level 1 Priority Growth Projects** | **-** | **4,000** | **4,000** | **4,000** | **4,000** | **4,000** | **4,000** | **4,000** | **4,000** | **4,000** | **4,000** | **40,000** |

## Decade Plan FY 2020 - 2029: Summary of Projects

| Category No. | Category Descriptions | Carryover from FY 2019 | Projected Fiscal Year Revenue by Category (x $1000's) 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | Total[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Level 2 Priority Growth Projects[4]:** | | | | | | | | | | | | | |
| 2000 | Drinking Water Plant Growth | - | 100 | 100 | 850 | 1,900 | 1,350 | 1,895 | 1,600 | 5,700 | 480 | 5,520 | **19,495** |
| 2100 | Arsenic Treatment Growth | - | - | - | - | - | 5,000 | 5,000 | 3,800 | 3,800 | 5,000 | 5,000 | **27,600** |
| 2200 | Wastewater Facilities Growth | - | 200 | - | 1,700 | - | - | - | - | - | - | - | **1,900** |
| 2300 | Water Lines Growth | - | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | **5,000** |
| 2400 | Land Acquisition | - | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | **2,000** |
| 2500 | Other Agreements | - | - | - | - | - | - | 750 | 750 | - | - | - | **1,500** |
| 3000 | Utility Risk Reduction | - | 340 | 340 | 340 | 340 | 345 | 340 | 340 | 345 | 340 | 340 | **3,410** |
| 3100 | Master Plans | - | - | 500 | - | - | - | - | - | - | - | - | **500** |
| | **Total Level 2 Priority Growth Projects** | **-** | **1,340** | **1,640** | **3,590** | **2,940** | **7,395** | **8,685** | **7,190** | **10,545** | **6,520** | **11,560** | **61,405** |

Notes:

1. Including carried over budget from FY2019.
2. Level 1 Priority Renewal Projects are the highest risk projects identified for funding first.
3. Level 1 Priority Growth Projects are projects identified for funding first.
4. Level 2 Priority Growth Projects are projects identified for completion as funds become available.

## Decade Plan FY 2020 - 2029: Level 1 Priority Renewal Projects[1]

| Decade Plan Category No. | Business Risk Score | Facility and Project Descriptions | Project Category | Projected Budget Carryover from FY 2019 (see Note 2) | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | Total[3] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) |
| **BASIC PROGRAM (Level 1 Priority Projects[1]):** | | | | | | | | | | | | | | | |
| **100** | | **Sanitary Sewer Pipeline Renewal** | | | | | | | | | | | | | |
| 101 | 61.6 | Interceptor Renewal (Planned) | Renewal | | 3,325 | 5,250 | 9,250 | 10,940 | 10,420 | 9,810 | 10,475 | 9,940 | 9,940 | 9,940 | **89,290** |
| 102 | 61.6 | Interceptor Renewal (Emergency) | Renewal | 1,900 | 3,500 | 3,500 | 3,500 | 3,500 | 2,500 | 2,500 | 2,500 | 2,500 | 2,500 | 2,500 | **30,900** |
| 103 | 62.5 | Small Diameter Sewer Line (Planned) | Renewal | | 250 | 250 | 250 | 1,280 | 4,250 | 6,160 | 5,425 | 7,250 | 7,250 | 7,250 | **39,615** |
| 104 | 62.5 | Small Diameter Sewer Line (Emergency) | Renewal | | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 | **15,000** |
| 105 | 60.4 | Sewer Line CCTV Inspections | Deficiency | | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | **5,000** |
| 106 | | Correct Sewer Deficiency at San Diego Ave, NE | Deficiency | | 300 | | | | | | | | | | **300** |
| 110 | | Collection System Flow Monitoring | Deficiency | | 150 | | | | | | | | | | **150** |
| | | **Sanitary Sewer Pipeline Renewal Subtotal** | | **1,900** | **9,525** | **11,000** | **15,000** | **17,720** | **19,170** | **20,470** | **20,400** | **21,690** | **21,690** | **21,690** | **180,255** |
| **200** | | **Drinking Water Pipeline Renewal** | | | | | | | | | | | | | |
| 201 | 54.0 | Small Diameter Water Line Renewal (Planned) | Renewal | | 2,250 | 2,550 | 3,100 | 3,000 | 9,600 | 11,300 | 9,300 | 12,300 | 12,300 | 12,300 | **78,000** |
| 202 | 61.2 | Small Diameter Water Line Renewal (Emergency) | Renewal | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | **1,000** |
| 203 | 54.0 | Large Diameter Water Line Renewal (Planned) | Renewal | | 100 | 100 | 100 | 100 | 100 | 13,300 | 13,300 | 13,300 | 13,300 | 13,300 | **67,000** |
| 204 | 54.0 | Large Diameter Water Line Renewal (Emergency) | Renewal | | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 650 | **6,500** |
| 205 | 25.1 | Water Meters, Boxes & Services Renewal | Renewal | | 2,000 | 2,000 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | **8,000** |
| 206 | 41.8 | Large Water Valve Renewal | Renewal | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | **2,500** |
| 207 | 18.8 | Pressure Reducing Valve Renewal | Renewal | | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | **1,500** |
| 209 | 62.5 | Water Line Deficiency at San Diego Ave, NE | Deficiency | | 300 | - | - | - | - | - | - | - | - | - | **300** |
| 212 | 41.1 | 8E Freeway - Ridgecrest Cross Trunk Transfer Line | Deficiency | | 250 | 250 | 5,000 | 5,000 | | | | | | | **10,500** |
| 214 | | Valve Rehabilitation Pilot Study | Renewal | | 100 | | | | | | | | | | **100** |
| | | **Drinking Water Pipeline Renewal Subtotal** | | **-** | **6,150** | **6,050** | **9,850** | **9,750** | **11,350** | **26,250** | **24,250** | **27,250** | **27,250** | **27,250** | **175,400** |
| **300** | | **Southside Water Reclamation Plant Renewal** | | | | | | | | | | | | | |
| 301 | 74.2 | Preliminary Treatment Facility incl Coarse Screens | Deficiency & Renewal | | 3,000 | - | - | - | 50 | 50 | 50 | 50 | 50 | 2,480 | **5,730** |
| 302 | 66.5 | Solids Dewatering Facility Renewal | Deficiency & Renewal | | 150 | - | - | - | 50 | 50 | 50 | 50 | 50 | 1,300 | **1,700** |
| 303 | 55.6 | Aeration Basin Blower Improvements | Deficiency & Renewal | | 150 | 150 | 150 | 150 | 50 | 50 | 50 | 50 | 50 | 50 | **900** |
| 304 | 68.8 | Anaerobic Digester Renewal and Capacity Increase | Deficiency & Renewal | | | 1,000 | 2,500 | 2,400 | 6,000 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | **26,900** |
| 305 | 64.0 | Primary Clarifier Improvements incl Pumping Stations | Renewal | | 6,000 | 1,500 | | | 50 | 50 | 50 | 50 | 50 | 50 | **7,800** |
| 306 | 52.6 | Aeration Basin Renewal: Phase 2 | Renewal | | | 1,000 | 2,000 | | 1,000 | 2,000 | 1,470 | 1,000 | 1,000 | 1,000 | **10,470** |
| 307 | 65.6 | Secondary Sludge Thickening Improvements | Renewal | | | 7,410 | 1,790 | - | 50 | 50 | 50 | 50 | 50 | 50 | **9,500** |
| 308 | 44.4 | Cogeneration Improvements | Renewal | 2,600 | 3,500 | 3,500 | 260 | 250 | 5,250 | 6,000 | 250 | 250 | 250 | 250 | **22,360** |
| 309 | 77.0 | SWRP Renewal Contingency | Renewal | | 800 | 800 | 1,300 | 1,380 | 630 | 630 | 630 | 630 | 630 | 630 | **8,060** |
| 310 | 64.9 | ABB Service Contract | Renewal | | 170 | 180 | 180 | - | - | - | - | - | - | - | **530** |
| 311 | 67.0 | Plant-Wide Electrical, Instrumentation and Control Improvements | Renewal | | 8,200 | 6,000 | *2,000* | *3,000* | 50 | 50 | 50 | 50 | 50 | 50 | **19,500** |
| 314 | 28.4 | Warehouse Facility Renewal | Renewal | | - | | | | | 700 | 2,500 | 2,500 | | | **5,700** |
| 316 | 31.4 | Plant Landscaping | Deficiency | | 1,000 | - | - | 1,500 | - | - | - | - | - | - | **2,500** |
| 317 | 36.0 | O&M Facility Renewal | Deficiency | | - | | 2,450 | 5,000 | - | - | | | | | **7,450** |
| 319 | 14.4 | Sludge Drying Beds Demolition | Renewal | | - | - | | | - | 450 | - | - | - | - | **450** |
| 324 | 67.4 | High Efficiency Blower Upgrades | Renewal | | | | 5,000 | 4,000 | - | - | - | - | - | - | **9,000** |
| 327 | 58.9 | Chemical Storage and Feed System Improvements | Deficiency | | - | - | 250 | 1,000 | - | - | - | - | - | - | **1,250** |
| 329 | 37.2 | As-Built Drawings | Deficiency | | | 50 | 50 | 50 | 50 | | | | | | **200** |
| 330 | 37.2 | FOG Receiving Station | Deficiency | | | | | | | | | 1,180 | 5,000 | | **6,180** |
| 332 | 68.8 | Advanced Treatment Improvments | Deficiency | | | | | | | | 10,000 | 5,000 | 3,680 | | **18,680** |
| 333 | | Final Effluent Sample Station Improvements | Deficiency | | 250 | 1,500 | 1,500 | | | | | | | | **3,250** |
| 334 | | Operator Lab Replacement | Deficiency | | | 250 | 1,500 | | | | | | | | **1,750** |
| 335 | | Final Clarifer Improvements | Deficiency | | | | | | | | | | | 5,000 | **5,000** |
| | | **Southside Water Reclamation Plant Renewal Subtotal** | | **2,600** | **23,220** | **23,340** | **20,930** | **18,730** | **13,230** | **13,080** | **18,150** | **13,860** | **13,860** | **13,860** | **174,860** |
| | | Basic Program Funding | | | *13,220* | *13,340* | *10,930* | | | | | | | | |
| | | Additional Funding | | | *10,000* | *10,000* | *10,000* | | | | | | | | |

| Decade Plan Category No. | Business Risk Score | Facility and Project Descriptions | Project Category | Projected Budget Carryover from FY 2019 (see Note 2) | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | Total[3] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) |
| **400** | | **Soil Amendment Facility (SAF) Renewal** | | | | | | | | | | | | | |
| 401 | 29.6 | Upgrade of Soil Amendment Facility | Renewal | - | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | **500** |
| | | **SAF Renewal Subtotal** | | **-** | **50** | **50** | **50** | **50** | **50** | **50** | **50** | **50** | **50** | **50** | **500** |
| **500** | | **Lift Station and Vacuum Station Renewal** | | | | | | | | | | | | | |
| 501 | 71.2 | Lift Station Renewal | Renewal | | 350 | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 650 | **6,200** |
| 502 | 74.7 | Lift Station 20 Renewal | Renewal | 6,000 | 2,000 | 405 | 165 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | **9,620** |
| 503 | 82.6 | Lift Station 24 Renewal | Renewal | | 400 | 600 | 200 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | **2,250** |
| 504 | 69.5 | Vacuum Station Renewal | Deficiency & Renewal | | 200 | 1,300 | 250 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | **4,200** |
| 505 | 57.0 | Lift Station PLC Replacement | Renewal | | - | 250 | 500 | - | - | - | - | - | - | - | **750** |
| | | **Lift Station and Vacuum Station Renewal Subtotal** | | **6,000** | **2,950** | **3,205** | **1,765** | **1,300** | **1,300** | **1,300** | **1,300** | **1,300** | **1,300** | **1,300** | **23,020** |
| **600** | | **Odor Control Facilities Renewal** | | | | | | | | | | | | | |
| 601 | 75.6 | Collection System Odor Control Renewal | Renewal | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | **2,500** |
| | | **Odor Control Facilities Renewal Subtotal** | | **-** | **250** | **250** | **250** | **250** | **250** | **250** | **250** | **250** | **250** | **250** | **2,500** |
| **700** | | **Drinking Water Plant: Groundwater System Renewal** | | | | | | | | | | | | | |
| 701 | 34.2 | Annual Sodium Hypochlorite Generator System Rehab/Replace | Renewal | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | **1,000** |
| 702 | 58.9 | Booster Pumping Station Rehab | Renewal | | 1,200 | 200 | 700 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | **3,500** |
| 703 | 58.9 | Well Rehab and Replacement | Renewal | | 1,000 | 2,000 | 2,000 | 2,000 | 2,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | **29,000** |
| 709 | 33.9 | Lomas Reservoir No. 2 Evaluation | Renewal | | 50 | - | - | - | - | - | - | - | - | - | **50** |
| 710 | 51.8 | Gas Engine Conversions | Renewal | | - | - | 50 | 1,350 | - | - | - | - | - | - | **1,400** |
| 715 | 33.9 | Charles Wells Reservoir Rehab | Renewal | | 500 | 1,000 | 1,000 | - | - | - | - | - | - | - | **2,500** |
| 716 | 20.7 | Santa Barbara Reservoir No. 1 Rehab | Renewal | | - | - | - | - | 800 | - | - | - | - | - | **800** |
| 717 | 24.0 | Annual Reservoir Cleaning and Inspection | Renewal | | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | **500** |
| 718 | 27.4 | Webster Reservoir Rehab | Renewal | | - | - | - | - | 250 | - | - | - | - | - | **250** |
| 719 | 14.0 | Other Reservoirs Rehab Built after 1980 | Renewal | | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | **1,500** |
| 720 | 31.8 | Griegos Pump Station Rehab/Replace | Renewal | | - | - | 1,000 | - | - | - | - | - | - | - | **1,000** |
| 732 | 63.5 | Valve Replacement | Deficiency | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | **1,000** |
| 736 | 38.1 | Corrales Well 2 Arsenic Treatment Project | Deficiency | | 250 | 2,500 | 1,500 | - | - | - | - | - | - | - | **4,250** |
| 740 | 75.6 | Corrales Trunk Arsenic Media Replacement | Renewal | | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | **3,500** |
| 742 | 32.1 | Alameda Trunk Well Collector | Deficiency | | | | | 6,950 | 14,000 | - | - | - | - | - | **20,950** |
| 743 | 18.0 | Demolision of San Jose Reservoir and Pumping Station | Deficiency | | 500 | 750 | | | | | | | | | **1,250** |
| 745 | 33.9 | Duranes Reservoir Renewal | Deficiency & Renewal | | 300 | 500 | | | | | | | | | **800** |
| 746 | 33.9 | West Mesa Reservoir Renewal | Renewal | | 25 | 225 | | | | | | | | | **250** |
| 747 | 33.9 | Lomas Reservoir No. 1 Renewal | Renewal | | | | 500 | | | | | | | | **500** |
| 748 | | Reservoir and Tower Access Safety Improvements | Deficiency | | 200 | 200 | 200 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | **1,440** |
| | | **Drinking Water Plant: Groundwater System Renewal Subtotal** | | **-** | **4,775** | **8,125** | **7,700** | **11,370** | **18,120** | **5,070** | **5,070** | **5,070** | **5,070** | **5,070** | **75,440** |

| Decade Plan Category No. | Business Risk Score | Facility and Project Descriptions | Project Category | Projected Budget Carryover from FY 2019 (see Note 2) | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | Total[3] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) |
| **800** | | **Drinking Water Plant: Treatment Systems Renewal** | | | | | | | | | | | | | |
| 801 | 71.2 | Water Treatment Plant Renewal Contingency | Renewal | | 350 | 350 | 550 | 800 | 1,050 | 1,050 | 1,050 | 1,050 | 1,050 | 1,050 | **8,350** |
| 804 | 47.2 | Dissolved Ozone Monitoring Improvements | Deficiency | | 650 | - | - | - | - | - | - | - | - | - | **650** |
| 805 | 78.6 | Diversion Bar Screen Improvements | Deficiency | | | 2,000 | - | - | - | - | - | - | - | - | **2,000** |
| 807 | 50.4 | Settling Basin Edge Protection | Renewal | | - | - | 75 | - | - | - | - | - | - | - | **75** |
| 808 | 51.8 | Water Systems SCADA Rehab | Renewal | | | 1,000 | 1,000 | - | - | - | - | - | - | - | **2,000** |
| 809 | 51.8 | Chemical Systems Improvements | Renewal | | 400 | 200 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | **1,000** |
| 811 | 28.6 | College Arsenic Removal Demonstration Facility Rehab | Renewal | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | **1,000** |
| 818 | 71.2 | Raw Water Pumping Station Renewal | | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | **2,500** |
| 826 | 51.8 | Lime System Expansion at SJCWTP | | | | | 1,350 | 1,550 | | | | | | | **2,900** |
| | | **Drinking Water Plant: Treatment Systems Renewal Subtotal** | | **-** | **1,750** | **3,900** | **3,375** | **2,750** | **1,450** | **1,450** | **1,450** | **1,450** | **1,450** | **1,450** | **20,475** |
| **900** | | **Reuse Line and Plant Renewal** | | | | | | | | | | | | | |
| 901 | 25.1 | Reuse Line Rehab | Renewal | | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | **300** |
| 902 | 20.7 | Reuse Plant Rehab | Renewal | | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | **1,200** |
| | | **Reuse Line and Plant Renewal Subtotal** | | **-** | **150** | **150** | **150** | **150** | **150** | **150** | **150** | **150** | **150** | **150** | **1,500** |
| **1000** | | **Compliance** | | | | | | | | | | | | | |
| 1001 | 59.3 | Water Quality Laboratory | Deficiency & Renewal | | 375 | 375 | 375 | 375 | 375 | 375 | 375 | 375 | 375 | 375 | **3,750** |
| 1002 | 48.6 | NPDES Program | Deficiency | | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | **100** |
| 1003 | 45.1 | Water Quality Program | Deficiency | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | **50** |
| | | **Compliance Subtotal** | | **-** | **390** | **390** | **390** | **390** | **390** | **390** | **390** | **390** | **390** | **390** | **3,900** |
| **1100** | | **Shared Renewal** | | | | | | | | | | | | | |
| 1101 | 71.4 | Ferrous/Ferric Transfer Station 70 Rehab | Deficiency | | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | **250** |
| 1104 | N/A | Utility Wide Asset Management Plan Update | Deficiency | | 350 | - | - | - | - | - | | | | | **350** |
| 1106 | N/A | Safey Group Equipment | Deficiency | | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | **100** |
| 1107 | N/A | Leak Detection Equipment | Renewal | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | **50** |
| | | **Shared Line & Plant Renewal Subtotal** | | **-** | **390** | **40** | **40** | **40** | **40** | **40** | **40** | **40** | **40** | **40** | **750** |
| **1200** | | **Franchise Agreement Compliance** | | | | | | | | | | | | | |
| 1201 | N/A | Franchise Compliance Water & Sewer | Renewal | | 3,200 | 2,750 | 2,750 | 2,750 | 2,750 | 2,750 | 2,750 | 2,750 | 2,750 | 2,750 | **27,950** |
| 1202 | N/A | DMD Street Rehab Manhole and Valve Box Adjustments | Renewal | | 750 | 750 | 750 | 750 | 750 | 750 | 750 | 750 | 750 | 750 | **7,500** |
| | | **Franchise Agreement Compliance Subtotal** | | **-** | **3,950** | **3,500** | **3,500** | **3,500** | **3,500** | **3,500** | **3,500** | **3,500** | **3,500** | **3,500** | **35,450** |
| **1300** | | **Vehicles and Heavy Equipment** | | | | | | | | | | | | | |
| 1301 | 34.9 | Vehicle Replacements | Renewal | | 3,500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | **8,000** |
| 1303 | 40.2 | Heavy Equipment | Renewal | | 950 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | **5,450** |
| | | **Vehicles and Heavy Equipment Subtotal** | | **-** | **4,450** | **1,000** | **1,000** | **1,000** | **1,000** | **1,000** | **1,000** | **1,000** | **1,000** | **1,000** | **13,450** |
| | | **Total Level 1 Priority Renewal Projects[1,2]** | | **10,500** | **58,000** | **61,000** | **64,000** | **67,000** | **70,000** | **73,000** | **76,000** | **76,000** | **76,000** | **76,000** | **707,500** |

Notes:

1. Level 1 Priority Renewal Projects are the highest risk projects identified for funding first.
2. CIP funds not spend in FY 2019 will be carried-over and spend in subsequent years.

| Decade Plan FY 2020 - 2029: Water 2120 Projects | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Decade Plan Category No.** | **Facility and Project Descriptions** | **Projected Budget Carryover from FY2019** | **2020** | **2021** | **2022** | **2023** | **2024** | **2025** | **2026** | **2027** | **2028** | **2029** | **Total** |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| **8000** | **Water 2120 Projects:** | | **(x $1000)** | **(x $1000)** | **(x $1000)** | **(x $1000)** | **(x $1000)** | **(x $1000)** | **(x $1000)** | **(x $1000)** | **(x $1000)** | **(x $1000)** | **(x $1000)** |
| 8001 | Surface Water Storage | 2,250 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | **5,250** |
| 8002 | ASR Wells and Associated Facilities | | | | | | | | | | | | **-** |
| 8003 | Connect North I-25 to Southside Reuse | | | | | | | | | | | | **-** |
| 8004 | Eastside Reuse Project | | | | | | | | | | | | **-** |
| 8005 | Westside Reuse Project | | | | | | | | | | | | **-** |
| 8006 | Indirect Potable Reuse | | | | | | | | | | | | **-** |
| 8007 | Stormwater Projects | | | | | | | | | | | | **-** |
| 8008 | Green Infrastructure and Inflitration Projects | | | | | | | | | | | | **-** |
| 8009 | Advanced Treatment Facilities | | | | | | | | | | | | **-** |
| | **Water 2120 Projects Total** | **2,250** | **300** | **300** | **300** | **300** | **300** | **300** | **300** | **300** | **300** | **300** | **5,250** |
| | | | | | | | | | | | | | |

## Decade Plan FY 2020 - 2029: Special Projects and Level 1 Priority Growth Projects

| Reference No. | Business Risk Score | Facility and Project Descriptions | Project Category | Projected Carryover from FY2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | Total[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) |
| **SPECIAL PROJECTS** | | | | | | | | | | | | | | | |
| **9400** | | **Special Projects** | | | | | | | | | | | | | |
| 9401 | N/A | Steel Waterline Rehab | Renewal | | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | **10,000** |
| 9403 | N/A | AMR Meter | Deficiency | 2,500 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | **22,500** |
| 9404 | N/A | Renewable Energy Projects | Deficiency | | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | **3,500** |
| 9416 | N/A | Corrales 2 to 3 Project | Deficiency | 1,566 | | | | | | | | | | | **1,566** |
| 9420 | N/A | Fluoride CIP Equipment | Deficiency | 175 | | | | | | | | | | | **175** |
| 9422 | N/A | Los Padillas Water Pipelines | Deficiency | 930 | 1,700 | 1,700 | | | | | | | | | **4,330** |
| 9423 | N/A | Admin Building Project | Deficiency | 10,000 | | | | | | | | | | | **10,000** |
| 9425 | N/A | Visitors Center Waterline | Deficiency | 1,300 | | | | | | | | | | | **1,300** |
| | N/A | Bosque Reclamation Plant | Deficiency | | 200 | | | | | | | | | | **200** |
| | N/A | Carnuel Gravity Sewer | Deficiency | | 13 | | | | | | | | | | **13** |
| | N/A | Carnuel Water System Phase 2C | Deficiency | | 500 | | | | | | | | | | **500** |
| | N/A | Carnuel Water System Phase 4 | Deficiency | | 50 | | | | | | | | | | **50** |
| | N/A | Winrock Water Reclamation Plant Construction | Deficiency | | 2,141 | | | | | | | | | | **2,141** |
| | | **Special Projects Subtotal** | | **16,471** | **7,954** | **5,050** | **3,350** | **3,350** | **3,350** | **3,350** | **3,350** | **3,350** | **3,350** | **3,350** | **56,275** |
| **LEVEL 1 PRIORITY GROWTH PROJECTS[2]** | | | | | | | | | | | | | | | |
| **2400** | | **Land and Easement Acquisition** | | | | | | | | | | | | | |
| 2401 | 21.1 | Land and Easement Acquisition | Growth | - | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | **5,000** |
| | | **Land Acquisition Subtotal** | | **-** | **500** | **500** | **500** | **500** | **500** | **500** | **500** | **500** | **500** | **500** | **5,000** |
| **2700** | | **Development Agreements** | | | | | | | | | | | | | |
| 2701 | N/A | Development Agreements | Growth | | 940 | 1,440 | 1,440 | 1,440 | 1,440 | 1,440 | 1,440 | 1,440 | 1,440 | 1,440 | **13,900** |
| | | **Development Agreements Subtotal** | | **-** | **940** | **1,440** | **1,440** | **1,440** | **1,440** | **1,440** | **1,440** | **1,440** | **1,440** | **1,440** | **13,900** |
| **2800** | | **MIS/GIS** | | | | | | | | | | | | | |
| 2801 | 36.0 | MIS / GIS | Renewal & Deficiency | - | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | **20,000** |
| | | **MIS/GIS Subtotal** | | **-** | **2,000** | **2,000** | **2,000** | **2,000** | **2,000** | **2,000** | **2,000** | **2,000** | **2,000** | **2,000** | **20,000** |
| **3100** | | **Master Plans** | | | | | | | | | | | | | |
| 3101 | 57.9 | Integrated Master Plan | Growth | - | 500 | - | - | - | - | - | - | - | - | - | 500 |
| | | **Master Plans Subtotal** | | **-** | **500** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **500** |
| **3200** | | **Miscellaneous** | | | | | | | | | | | | | |
| 3203 | 43.7 | Low Income W/S Connections | Deficiency | - | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | **600** |
| | | **Miscellaneous Subtotal** | | **-** | **60** | **60** | **60** | **60** | **60** | **60** | **60** | **60** | **60** | **60** | **600** |
| | | **Total Level 1 Priority Growth Projects** | | **-** | **4,000** | **4,000** | **4,000** | **4,000** | **4,000** | **4,000** | **4,000** | **4,000** | **4,000** | **4,000** | **40,000** |

Notes:

1. Includes projected carry-over budget from FY2019.
2. Level 1 Priority Growth Projects are projects identified for funding first.

## Decade Plan FY 2020 - 2029: Level 2 Priority Growth Projects

| Reference No. | Business Risk Score | Facility and Project Descriptions | Project Category | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) | (x $1000) |
| **LEVEL 2 PRIORITY GROWTH PROJECTS[1]** | | | | | | | | | | | | | | |
| **2000** | | **Drinking Water Plant Growth** | | | | | | | | | | | | |
| 2002 | 23.7 | Second College Reservoir | Deficiency & Growth | | | | - | 250 | 1,795 | 1,000 | | | | **3,045** |
| 2003 | 33.3 | Second Corrales Reservoir No. 6 | Deficiency & Growth | | | | | | | | | 240 | 2,760 | **3,000** |
| 2004 | 30.4 | Second Coronado Reservoir | Deficiency & Growth | | | | | | | 250 | 2,800 | | | **3,050** |
| 2005 | 31.9 | Second Leyendecker Reservoir | Deficiency & Growth | | | | | | | 250 | 2,800 | | | **3,050** |
| 2006 | 31.9 | Second Charles Wells Reservoir | Deficiency & Growth | | | | | | | | | 240 | 2,760 | **3,000** |
| 2007 | 36.1 | Second Charles Wells Reservoir Site Procurement | Deficiency & Growth | | | 500 | | | | | | | | **500** |
| 2009 | 16.3 | Water Facilities Landscaping Program | Deficiency | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | | | **800** |
| 2010 | 43.9 | Second Don Reservoir | Deficiency & Growth | | | 250 | 1,800 | 1,000 | | | | | | **3,050** |
| | | **Drinking Water Plant Growth Subtotal** | | **100** | **100** | **850** | **1,900** | **1,350** | **1,895** | **1,600** | **5,700** | **480** | **5,520** | **19,495** |
| **2100** | | **Arsenic Treatment Growth** | | | | | | | | | | | | |
| 2101 | 58.1 | Arsenic Treatment at Alameda Trunk | Deficiency & Growth | | | | | | | | | 5,000 | 5,000 | **10,000** |
| 2102 | 64.2 | Arsenic Treatment at Volcano Cliffs Reservoir | Deficiency & Growth | | | | | 5,000 | 5,000 | | | | | **10,000** |
| 2103 | 27.2 | Arsenic Treatment at Leavitt | Deficiency & Growth | | | - | - | | | 3,800 | 3,800 | | | **7,600** |
| 2104 | | Arsenic Treatment for Corrales Well 4 | Growth | | | | | | | | 400 | 2,750 | | **3,150** |
| 2105 | | Arsenic Treatment for Corrales Well 5 | Growth | | | | | | 450 | 3,000 | | | | **3,450** |
| | | **Arsenic Treatment Growth Subtotal** | | **-** | **-** | **-** | **-** | **5,000** | **5,000** | **3,800** | **3,800** | **5,000** | **5,000** | **27,600** |
| **2200** | | **Wastewater Facilities Growth** | | | | | | | | | | | | |
| 2201 | 33.5 | MDC Wastewater Lift Station and Interceptor | Deficiency | | | 1,700 | | | | | | | | **1,700** |
| 2203 | 33.5 | Bosque Reuse WWTP | Growth | 200 | | | | | | | | | | **200** |
| | | **Wastewater Facilities Growth Subtotal** | | **200** | **-** | **1,700** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **1,900** |
| **2300** | | **Water Lines Growth** | | | | | | | | | | | | |
| 2301 | 24.6 | Warehouse Meters | Growth | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | **5,000** |
| | | **Water Lines Growth Subtotal** | | **500** | **500** | **500** | **500** | **500** | **500** | **500** | **500** | **500** | **500** | **5,000** |
| **2500** | | **Other Agreements** | | | | | | | | | | | | |
| 2501 | 28.2 | NMDOT 45 South Coors Water Line | Growth | | | - | - | - | 750 | 750 | - | - | - | **1,500** |
| | | **Other Agreements Subtotal** | | **-** | **-** | **-** | **-** | **-** | **750** | **750** | **-** | **-** | **-** | **1,500** |
| **3000** | | **Utility Risk Reduction** | | | | | | | | | | | | |
| 3001 | 35.3 | Utility Risk Reduction/Security | Deficiency | 335 | 335 | 335 | 335 | 335 | 335 | 335 | 335 | 335 | 335 | **3,350** |
| 3002 | N/A | GPS | Deficiency | 5 | 5 | 5 | 5 | 10 | 5 | 5 | 10 | 5 | 5 | **60** |
| | | **Utility Risk Reduction Subtotal** | | **340** | **340** | **340** | **340** | **345** | **340** | **340** | **345** | **340** | **340** | **3,410** |
| | | **Total Level 2 Priority Growth Projects** | | **1,340** | **1,640** | **3,590** | **2,940** | **7,395** | **8,685** | **7,190** | **10,545** | **6,520** | **11,560** | **61,405** |

Notes:

1. Level 2 Priority Growth Projects are projects identified for completion as funds become available.

# Project Summary Sheets

**Decade Plan Line Number and Title:** **101 - Planned Sewer Interceptor Renewal**

**Description:** **Risk Ranking:** 61.6

This program provides funding for evaluation, planning, design, construction, and related activity necessary for sanitary sewer interceptor rehabilitation or complete removal and replacement of severely deteriorated sewer interceptor lines that are beyond feasible rehabilitation.

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 3,325 |
| 2021 | 5,250 |
| 2022 | 9,250 |
| 2023 | 10,940 |
| 2024 | 10,420 |
| 2025 | 9,810 |
| 2026 | 10,475 |
| 2027 | 9,940 |
| 2028 | 9,940 |
| 2029 | 9,940 |
| **Total** | **89,290** |

The sanitary sewer interceptor system is the backbone to the Utility's current sewer collection system. It is designed to carry large flows from the collection line system for delivery to the plant for treatment. There are over 242 miles throughout the service area of interceptor lines which range in size from 12-inch up to 72-inch.

46-percent (approximately 111 miles) of the current interceptors within the system are made of concrete and have suffered substantial hydrogen sulfide corrosion damage along the upper portions of the pipe. This ultimately results in complete pipe failure which could cause a sinkhole to form at any time within the public right-of-way.

The cost of repair under emergency conditions after a collapse is two to three times more than the cost of rehabilitation on a planned basis and the liability associated far exceeds these costs.

**O&M Cost Impacts:**

Proactive renewal of whole segments of aged pipe reduces ongoing O&M costs for the utility. If not renewed, then O&M crews have to respond to collapses and perform point repairs, including the restoration of pavement. This becomes unsustainbly expensive when multiple failures occur on the same segment of pipeline.

*Other Alternatives Considered?*

None

***New 48" Sewer Line to be Slip-lined into an existing 54" Concrete Pipe in Broadway NE***

***New 27-inch Sewer Line Sliplined in the old 30" Concrete Pipe in Prospect NE west of Carlisle***

**Decade Plan Line Number and Title:** **102 - Emergency Sewer Interceptor Renewal**

**Description:** **Risk Ranking:** 61.6

Refer to the description for Project 101.

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 3,500 |
| 2021 | 3,500 |
| 2022 | 3,500 |
| 2023 | 3,500 |
| 2024 | 2,500 |
| 2025 | 2,500 |
| 2026 | 2,500 |
| 2027 | 2,500 |
| 2028 | 2,500 |
| 2029 | 2,500 |
| **Total** | **29,000** |

This Decade Plan line provides funding for addressing emergency repairs of the interceptors.

The cost of repair under emergency conditions after a collapse is two to three times more than the cost of rehabilitation on a planned basis and the liability associated far exceeds these costs.

**O&M Cost Impacts:**

Renewal of whole segments of aged pipe, as funded by Project 101, reduces ongoing O&M costs for the utility. If not renewed, then O&M crews have to respond to collapses and perform point repairs, including the restoration of pavement. This becomes unsustainbly expensive when multiple failures occur on the same segment of pipeline.

*Other Alternatives Considered?*

None

**Inteceptor collapse along Coors Blvd.**

**Decade Plan Line Number and Title:** **103 - Planned Small Diameter Sewer Renewal**

**Description:** **Risk Ranking:** 62.5

This program provides funding for planning, design, construction, and related activity necessary for rehabilitation and replacement of deteriorating small diameter sewer collection lines.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 250 |
| 2021 | 250 |
| 2022 | 250 |
| 2023 | 1,280 |
| 2024 | 4,250 |
| 2025 | 6,160 |
| 2026 | 5,425 |
| 2027 | 7,250 |
| 2028 | 7,250 |
| 2029 | 7,250 |
| **Total** | **39,615** |

There are over 1,835 miles of 8-inch and 10-inch sanitary sewer collection lines through the Authority's service area. Lines that were constructed using concrete material or other obsolete material have a life expectancy of 50 years or less. These types of lines must now be lined or replaced with suitable material to avoid collapses in the collection line and possibly the roadways that they occupy. Lining or replacement options will increase the life of the pipe up to 100 years if not longer. When the deterioration has compromised the integrity of the wall strength, the replacement option is the only option left for rehabilitation of the line. This option is about twice the cost of lining the pipe if it had been caught in time.

**O&M Cost Impacts:**

Proactive renewal of whole segments of aged pipe reduces ongoing O&M costs for the utility. If not renewed, then O&M crews have to respond to collapses and perform point repairs, including the restoration of pavement. This becomes unsustainbly expensive when multiple failures occur on the same segment of pipeline.

*Other Alternatives Considered?*

None

***8-inch Sewer Lining Installation Project***

**Downtown at 7th Street and Kent**

***8-inch Sewer Lining Project on Los Arboles NE***

**Decade Plan Line Number and Title:** **104 - Emergency Small Diameter Sewer Renewal**

**Description:** **Risk Ranking:** 62.5

This line of the Decade Plan provides funding for unplanned/emergency renewal of small diameter lines. Oftentimes, sewers collapse berfore a planned renewal project can be implemented.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 1,500 |
| 2021 | 1,500 |
| 2022 | 1,500 |
| 2023 | 1,500 |
| 2024 | 1,500 |
| 2025 | 1,500 |
| 2026 | 1,500 |
| 2027 | 1,500 |
| 2028 | 1,500 |
| 2029 | 1,500 |
| **Total** | **15,000** |

This Decade Plan line provides funding for addressing emergency repairs of small diameter sewer lines.

The cost of repair under emergency conditions after a collapse is two to three times more than the cost of rehabilitation on a planned basis and the liability associated far exceeds these costs.

**O&M Cost Impacts:**

Renewal of whole segments of aged pipe, as funded by Project 103, reduces ongoing O&M costs for the utility. If not renewed, then O&M crews have to respond to collapses and perform point repairs, including the restoration of pavement. This becomes unsustainbly expensive when multiple failures occur on the same segment of pipeline.

*Other Alternatives Considered?*

None

***Sewer pipe with roof partially missing***


***Severly corroded ductile iron sewer pipe***

**Decade Plan Line Number and Title:** **105 - Sewer Line CCTV Inspections**

**Description:** **Risk Ranking:** 60.4

Sanitary sewers routinely become blocked with tree roots and other materials. Also, corrosion of concrete and breakage of other types of pipes occur, that result in backups. Closed caption television (CCTV) is used to assess the condition of these lines. Some of this work is done by Water Authority employees using equipment owned by the Water Authority. The remainder is done by contractors.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 500 |
| 2021 | 500 |
| 2022 | 500 |
| 2023 | 500 |
| 2024 | 500 |
| 2025 | 500 |
| 2026 | 500 |
| 2027 | 500 |
| 2028 | 500 |
| 2029 | 500 |
| **Total =** | **5,000** |

This project provides funding for renewing Water Authority CCTV equipment as well as for hiring contractors to perform CCTV work.

This project provides for regular inspection of 8" to 78" sewer lines. Unlined concrete interceptors will be re-CCTV'd on a five-year cycle to identify further deterioration and help provide deterioration-rate data. In each of the other FYs, the focus will be on the small diameter lines which experience nearly all SSOs and the majority of the system collapses. These lines have generally not had any previous CCTV inspections. Through our in-house SSO reduction studies, we have identified that the likelihood of an SSO increases with pipe age. The inspections will focus on the highest risk lines each year. CCTV inspections will provide precise information on pipe defects, including grease and root issues that cause most of the Authority's SSOs. Work orders will then be generated specifying the correct cleaning tool for a specific condition, improving the cleaning effectiveness and further driving down the Authority's already low SSO rate. Seriously damaged lines will be addressed in the Small Diameter Sewer Rehab program.

**O&M Cost Impacts:**

The use of CCTV inspections can identify problematic pipe before it collapses and creates an emergency situation. This reduces O&M costs.

*Other Alternatives Considered?*

None: Failing to do these inspections can result in missing an opportunity to reduce sewer line collapses and SSOs.

*Robotic CCTV Unit*

**Project Title - Extension of Sewer in San Diego Ave., NE**

**Decade Plan Line and Work Category:** **106 - Sewer Pipeline Renewal**

**Description:** **Risk Ranking:**

This project is to correct a deficiency in the sanitary sewer system. It will connect an isolated section of sewer pipeline to the existing gravity sewer system. Currently, Water Authority crews routinely use a Vactor truck to pump out the unconnected sewer line. This project will eliminate this requirement allowing these crews to peform more important system maintenance.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 300 |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **300** |

The planned spending will be used to design and construct approximately 1,900 linear feet fo 8-inch diameter sewer line plus approximately five manholes . A parallel project under Category 200 will extend a similar length of 8-inch potable water line with fire hydrants and other appurtenances. Once constructed, these lines swill be able to serve aproximately 20 residences.

Pro-rata will be assigned to the engineering and constructions costs to reimburse the Water Authority at the time of connection. Additionally, system connection will generate revenues through utility expansion charges (UECs) and ongoing monthly charges.

**O&M Cost Impacts:** Refer to Project 209.

*Other Alternatives Considered?*

Continued use of Vactors to periodically pump-out the sewer line. This alternative was estimated to have a higher life-cycle cost than constructing pemanent lines.

***Proposed general alignments of new sewer and potable water lines***

**Decade Plan Line Number and Title:** **108 - Collection System Flow Monitoring Study**

**Description:** **Risk Ranking:**

This project is to provide data on the sewage flow conditions in the Water Authority's different interceptors. This data is needed to better understand the operation of the collection system and will be useful for calibrating the Water Authority's computerized model. The information will also assist in optimizing odor control chemical dosing.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 150 |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **150** |

The planned spending will be used to hire a specialized consultant to place and monitor flow meters in different locations along the Water Authority's interceptors.

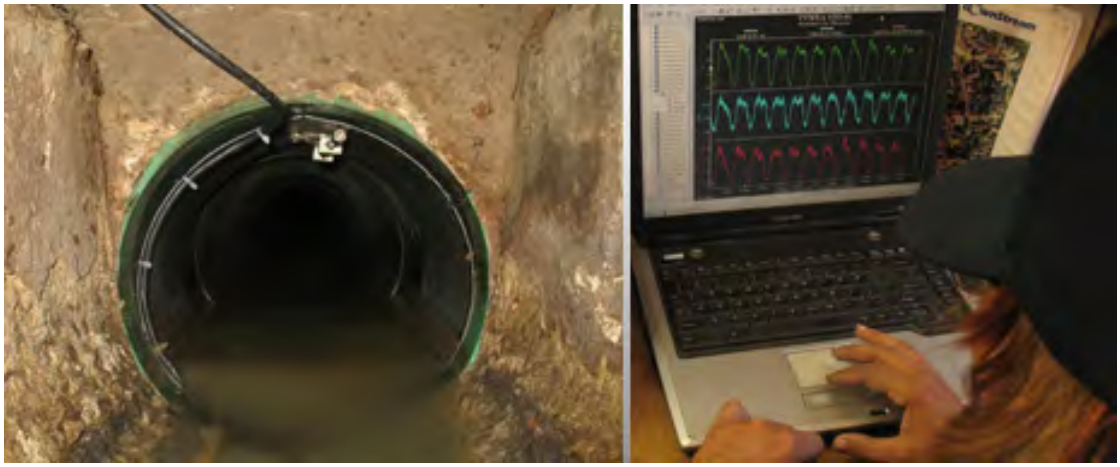
**O&M Cost Impacts:**

If odor control chemical addition can be optimized from this work, then there will be an associated O&M cost savings.

*Other Alternatives Considered?*

Without more flow data, the operation of the collection system will be less optimized.

***Description***



**Decade Plan Line Number and Title:** **201 - Planned Small Diameter Water Line Renewal**

**Description:** **Risk Ranking:** 61.2

This program provides funding for evaluation, planning, design, construction, and related activity necessary for the rehabilitation or replacement of water lines that have deteriorated and are past their useful life. The activity includes both plannned rehab, (201) and emergency (contingency), (202) funding.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 2,250 |
| 2021 | 2,550 |
| 2022 | 3,100 |
| 2023 | 3,000 |
| 2024 | 9,600 |
| 2025 | 11,300 |
| 2026 | 9,300 |
| 2027 | 12,300 |
| 2028 | 12,300 |
| 2029 | 12,300 |
| **Total =** | **78,000** |

There are over 2,000 miles of small diameter (4-inch to 10-inch) water lines that serve as the distribution network for the Authority's water system. These lines are used to provide domestic metered water service, fire protection, and irrigation uses for our customers. Currently there is over 500-miles of pipe that is deficient either in wall integrity or size that poses potential threats to the Utility. As our older steel or cast iron lines become deficient, the Utility will often respond to numerous leaks. These leaks if gone unnoticed do have the potential, under certain circumstances, to become sinkholes which destroy entire roadways and create incredible liability for the utility.

**O&M Cost Impacts:**

Replacing whole segments of aged pipe reduces ongoing O&M costs for the utility. If not replaced, then O&M crews have to respond to leaks and perform point repairs, including the restoration of pavement. This becomes unsustainbly expensive when multiple leaks occur on the same segment of pipeline.

*Other Alternatives Considered?*

None. There are no other alternatives for this critical activity.

**New 6-inch Water Line Installation**

**Old Steel Line at the Break Point**

**Decade Plan Line Number and Title:** **202 - Emergency Small Diameter Water Line Contingency**

**Description:** **Risk Ranking:** 61.2

This program provides funding for evaluation, planning, design, construction, and related activity necessary for the rehabilitation or replacement of water lines that have deteriorated and are past their useful life. The activity includes both plannned rehab, (201) and emergency (contingency), (202) funding.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 100 |
| 2021 | 100 |
| 2022 | 100 |
| 2023 | 100 |
| 2024 | 100 |
| 2025 | 100 |
| 2026 | 100 |
| 2027 | 100 |
| 2028 | 100 |
| 2029 | 100 |
| **Total =** | **1,000** |

There are over 2,000 miles of small diameter (4-inch to 10-inch) water lines that serve as the distribution network for the Authority's water system. These lines are used to provide domestic metered water service, fire protection, and irrigation uses for our customers. Currently there is over 500-miles of pipe that is deficient either in wall integrity or size that poses potential threats to the Utility. As our older steel or cast iron lines become deficient, the Utility will often respond to numerous leaks. These leaks if gone unnoticed do have the potential, under certain circumstances, to become sinkholes which destroy entire roadways and create incredible liability for the utility.

**O&M Cost Impacts:** Replacing whole segments of aged pipe per Project 201 reduces ongoing O&M costs for the utility. If not replaced, then O&M crews have to respond to leaks and perform point repairs, including the restoration of pavement. This becomes unsustainbly expensive when multiple leaks occur on the same segment of pipeline.

*Other Alternatives Considered?*

None. There are no other alternatives for this critical activity.

**New 6-inch Water Line Installation**

**Old Steel Line at the Break Point**

**Decade Plan Line Number and Title:** **203 - Planned Large Diameter Water Line Renewal**

**Description:** **Risk Ranking:** 54

This program will provide funding for the rehabilitation or replacement of large diameter (14-inch and larger) water transmission pipelines that begin to leak or show signs of failure. During the first seven years of the decade, the funding will be used as a contingency fund to address emergencies. In FY23, planned renewal projects will begin.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 100 |
| 2021 | 100 |
| 2022 | 100 |
| 2023 | 100 |
| 2024 | 100 |
| 2025 | 13,300 |
| 2026 | 13,300 |
| 2027 | 13,300 |
| 2028 | 13,300 |
| 2029 | 13,300 |
| **Total =** | **67,000** |

There are over 410 miles of large diameter (14-inch and larger) water transmission pipelines that serve as the transmission network for the Authority's water system. These lines are used to convey large quantities of drinking water from production facilities (e.g., wells) to storage reservoirs and between distribution system zones. When leaks occur on these lines, they can lead to a major loss of water, property damage, and street traffic disruption.

**O&M Cost Impacts:**

Replacing whole segments of aged pipe reduces ongoing O&M costs for the utility. If not replaced, then O&M crews have to respond to leaks and perform point repairs, including the restoration of pavement. This becomes unsustainably expensive when multiple leaks occur on the same segment of pipeline.

*Other Alternatives Considered?*

None. There are no other alternatives for this critical activity.

**Hole in 20" Diameter Steel Water Line**

**Patching the pipe with a welded plate**

**Decade Plan Line Number and Title:** **204 - Emergency Large Diameter Water Line Contingency**

**Description:** **Risk Ranking:** 54

This program will provide funding for the rehabilitation or replacement of large diameter (14-inch and larger) water transmission pipelines that begin to leak or show signs of failure. During the first seven years of the decade, the funding will be used as a contingency fund to address emergencies. In FY23, planned renewal projects will begin.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 650 |
| 2021 | 650 |
| 2022 | 650 |
| 2023 | 650 |
| 2024 | 650 |
| 2025 | 650 |
| 2026 | 650 |
| 2027 | 650 |
| 2028 | 650 |
| 2029 | 650 |
| **Total =** | **6,500** |

There are over 410 miles of large diameter (14-inch and larger) water transmission pipelines that serve as the transmission network for the Authority's water system. These lines are used to convey large quantities of drinking water from production facilities (e.g., wells) to storage reservoirs and between distribution system zones. When leaks occur on these lines, they can lead to a major loss of water, property damage, and street traffic disruption.

**O&M Cost Impacts:** Replacing whole segments of aged pipe per Project 203 reduces ongoing O&M costs for the utility. If not replaced, then O&M crews have to respond to leaks and perform point repairs, including the restoration of pavement. This becomes unsustainbly expensive when multiple leaks occur on the same segment of pipeline.

*Other Alternatives Considered?*

None. There are no other alternatives for this critical activity.

**Hole in 20" Diameter Steel Water Line**

**Patching the pipe with a welded plate**

**Decade Plan Line Number and Title:** **205 - Water Meters, Boxes & Services Rehab**

**Description:** **Risk Ranking:** 25.1

The Water Authority meters potable water usage for residences and businesses for calculating monthly bills. The Water Authority is replacing manually read meters with smart meters that use automated meter reading. Also, meters, meter boxes, and service lines between the street main and the meter that fail require replacement.

**Project Cash Flow Est.**

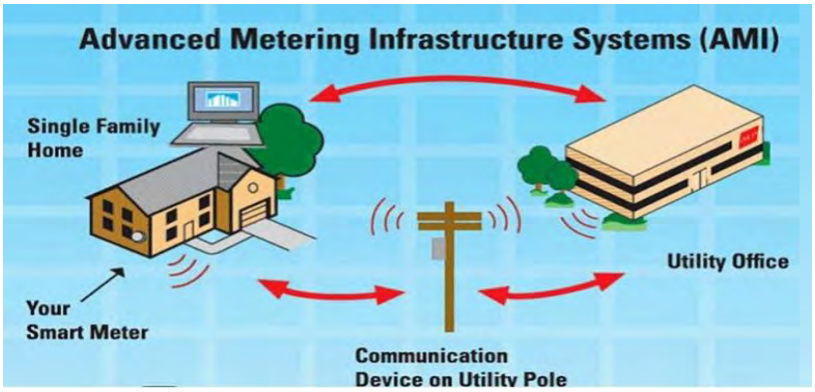
| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 2,000 |
| 2021 | 2,000 |
| 2022 | 500 |
| 2023 | 500 |
| 2024 | 500 |
| 2025 | 500 |
| 2026 | 500 |
| 2027 | 500 |
| 2028 | 500 |
| 2029 | 500 |
| **Total =** | **8,000** |

A portion of the funds is directed to large revenue meter testing, repairs, and maintenance. Service line replacements reduce lost water and infrastructure damages in public right-of-way. Replacement of non- or under-registering water meters will enhance revenues adn redues unaccounted for water. Meter box replacement will reduce liability in sidewalk and other are as due to tripping and other public traffic hazards.

**O&M Cost Impacts:** The AMI system will largely eliminate the need for Meter Readers. There will still be a need for technicians to address maintenance issues with the new automated meters; however, there should be a net reduction in O&M costs with AMI.

*Other Alternatives Considered?*

None



**Decade Plan Line Number and Title:** **206 - Large Valve Replacement**

**Description:** **Risk Ranking:** 41.8

Continuous replacement of large diameter valves (16" and larger) that have become inoperable or unreliable. Renewal of these assets are required to allow isolation of sections of the water distribution system during emergencies such as pipe breaks and for routine maintenance.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 250 |
| 2021 | 250 |
| 2022 | 250 |
| 2023 | 250 |
| 2024 | 250 |
| 2025 | 250 |
| 2026 | 250 |
| 2027 | 250 |
| 2028 | 250 |
| 2029 | 250 |
| **Total =** | **2,500** |

The larger and older valves are critical for controlling transmission and distribution flows. If valve operating problems occur, the large valves can be especially problematic for controlling leaks and performing construction shutoffs. When they don't work properly, the shutoffs have to be extended geographically and also have larger potential for lengthier and more extensive water service disruptions and reduced fire protection.

**O&M Cost Impacts:** Valves that are broken (frozen) in the open position cannot be operated and maintained. Replacing these inoperable valvew with working units adds to O&M costs due to required periodic valve exercising. However, working valve to allow system segment isolation is important, so the added O&M costs in justified.

*Other Alternatives Considered?*

None

***Large Valve, east of I-25***

***Valve to be replaced***

**Decade Plan Line Number and Title:** **207 - Presure Reducing Valve Renewal**

**Description:** **Risk Ranking:** 18.8

Periodic replacement of pressure reducing valves and re-construction of vaults (for safety and traffic control reasons) is required as the older installations deteriorate.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 150 |
| 2021 | 150 |
| 2022 | 150 |
| 2023 | 150 |
| 2024 | 150 |
| 2025 | 150 |
| 2026 | 150 |
| 2027 | 150 |
| 2028 | 150 |
| 2029 | 150 |
| **Total =** | **1,500** |

Pressure reducing valves serve a fundamental water distribution purpose and essentially replace the need for more expensive water storage facilities. Failures result in either lowered pressure (reduced fire protection and service interruptions) or excessive pressures which can damage plumbing and distribution system components. These facilities are below grade and some are in traffic areas and need to be relocated and upgraded to enhance the preventive maintenance activities and safety of the maintenance technicians.

**O&M Cost Impacts:** As PRVs wear, increased maintenance is required to keep them operating properly. If PRVs are allowed to fail, they can results in high system pressures resulting in increased water leakage and broken water lines. Periodic rehabilitation or replacement minimizes O&M costs.

*Other Alternatives Considered?*

None

***New Pressure Reducing Valve installation***

**Project Title - Extension of Sewer in San Diego Ave., NE**

**Decade Plan Line and Work Category:** **209 - Water Pipeline Renewal/Deficiency**

**Description:** **Risk Ranking:**

This project is to extend the 8-inch potable water pipeline in San Diego Ave., NE. This project is to be done in conjunction with Project 106 that corrects a sanitary sewer deficiency.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 300 |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **300** |

The planned spending will be used to design and construct approximately 1,800 linear feet fo 8-inch diameter water line allong with fire hydrants and isolation valves. Once constructed, this line will be able to serve approximately 20 residences.

Pro-rata will be assigned to the engineering and constructions costs to reimburse the Water Authority at the time of connection. Additionally, system connection will generate revenues through utility expansion charges (UECs) and ongoing monthly charges.

**O&M Cost Impacts:** Currently, a Water Authority Vactor and crew must periodically pump out a local manhole. The Water Authority customers would be better served by installing this new line and using the Vactor and crew to perform its primary duty of cleaning sewer lines.

*Other Alternatives Considered?*

Refer to Project 106.

***Proposed general alignments of new sewer and potable water lines***

**Decade Plan Line Number and Title:** **212 - 8E Freeway - Ridgecrest Cross Trunk Transfer Line**

**Description:** **Risk Ranking:**

This project will construct a new potable water transmission line to interconnect the Freeway and Ridgecrest Trunks at the 8E pressure zone. This will provde an alternative conduit for conveying water into the upper portion of the Ridgecrest Trunk. Currently, this area of the potable water distribution system is vulnerable to outages if the Ridgecrest Pumping Station or Four Hills Pumping Station are out-of-service.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 250 |
| 2021 | 250 |
| 2022 | 5,000 |
| 2023 | 5,000 |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total =** | **10,500** |

The planned spending will allow the completion of the design and construction of the 8E Freeway-Ridgecrest Cross Trunk Tranfer Line.

**O&M Cost Impacts:** The addition of this new transmission pipeline will result in a minor net icrease O&M costs. However, the O&M costs of pipelines and their appurtenances are relatively minor.

*Other Alternatives Considered?*

Not constructing this line will leave the upper pressure zones of the Ridgecrest Trunk more vulnerable to potable water outages.

**Decade Plan Line Number and Title:** **214 - Valve Restoration Pilot Program**

**Description:**

The Water Authority has approximately 39,000 buried valves in its potable and non-potable water transmission/distribution systems and at plant facilities (e.g., reservoir sites). Many of these valves have not been turned since their installation several decades ago. Valves need to be exercised routinely to ensure their functionality when needed, for instance, to isolate a leaking pipeline.

**Risk Ranking:**

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 100 |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total =** | **100** |

This project will be part of the Water Authority's Asset Management Program. The funding will be used to hire a specialized firm to perform a pilot program of valve restoration. Based on results at other water agencies, many of the valves that are found to be frozen can be restored to useable service if proper techniques are applied. This involves using specialized valve actuating equipment that applies impact force to the valve stem to free the valve without breaking it. If the pilot program is successful, a program for addressing valve throughout the system will be developed. This is an asset management approach that can reduce the number of valves that need to be replaced and thereby reduce the cost.

**O&M Cost Impacts:** When a water line breaks and the line needs to be isolated, it is best if the most local valves can be closed so that the fewest customers are impacted. Currently, crews often find valves that are inoperable due to a lack of exercising. They then have to close valves in surrounding streets until the water can be shut-off. This takes additional O&M time as well as causes greater customer distruption.

*Other Alternatives Considered?*

None.

***Specialized equipment and techniques can restore frozen valves to working order***

**Project Title - Preliminary Treatment Facility Improvements**

**Decade Plan Line and Work Category:** **301 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 74.2

This project will make improvements to the Preliminary Treatment Facility to improve its safety, performance, and reliability. Funding in Fiscal Years 2024 and beyond are to cover miscellanous minor renewal projects anticipated as the facility ages.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 3,000 |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | 50 |
| 2025 | 50 |
| 2026 | 50 |
| 2027 | 50 |
| 2028 | 50 |
| 2029 | 2,480 |
| **Total** | **5,730** |

A new screening facility is currently under construction and will be completed during FY 2020. This facility is needed to remove rags and other larger debris ahead of Lift Station 11A, which lifts sewage into the Southside Water Reclamation Plant (SWRP).

**O&M Cost Impacts:**

The new screening facility will reduce the amount of O&M required to keep Lift Station 11A working properly. Currently, rags and other debris in the raw sewage periodically clog the pumps. This requires that maintenance staff members unclog the pumps to allow them to work properly. In some instances, the rags and other debis have resulted in rapid wear and damage to the pumps.

Other safety improvments and HVAC improvements are also underway.

*Other Alternatives Considered?*

Not making these improvements could impact the performance and reliability of Lift Station 11A and the safety of O&M staff members.

**Project Title - Solids Dewatering Facility Renewal**

**Decade Plan Line and Work Category:** **302 - Wastewater Facilities Rehab**

**Description:** **Risk Ranking:** 66.5

After construction and startup of the renewed SDF, the need for additional safety railing and ladders to access roofs become known. Fiscal Years 2024 and beyond are to cover miscellanous minor renewal projects anticipated as the facility ages.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 150 |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | 50 |
| 2025 | 50 |
| 2026 | 50 |
| 2027 | 50 |
| 2028 | 50 |
| 2029 | 1,300 |
| **Total** | **1,700** |

The budget shown will cover the cost of design and construction of the safety improvements. Fiscal Years 2024 and beyond are to cover miscellanous minor renewal projects anticipated as the facility ages.

**O&M Cost Impacts:**

None.

*Other Alternatives Considered?*

Not expending these funds would result in safety risks to O&M staff members.

*Renewed Solids Dewatering Facility*

**Project Title - Aeration Basin Blower Improvements**

**Decade Plan Line and Work Category:** **303 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 55.6

Most of the current Hoffman-brand multi-stage centrifugal blowers have been in service for several decades and are of an outdated design. The blowers run routinely and suffer wear and tear that requires repair.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 150 |
| 2021 | 150 |
| 2022 | 150 |
| 2023 | 150 |
| 2024 | 50 |
| 2025 | 50 |
| 2026 | 50 |
| 2027 | 50 |
| 2028 | 50 |
| 2029 | 50 |
| **Total** | **900** |

The funding for this project will provide for sending the existing multi-stage blowers out for renewal. When new, high-efficiency blowers are installed in the North Blower Building per Project 324, the multi-state centrifugal blowers will be used less and will require less annual expenditures to keep in good working order.

**O&M Cost Impacts:**

The operation of these blowers is critical to the treatement of the sewage. Keeping the blowers in good working order is a necessary O&M cost.

*Other Alternatives Considered?*

None.

*A Hoffman multi-stage centrifugal blower*

## Project Title - Digester Renewal

**Decade Plan Line and Work Category:** **304 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 68.8

The digesters remove volatile solids in the sludge produced by the plant's liquid treatment operations prior to sludge dewatering and land disposal. The digestion process converts volatile solids into a methane gas by-product that is burned by the plant's co-generation system to produce electric power for plant operations and produce hot water for digester heating and space heating of SWRP buildings

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | 1,000 |
| 2022 | 2,500 |
| 2023 | 2,400 |
| 2024 | 6,000 |
| 2025 | 3,000 |
| 2026 | 3,000 |
| 2027 | 3,000 |
| 2028 | 3,000 |
| 2029 | 3,000 |
| **Total** | **26,900** |

The recently completed Phase 1 of the digester renewal program addressed deteriorated mixers, safety valves, hatches, and other mechanical components of the digesters. This has brought all 14 digesters into good working order. Also, a new 2-million gallon liquid digested sludge storge tank has been constructed as part of Project 302 - Dewatering Facility Renewal.

The funding shown will be used to continue the renewal and capacity increase of the digesters. This will include conversion of secondary digesters to primary digesters to provide more digestion capacity. Once this addtional capacity is availble, the different digesters will be able to be taken out of service one-at-a-time or in pairs to allow structural and coating renewal on their interiors as well as the installation of new, more energy efficient mixers. The structural rehabilitation work requires digesters to be taken out of service for extended periods of time. The funding will also be used to upgrade the mixers to more effiecient units to save on energy. Also, additional inprovements to the sludge heating system will be made to allow for more consistent temperature control.

**O&M Cost Impacts:**

Installing more efficient mixers will lower electrical energy costs, resulting in an overall reduction in O&M costs. Also, the new mixers will initially require less mainteance than decades-old mixers.

*Other Alternatives Considered?*

Alternative mixing technologies have been evaluated. The bulk of the renewal program is to maintain the performance and reliability of the digesters, which are a necessary part of the treatment processes at the SWRP.

*Digester*


*Digester Heat Exchanger for heating the sludge*

**Project Title - Primary Clarifier Renewal**

**Decade Plan Line and Work Category:** **305 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 64.0

The Primary Clarifiers are used to remove suspended solids ahead of the Aeration Basins. Maintaining these units in good working order is important for the downstream processes to work properly and for the plant to meet its NPDES permit requirements. The primary clarifiers handle sewage is corrosive resulting in deterioration of structural, mechanical, and electrical components. Also, the currently open basins are a source of hydrogen sulfide and other odors.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 6,000 |
| 2021 | 1,500 |
| 2022 | - |
| 2023 | - |
| 2024 | 50 |
| 2025 | 50 |
| 2026 | 50 |
| 2027 | 50 |
| 2028 | 50 |
| 2029 | 50 |
| **Total** | **7,800** |

The funding shown is to rehabilitate and make improvements to the existing eight primary clarifiers. This will include repair of structural concrete and replacement of the mechanical scraper mechanisms. In addition, covers will be added to assist in combating offensive odors. Improvements are also being made to the odor control biofilters to provide more effective and reliable treatment. In the future, an additional pair of clarifiers may be necessary if influent flow rates to the SWRP increase.

The funding in 2021 also covers the cost of making improvements to Primary Pumping Stations 1 and 2.

**O&M Cost Impacts:**

Keeping the equipment in good working order, will reduce overall maintenance costs associated with repairs of older, worn equipment.

*Other Alternatives Considered?*

Replaceing several of the existing clarifiers was evaluated and determined not to cost effective in the short term. When additional clarifiers are needed due to capacity constraints, the replacement option will be reevaluated.

*Primary Clarifiers 1 through 4*


*Primary Clarifier #1*

**Project Title - Aeration Basin Renewal: Phase 2**

**Decade Plan Line and Work Category:** **306 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 52.6

The Aeration Basin (a.k.a. Process Basins) are used to treat the sanitary sewage to remove biochemical oxygen demand (BOD) and nutrients (e.g., ammonia and nitrate). These treatment in these basins is critical for meeting the discharge permit requirements for the SWRP. During Phase 1 of the program, the aeration diffusers were repalced with new, higher efficiency units.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | 1,000 |
| 2022 | 2,000 |
| 2023 | - |
| 2024 | 1,000 |
| 2025 | 2,000 |
| 2026 | 1,470 |
| 2027 | 1,000 |
| 2028 | 1,000 |
| 2029 | 1,000 |
| **Total** | **10,470** |

The funding shown will be used to address structural, mechanical, electrical, and instrumentation elements of the fourteen aeration basins at the SWRP. For instance, the valves and electric operators are wearing out and/or have frozen up or failed and are in need of replacement. If these valves fail in the future, it will be difficult to properly distribute air to the different zones of fine bubble diffusers. This adversely affects the quality of the aeration process which can cause the Water Reclamation Plant to violate the NPDES Discharge permit. It also hinders efficient use of electric power at the SWRP.

**O&M Cost Impacts:**

Old, worn equipment requires more periodic maintenance to keep in proper working order than new replacement equipment. Also, when equipment fails, it impacts plant peformance requiring the operators to make changes in plant operations, such as switching basines.

*Other Alternatives Considered?*

The only alternative is to rebuild the valves and operators which would cost as much or more assuming that parts are even available for these old valves.

*Aeration Tank Air Control Valve*

*Aeration Tanks catwalk*

**Project Title - Secondary Sludge Thickening Improvements**

**Decade Plan Line and Work Category:** **307 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 65.6

The existing Dissolved Air Floatation (DAF) Facility is used to concentrated activated sludge that is periodically wasted from the secondary treatment process. Sludge concentration using DAF also conserves volume needed in the anaerobic digesters to stabilize the sludge and allows for a more efficient sludge digestion process

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | 7,410 |
| 2022 | 1,790 |
| 2023 | - |
| 2024 | 50 |
| 2025 | 50 |
| 2026 | 50 |
| 2027 | 50 |
| 2028 | 50 |
| 2029 | 50 |
| **Total** | **9,500** |

The existing equipment within the DAF Facility is old and wearing out. Parts are becoming difficult to find. As the DAF equipment in the facility fails, it becomes more difficult to keep up with sludge wasting requirements for the activated sludge process.

More efficient, better performing DAF technology is available such as rotary drum thickeners (RDTs). Funding shown is for replacement of DAF with RDTs.

**O&M Cost Impacts:**

The exting DAF equipment is old, worn, and obsolete. Also, the DAF process is more mechanically intense than the proposed RDTs. Once constructed, the RDT facility will require less O&M effort to operate and maintain.

*Other Alternatives Considered?*

Changing from obsolete dissolved air flotation treatment technology will reduce operation and maintenance costs. A design analysis was performed on alternative sludge thickening technologies and rotating drum thickeners (RTDs) were determined to be the apparent best alternative.

***Picture of Rotating Drum Thickener***

**Project Title - Cogeneration Facility Renewal**

**Decade Plan Line and Work Category:** **308 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 44.4

The two cogeneration facility uses large internal combustion engines to burn biogas produced by the Anaerobic Digesters at the SWRP. The engines turn generator sets that produce electricity that is used to power the SWRP. The Cogen facilities also provide hot water for heating the digesters and other buildings at the plant.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 3,500 |
| 2021 | 3,500 |
| 2022 | 260 |
| 2023 | 250 |
| 2024 | 5,250 |
| 2025 | 6,000 |
| 2026 | 250 |
| 2027 | 250 |
| 2028 | 250 |
| 2029 | 250 |
| **Total** | **19,760** |

The funding shown during FY2020 and 2021 is for the design and installation of emissions control equipment. Currently, the engine generators exhaust controlled substances such as carbon monoxide and nitrous oxides. The proposed emission control equipment will clean up the exhaust gas. Funding in later years is to cover periodic engine overhauls and replacement of the engines.

**O&M Cost Impacts:**

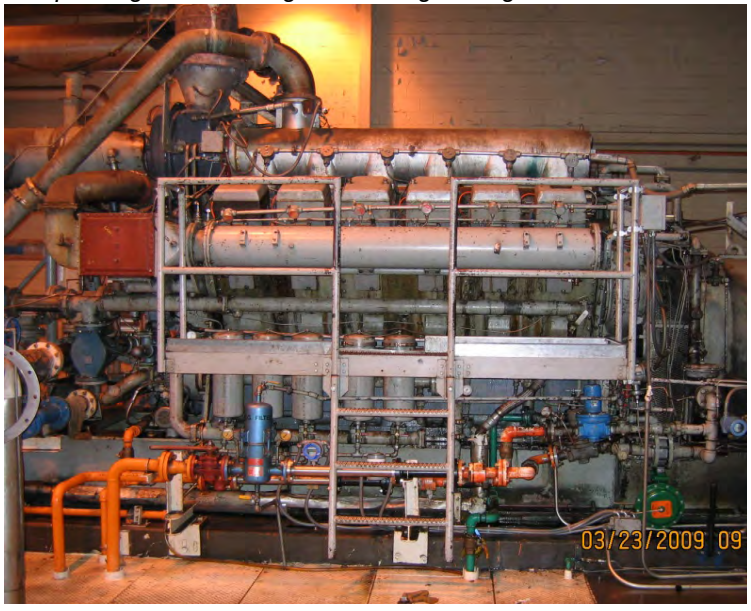
Making these improvments should allow the Water Authority to dispense with the costs assocated with a Title V Air Quality Operating Permit.

*Other Alternatives Considered?*

Alternative replacement technology will be evaluated prior to the design and installation of new co-gen units. Alternative technologies include turbines and fuel cells.

*South Cogeneration Building*


*Cooper Cogeneration Engine at S.Cogen Bldg*



**Project Title - Miscellaneous Improvements Contingency**

**Decade Plan Line and Work Category:** **309 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 77.0

Much of the SWRP is over 30 years old and some elements are 50 years old. This is a complex treatment plent with many indiviual pieces of equipment operating in corrosive environments. Miscellaneous small renewal projects are required to address failing assets and to keep the plant in service and treating the sewage to meet the NPDES permit requirements.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 800 |
| 2021 | 800 |
| 2022 | 1,300 |
| 2023 | 1,380 |
| 2024 | 630 |
| 2025 | 630 |
| 2026 | 630 |
| 2027 | 630 |
| 2028 | 630 |
| 2029 | 630 |
| **Total** | **8,060** |

The funding shown is to allow for small rehab projects as they are needed. Typically, these projects are designed by one of the WUA's on-call engineering consultants and the competitively bid among the WUA's four on-call contractors. This allows problems to be resolved in a quick and cost effective manner.

**O&M Cost Impacts:**
Dependent upon specific project.

*Other Alternatives Considered?*
Not providing this funding would result in important equipment and systems not being restored to service when they failed, which could result in employee safety issues or water quality violations.

*Areation Basins*


*Primary Clarifiers*

**Project Title - SWRP ABB Distributed Control System Service Contract**

**Decade Plan Line and Work Category:** **Line Item 310 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 64.9

This project funds the SWRP ABB Distributed Control System (DCS) service contract. The DCS process computers provide continuous critical operations 24 hours a day 365 days a year providing automatic control of the wastewater plant's process treatment equipment. It is imperative that the DCS parts and service contract remain in place without which would impair the plant's ability to treat wastewater.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 170 |
| 2021 | 180 |
| 2022 | 180 |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **530** |

The ABB Distributed Control System (DCS) service contract is essential for providing immediate hardware and software support 24/7, 365 day a year, whenever problems occur with the DCS. The ABB service contract includes access to SolutionsBank, a web based knowledge bank, which house online DCS hardware manuals, updated downloads, and SupportLine Silver Plus for Control systems which provide 20 hours of 24/7 immediate telephone technical support, Included in the contract is the Sentinel Software Maintenance Subscription, which provides access to Sentinel SolutionsBank for latest software updates, patches, flash firmware, and release notes.
The program includes 5 days per year of on-site service support to be used for DCS hardware corrective maintenance, system tuning, logic development, and configuration changes.

**O&M Cost Impacts:**
None.

*Other Alternatives Considered?*
N/A -Currently, only ABB can provide this DCS service.

***ABB Process Control Unit***

***Data Highway Coaxial Cable Terminations***

**Project Title - Plant Wide Electrical and Instrumentation System Improvements**

**Decade Plan Line and Work Category:** **311 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 67.0

Wastewater Electrical Systems, electrical gear for many facilities within the Water Reclamation Plant such as Cogen, DAF, Compression and Pump Stations 1 and 2 have reached or exceeded their 20 year life and need to be replaced. The electrical gear is essential for successful operation of these facilities.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 8,200 |
| 2021 | 6,000 |
| 2022 | 2,000 |
| 2023 | 3,000 |
| 2024 | 50 |
| 2025 | 50 |
| 2026 | 50 |
| 2027 | 50 |
| 2028 | 50 |
| 2029 | 50 |
| **Total** | **19,500** |

The funding in the first several years will be used to provide a redundant set of primary power loops at the facility. This is necessary to have separate loops that can be take off line and serviced in a safe manner. Old, obsolete electrical equippment will be replaced with new equipment that meets current building codes.

**O&M Cost Impacts:**

Old equipment and materials are more prone to failure that results in disruption of the SWRP treatment processes. This adds to the annual O&M costs. Have newer, up to date equipment that is easier and safer to maintain will reduce O&M costs.

*Other Alternatives Considered?*

erway. An overall plant-wide power reliability study is underway to define alternatives for improving the reliability of the SWRP power supply

*Typical MCC Switchgear*

*South Cogen Switchgear*

**Project Title - Warehouse Facility**

**Decade Plan Line and Work Category:** **314 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 28.4

Wastewater Warehouse Facilities, build a new larger and more modern warehouse to house and protect expensive large equipment such as pumps, generators, piping, and other equipments and materials used at the Plant.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | 700 |
| 2026 | 2,500 |
| 2027 | 2,500 |
| 2028 | - |
| 2029 | - |
| **Total** | **5,700** |

The funding shown is intended to cover the costs of design and construction of a new warehouse facility.

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

None

**Project Title - Site Landscaping**

**Decade Plan Line and Work Category:** **316 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 31.4

Wastewater Plant Site Landscaping, provide landscaping for areas around the Water Reclamation Plant. Landscaping improvements should focus on less watering intensive landscape and removal of the river rock landscaping media.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 1,000 |
| 2021 | - |
| 2022 | - |
| 2023 | 1,500 |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **2,500** |

Landscaping would present a better image to the visiting public and others as well as improve the grounds around the Plant for weed control. Removal of the river rock will allow foot traffic in many of the areas where the river rock has presented a safety hazard to personnel working on equipment where the river rock was placed.

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

None

*Failed Landscaping by Dewatering*


*Barren lot next to Training*

**Project Title - New Operations & Maintenance Building**

**Decade Plan Line and Work Category:** **317 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 36.0

The current O&M facilities provide spaces for several purposes including space for equipment maintenance, tool storage, central control room for monitoring plant operations, SWRP staff offices, training classrooms, break rooms, showers and locker room areas. The expected level of service is to provide sufficient space to accomplish these different and conflisting purposes efficiently. The existing O&M facilities include the Main O&M Building, the Training Bldg, the Server Bldg, an open air equipment warehouse and bulk lubricant storage / waste oil storage area, and a building formerly used to house a small water quality lab (Ghost Building).

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | 2,450 |
| 2023 | 5,000 |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **7,450** |

The expected level of service is not realized because the existing spaces and functions are scattered between five different buildings / structures. These facilities are between 25 and 48 years old. Common problems for these buildings include poor HVAC and leaking roofs. The Main O&M Building has an extremely inefficient space layout.

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

Consider opportunites to renovate the exisitng PTF and Dewatering Buildings that will be abandoned into space required for plant operations & maintenance.

*Main Operations Bldg from original 1960 plant project*

*Metal Bldg from 1970's used for Staff Training*

**Project Title - Demolition of the Abandoned Drying Beds**

**Decade Plan Line and Work Category:** **319 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 14.4

The abandoned sludge drying beds are no longer used at the SWRP. These facilities including the ones converted into pilot wetlands no longer serve a useful purpose at the SWRP. They occupy space that could othwerwise be used for needed SWRP facilities such as new liquid digested sludge storage tanks and storm water retention basins.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | 450 |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **450** |

The budget shown will be used to demolish the concrete structures and fill depressions with soil.

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

None

*View of original sludge drying beds looking south*


*Sludge Drying Beds that were added in 1980's*

**Project Title - High Efficiency Blower Upgrades**

**Decade Plan Line and Work Category:** **324 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 55.6

The operation of the aeration basin blowers represtns approximately 50% of the electrical energy demand at the SWRP. Most of the current Hoffman-brand multi-stage centrifugal blowers have been in service for several decades and are of an outdated design. New blower technology using higher speeds results in significant operational cost savings.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | 5,000 |
| 2023 | 4,000 |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **9,000** |

The funding for this project will provide for a consultant to assist in the design for replacing the existing four multi-stage blowers at the North Blower Building with eight high efficiency blowers. The compressed air capacity would increase from about 29,000 to 36,000 cubic feet per minute (cfm).

**O&M Cost Impacts:**

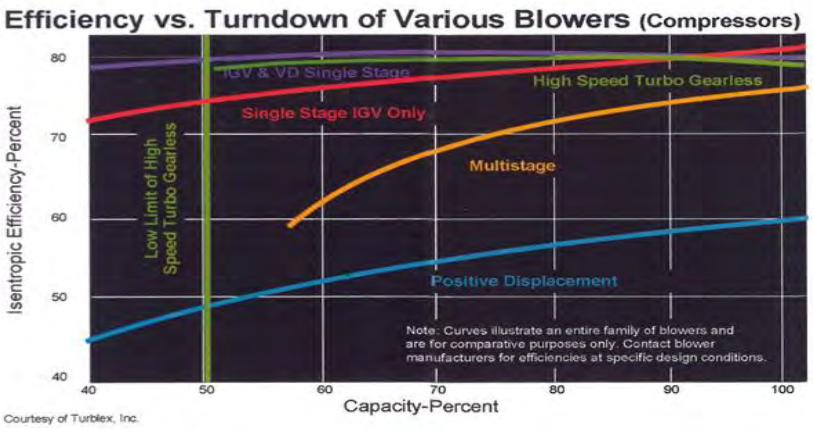
By by using more efficient blower technology, electical energy costs will be reduced resulting in overally O&M cost savings. Also, newer equipment will initially have lower maintenance costs than several decade old blowers.

*Other Alternatives Considered?*

The operation and maintenance of the existing multi-stage centrifugal blowers would result in higher long-term costs.

*A Hoffman multi-stage centrifugal blower*


*Blower efficiency by type of blower*



**Project Title - Chemical Systems**

**Decade Plan Line and Work Category:** **327 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 58.9

The non-potable water treatment system lacks a corroson control treatment system. The filtered water produced by the plant is corrosive to cement mortar linings of the transmission pipelines.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | 250 |
| 2023 | 1,000 |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **1,250** |

The funding for this project will provide for a consultant to assist in the evaluation and design of a corrosion control treatment system. A potential system to be considered is adding ortho-phosphate to the filtered water.

**O&M Cost Impacts:**

Adding a new chemical system will add to the O&M costs; however, not addressing internal corrosion of pipelines, will reduce their useful life, resulting in higher renewal costs.

*Other Alternatives Considered?*

None

**Project Title - As-Built Drawings of the SWRP**

**Decade Plan Line and Work Category:** **329 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:**

The original Southside Water Reclamation Plant (SWRP) was constructed in the early 1960's. Since that time, numerous proects have been completed to make improvements and increase the treatment capacity of the plant. This has resulted in numerous different construction drawings being produced that makes it difficult to understand the current conditions at the plant.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | 50 |
| 2022 | 50 |
| 2023 | 50 |
| 2024 | 50 |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **200** |

The funding for this project will provide for consultants to develop a set of "as-built" drawings for each of the process areas at the SWRP.

**O&M Cost Impacts:**

Having an accurate and complete set of as-built drawings will reduce the time to research issues such as pipeline leaks that periodically occur. Therefore, there should be an O&M cost savings associated with this project.

*Other Alternatives Considered?*

The alternative is to continue using multiple sets of drawings that do not accurately reflect the actual conditions at the plant.

**Project Title - Fats, Oils, & Grease (FOG) Receiving Station**

**Decade Plan Line and Work Category:** **330 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:**

Fats, oils, and grease (FOG) materials that are generated by restaraunts and other food industry establishments can be disruptive to the wastewater system if not disposed of properly. If discharged directly to the sanitary sewer, FOG can result in clogging of the pipelines resulting in backups and overflows. If discharged at the Septage Receiving Station, FOG can upset the treatment processes at the SWRP. However, if FOG were injeccted directly into the Anearobic Digesters at the SWRP, it would likely result in an increase in the production of methane, which can be used to generate electrical power at the CoGeneration Facility at the plant.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | 1,180 |
| 2028 | 5,000 |
| 2029 | - |
| **Total** | **6,180** |

The funding for this project will provide for a consultant to assist in the design of a FOG Receiving Station at the SWRP. Other wastewter plants have installed such facilities and have seen an increase in methane/power production. However, FOG is difficult to handle and has resulted in higher than expected operation and maintenance (O&M) requirements. Prior to implementing a FOG Receiving Station at the SWRP, a thorough evalution of the pros an cons needs to be completed.

**O&M Cost Impacts:**

A FOC receiving station will increase labor costs; however, the extra biogas produced may offset this cost by reducing the use of natural gas and electrical power purchased from outside utilities.

*Other Alternatives Considered?*

The final decision to move forward with this project will depend on additional review of the practicality of facilities at other wastewater treatment plants.

**Project Title - Advanced Treatment Facilities**

**Decade Plan Line and Work Category:** **332 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:**

In anticipation of more rigorous effluent discharge requirements, advanced treatment including filtration may be required in the future. Also, the Water Authority will be reusing more and more of its effleunt for non-potable and possibly potable reuse. The effluent will be required to be more rigorously treated for such uses.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | 10,000 |
| 2027 | 5,000 |
| 2028 | 3,680 |
| 2029 | - |
| **Total** | **18,680** |

The funding shown will be used to prepare a pre-design study to evaluate potential advanced treatment requirements. Funding shown later in the decade, may be used for constructing the actual advanced treatment facilities. The amount of funding and the timing of expenditures will be addressed in the proposed pre-design study.

**O&M Cost Impacts:**

Adding additional unit processes at the SWRP would increase O&M costs.

*Other Alternatives Considered?*

None.

**Project Title - Replacement Operator Laboratory**

**Decade Plan Line and Work Category:** **334 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 38.6

The SWRP Operators need to perform tests each day to monitor the diffeent treatment processes at the plant. The current space used for these tests is inadequate.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | 250 |
| 2022 | 1,500 |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **1,750** |

The funding for this project will provide for a consultant to design modifications to the out-of-use Reuse Treatment Building to include an operators lab. The modifications to this existing builing will include additional storage space.

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

None

**Project Title - Final Clarifiers**

**Decade Plan Line and Work Category:** **335 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 28.4

The final clarifiers (a.k.a., secondary clarifiers) are used to remove biosolids from the treated sewage before it undergoes ultraviolet disinfection. A major rehab of the 12 Final Clarifers was completed in 2012; however, the clarifier mechanical, electrical, and instrumentation systems need to undergo future renewal.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | 5,000 |
| **Total** | **5,000** |

The funding shown is intended to cover the costs of design and construction of rehabilition and replacement of clarifier components.

**O&M Cost Impacts:**

As mechanical equipment ages, it presents higher O&M costs. Renewing the equipment will lower these costs.

*Other Alternatives Considered?*

None

**Project Title - Soil Amendment Facility Rehab**

**Decade Plan Line and Work Category:** **401 - Soil Amendment Facility**

**Description:** **Risk Ranking:** 28.6

The soil amendment facilty (SAF) is an important element in the Water Authority's wastewater treatment systems. The Southside Water Reclamation Plant (SWRP) generates approximately 60 tons of solids per day. These solids are land applied and composed at the SAF. The composed solids are sold and generate income for the utility. Without the SAF, the utility would have to pay to dispose of the solids in a landfill.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 50 |
| 2021 | 50 |
| 2022 | 50 |
| 2023 | 50 |
| 2024 | 50 |
| 2025 | 50 |
| 2026 | 50 |
| 2027 | 50 |
| 2028 | 50 |
| 2029 | 50 |
| **Total** | **500** |

The revenue shown for this item is to allow periodic rehabilitation of the existing fixed equipmement and facilities at the SAF. This includes buildings, heavy equipment, pumping systems, and grounds.

**O&M Cost Impacts:**

Renewing equipment as it becomes older and more prone to failures will reduce O&M costs.

*Other Alternatives Considered?*

The no action alternative would not allow this important faciltiy to be sustainable.

***Scarab Compost Turner***


***SAF Water Pumping System***

## Project Title - Lift Station Renewal

**Decade Plan Line and Work Category:** **501 - Lift and Vacuum Station Renewal**

**Description:** **Risk Ranking:** 71.2

This project provides funding for the planning, design, engineering services, contract and/ or in-house services related to general lift stations. This work is important in maintaining the WUA's stated Level of Service. There are 28 sanitary lift stations (does not include NWSA) that all operate continuously. Sewage is a corrosive and abrasive material to handle which causes advanced deterioration of the stations.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 350 |
| 2021 | 650 |
| 2022 | 650 |
| 2023 | 650 |
| 2024 | 650 |
| 2025 | 650 |
| 2026 | 650 |
| 2027 | 650 |
| 2028 | 650 |
| 2029 | 650 |
| **Total** | **6,200** |

This project provides for regular inspection, repair and replacement of the complex mechanical / electrical components of a lift station. The following examples are focused on recent experience at the larger stations. An example is the management of the 63 pumps at the 28 stations. Pumps wear out, losing efficiency and eventually risking catastrophic failure. Pumps are monitored for pumping rate, which is an indicator of the pump wear, and when appropriate, pulled for inspection. Pump rebuilds on the larger stations typically cost $30,000 to $40,000 each. Variable frequency drives (VFDs) are utilized on approximately 22 of the Authority's pumps to match flow rates and mitigate shock waves in the station piping.

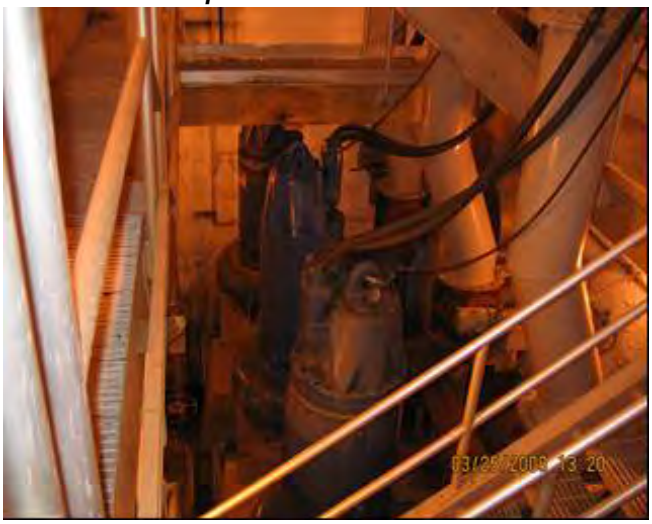
**O&M Cost Impacts:**

Periodice renewal of equipment and materials will reduce O&M costs as compared to more frequent response to failures.

*Other Alternatives Considered?*

Asset Management dictates that facilities be operated at the least cost while providing the appropriate level of service. In nearly all cases, regular and complete Operation & Maintenance (O&M) is the least cost approach.

***Lift Station Pumps***



***Lift Station 17***

**Project Title - Lift Station 20 Renewal**

**Decade Plan Line and Work Category:** **502 - Lift and Vacuum Station Renewal**

**Description:** **Risk Ranking:** 74.7

Lift Station 20 is the largest lift station in the Water Authority system. It pumps raw sewage from the west side of the river to the SWRP on the east side.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 2,000 |
| 2021 | 405 |
| 2022 | 165 |
| 2023 | 150 |
| 2024 | 150 |
| 2025 | 150 |
| 2026 | 150 |
| 2027 | 150 |
| 2028 | 150 |
| 2029 | 150 |
| **Total** | **3,620** |

The funding shown, together with carryover funds from FY 2019 is to perform a major renewal of this facility.

**O&M Cost Impacts:**

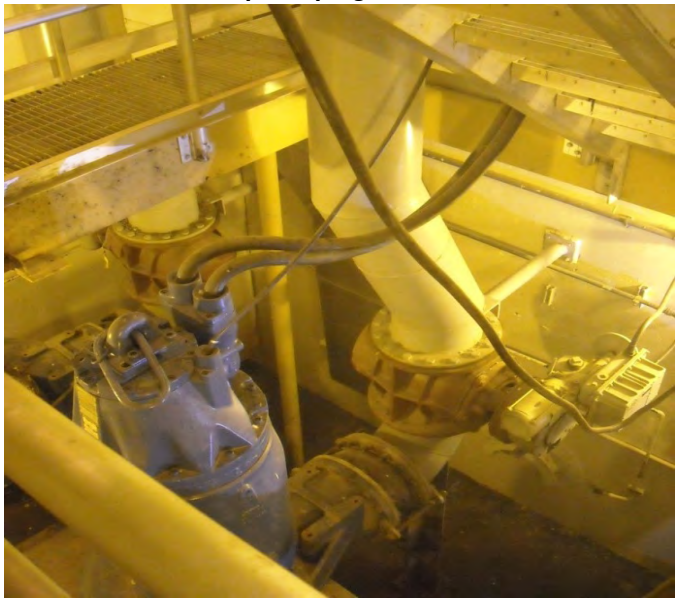
Replaced old, obsolete equipment and materials with new will reduce mainteance costs.

*Other Alternatives Considered?*

None. These facilities have to operate 24/7.

***Lift Station #20 Force Main Header***


***Lift Station #20 Pump & Piping***



**Project Title -Lift Station 24 Renewal**

**Decade Plan Line and Work Category:** **503 - Lift and Vacuum Station Renewal**

**Description:** **Risk Ranking:** 82.6

Lift Station 24 is the second largest lift station in the Water Authority system.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 400 |
| 2021 | 600 |
| 2022 | 200 |
| 2023 | 150 |
| 2024 | 150 |
| 2025 | 150 |
| 2026 | 150 |
| 2027 | 150 |
| 2028 | 150 |
| 2029 | 150 |
| **Total** | **2,250** |

The funding shown is to allow pro-active renewal of the different facility components including pumps, piping, valves, instrumentation, and other components.

**O&M Cost Impacts:**

Replaced old, obsolete equipment and materials with new will reduce mainteance costs.

Other Alternatives Considered?

Pro-active renewal is necessary to provide the continous sanitary sewer service that Water Authority customers expect.

***Station 66***

***Force Main Repair - Station 68***

**Project Title - Vacuum Station Renewal**

**Decade Plan Line and Work Category:** **504 - Lift and Vacuum Station Renewal**

**Description:** **Risk Ranking:** 69.5

The pumps, piping, valves, and other components at these facilities are exposed to wastewater that contains high levels of abrasive grit (e.g., sand) and corrosive hydrogen sulfide/sulfuric acid. This results in periodic failures of the different components.
.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 200 |
| 2021 | 1,300 |
| 2022 | 250 |
| 2023 | 350 |
| 2024 | 350 |
| 2025 | 350 |
| 2026 | 350 |
| 2027 | 350 |
| 2028 | 350 |
| 2029 | 350 |
| **Total** | **4,200** |

The funding shown is to allow immediate repair or replacement of components when they fail or show signs of impending failure. The funding in FY 2021 is for construction of a new vacuum pumping station at Vacuum Station 63.

**O&M Cost Impacts:**
Replaced old, obsolete equipment and materials with new will reduce mainteance costs.

*Other Alternatives Considered?*
None. These facilities have to operate 24/7.

***Station 66***

***Force Main Repair - Station 68***

**Project Title - Station Telemetry System Upgrades**

**Decade Plan Line and Work Category:** **Line Item 505 -Lift Station PLC Renewal**

**Description:** **Risk Ranking:** 57.0

The Water Authority has 45 lift and vacuum stations that convey sanitary sewage to the Southside Water Reclamation Plant (SWRP) . This equipment provides continuous critical operations, 24 hours a day 365 days a year. Each station includes telemetry systems that send alarms and other data to the SWRP for monitoring.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | 250 |
| 2022 | 500 |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **750** |

This project funds replacement of obsolete PLC-5 Programmable Logic Controllers (PLCs) used to control sanitary lift and vacuum pump stations with modern ControlLogix PLCs. The existing Allen Bradley PLC-5 equipment in service at the sanitary lift and vacuum stations are over fifteen years old, facing absolesence, and will no longer be supported by the maufacturer past 2017. To migrate from the existing PLC-5s to ControlLogix PLCs requires new control cabinets rack, processors, analog and digital I/O modules, power supplies, PanelView interface and wiring. PLC Cabinets will have to assembled and installed. Programming can be completed in-house by Utility instrumentation personnel.

Funding is also provided to upgrade of the iFix software used for communicating alarms and other information between the remote stations and the SWRP.

**O&M Cost Impacts:**

None.

*Other Alternatives Considered?*

N/A – In order to keep the existing programming, ControlLogix PLCs must be used.

***Sanitary Lift Station PLC-5***

***Typical ControlLogix PLC***

## Project Title -Collection Sytem Odor Control Renewal

**Decade Plan Line and Work Category:** **601 - Odor Control Facilities Renewal**

**Description:** **Risk Ranking:** 75.6

This program provides funding for evaluation, planning, design, construction, and related activity necessary for odor control in the collection system. This work is important in maintaining the WA's stated Level of Service.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 250 |
| 2021 | 250 |
| 2022 | 250 |
| 2023 | 250 |
| 2024 | 250 |
| 2025 | 250 |
| 2026 | 250 |
| 2027 | 250 |
| 2028 | 250 |
| 2029 | 250 |
| **Total** | **2,500** |

Hydrogen sulfide is the primary gas that causes offensive odors from the sewer system. These gases are naturally generated through biological activity in the sewer. Larger sewers known as interceptors are the primary odor generators in the collection pipe system and the primary focus of CIP 601 is controlling interceptor odors. However, CIP 601 will address collection system odors from all sources including small diameter pipes, pump stations and manholes.

**O&M Cost Impacts:**

Renewing equipment and materials as they age and become more prone to failure will reduce O&M costs.

*Other Alternatives Considered?*

Odor control solutions must be effective and are extremely variable, dependent on the specific issues applicable to the particular odor source. Solutions range from low tech and inexpensive to very expensive in both capital and future O&M. Solutions include improved sewer cleaning, chemical treatment, air phase treatment and correction of air flow choke points.

System wide liquid phase sampling locations

*Odor Control Station 51. 2nd St. & Griegos*

**Project Title - Annual Sodium Hypochlorite Generator System Renewal**

**Decade Plan Line and Work Category:** **701 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 34.2

The groundwater system uses on-site sodium hypochlorite generation systems for disinfection of the well water. It is important that these units be rehabed or replaced when they become unreliable.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 100 |
| 2021 | 100 |
| 2022 | 100 |
| 2023 | 100 |
| 2024 | 100 |
| 2025 | 100 |
| 2026 | 100 |
| 2027 | 100 |
| 2028 | 100 |
| 2029 | 100 |
| **Total** | **1,000** |

The existing sodium hypochlorite generator systems are nearing the end of their useful lives. Some systems are approaching 20 years. Various components of these systems are becoming obsolete and thereby more difficult to replace. Increasing levels of operating and capital budget are being expended to replace and/or repair the equipment. The program is needed to gradually replace all of the systems with new ones. Failure to do so will eventually put the Water Authority at risk for not meeting water quality requirements for disinfection and not providing safe drinking water to the public. Service may be disrupted while new equipment is purchased and installed on an emergency basis. A replacement program extended over a ten-year period is a proactive, cost effective means of dealing with the aging assets.

**O&M Cost Impacts:**

Replacing old and obsolete equipment with new units will reduce O&M costs.

*Other Alternatives Considered?*

Not doing anything puts the Water Authority at risk for violating permit requirements, impacting health and safety, loosing public image, and disrupting service. Replacement with new disinfection systems before failure of the existing systems will have no impact on service disruption.

***Sodium Hypochlorite Generator System***

***Damaged system in need of renewal***

**Project Title - Booster Pump Renewal**

**Decade Plan Line and Work Category:** **702 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 58.9

There are 39 potable water booster stations that pump water to the upper zones of the water service area. If the booster pumps and auxiliary equipment are not maintained and repaired as needed, there is a significant risk of failure to get water to customers and/or maintain the expected levels of service.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 1,200 |
| 2021 | 200 |
| 2022 | 700 |
| 2023 | 200 |
| 2024 | 200 |
| 2025 | 200 |
| 2026 | 200 |
| 2027 | 200 |
| 2028 | 200 |
| 2029 | 200 |
| **Total** | **3,500** |

This item is to provide funding for the renewal of booster pumping stations that supply potable water to customers with minimal or no disruption of service. Among the items requiring renewal at the different stations are control valves, motor control centers pump motors pumps, HVAC systems, and building roofs.

**O&M Cost Impacts:**

Replacing old and obsolete equipment with new units will reduce O&M costs

*Other Alternatives Considered?*

One alternative is to do nothing, allowing the asset(s) to fail. This is not viable with respect to booster stations because water would not get to customers in certain locations of the service area if failed booster pumps were left inoperable.

***West Mesa Booster Station***

**Project Title - Well Rehab and Renewal**

**Decade Plan Line and Work Category:** **703 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 58.9

The Water Authority must maintain a full capacity groundwater supply system even with the San Juan - Chama Drinking Water Project. At times, river water may not be available for diversion, so the Water Authority will have to rely fully on its wells . Also, the wells are needed to provide peak capacity during the high demand periods.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 1,000 |
| 2021 | 2,000 |
| 2022 | 2,000 |
| 2023 | 2,000 |
| 2024 | 2,000 |
| 2025 | 4,000 |
| 2026 | 4,000 |
| 2027 | 4,000 |
| 2028 | 4,000 |
| 2029 | 4,000 |
| **Total** | **29,000** |

As illustrated below, over 40 percent of the Water Authority's wells are older than 50 years. These wells should be replaced in the next decade. Sixty years is the typical maximum life of a well before it needs to be replaced. Some wells fail sooner than this and some last longer.

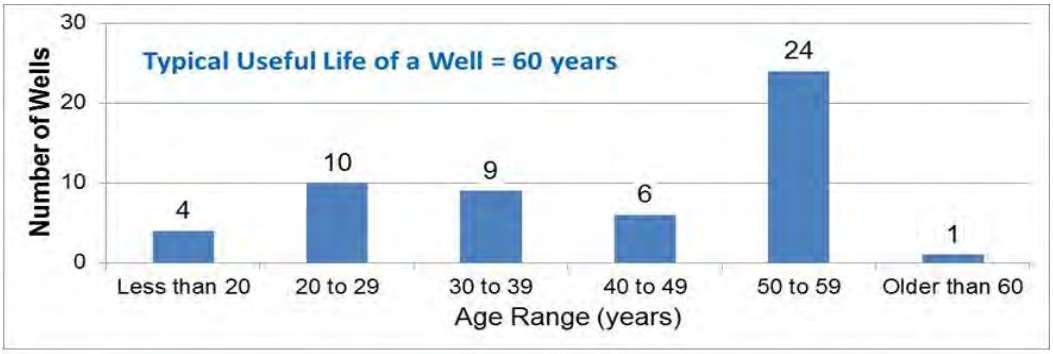
The funding shown will be used to start the well replacements. An approximate cost for a replacement well is $2-million. The level of funding shown is anticipated to allow for approximately 12 well replacements. As more funding becomes availble, the rate of well replacement will be increased. Funding will also be used to evaluate selective pugging of well screen zones in high arsenic wells to lower the arsenic concentration in the pumped water and restore the well to potable water service.

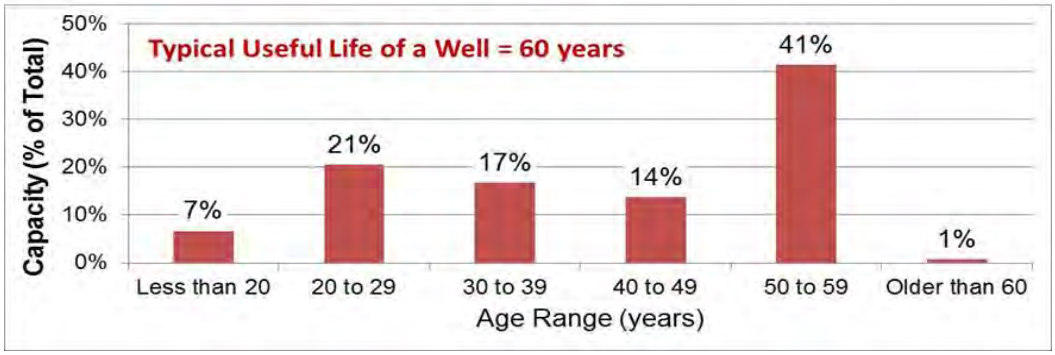
**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

An alternative to replacing wells is to restore the use of wells with arsenic levels above the drinking water standard. For insance, the wells in the Alameda Trunk and some in the adjacent Montomery Trunk could be conveyed via a new well collector/transmission line could deliver this well water to the San Juan Chama WTP, where it coudl be treated to remove arsenic and then used for drinking water. Such a project would provide approximatley 30 mgd of potable water supply capacity.



**Project Title - Lomas Reservoir No. 2 Rehabilitation Project**

**Decade Plan Line and Work Category:** **709 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 33.9

Lomas Reservoir No. 2 is a partially buried concrete reservoir with a capacity of 4 million gallons. It was constructed in 1964. It provides gravity service to Pressure Zone 5E of the Freeway Trunk.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 50 |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **50** |

The funding shown is for a structural investigation of the reservoir ahead of renewal.

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

None.

***Lomas Reservoir Nos. 1 (right) and 2 (left).***

**Project Title - Natural Gas Engine Conversions**

**Decade Plan Line and Work Category:** **710 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 51.8

This item is to provide funding for the replacement of the last remaining natural gas engines including Corrales Well 2, Ponderosa Well 3 (also known as Walker Well 3), Volcano Cliffs Well 1, Gonzales Well 3, Duranes Booster 1, and Burton Booster. 1.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | 50 |
| 2023 | 1,350 |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **1,400** |

The Caterpillar gas engine air quality permit fees are $1,800 per year. The engines are in need of replacement with electric motor drivers to eliminate emissions and improve operational efficiencies. The older engines are inefficient and replacement parts are becoming obsolete. The newer engines at Burton and Duranes pump stations are problematic from a mechanical and controls standpoint. The Duranes gas engine controls system has never worked properly eventhough it has been serviced many times by the manufacturer's representative. The Burton gas engine has had numerous mechanical problems also.

**O&M Cost Impacts:**

Natural gas engines have higher maintance costs than electric motors. The operational costs can be lower with natural gas. So, overall the O&M costs will remain similar.

*Other Alternatives Considered?*

No action puts the Water Authority at risk for not having system redundancy in the event that the older gas engines cannot be serviced due to unavailability of replacement parts or the mechanical systems of the newer gas engines continue to be a problem.

***Volcano Cliffs Well No. 1 - Natural Gas Engine***


***Corrales Well 1 - Electric driver replaced gas engine***

**Project Title - Charles Wells Reservoir No. 1 Rehabilitation Project**

**Decade Plan Line and Work Category:** **715 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 33.9

Charles Wells Reservoir stores up to 6.9 million gallons of treated surface water and well water. There is no backup reservoir, so a second reservoir is need to allow Charles Reservoir No. 1 to be taken out of service without undue distruption to customer water service and fire protection.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 500 |
| 2021 | 1,000 |
| 2022 | 1,000 |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **2,500** |

This is a partially buried, rectangular concrete reservoir that is 45 years old. The roof of the reservoir is a totally fenced-in, gated tennis court that is open to the public. Rehabilitation of this facility will include a thorough tank inspection, pressure washing the tank interior, sandblasting and re-coating the steel fabricated parts as needed, addressing any leaks (possibly replacing the joint material in the floor and installing an epoxy liner) and resurfacing the roof.

**O&M Cost Impacts:**
None.

*Other Alternatives Considered?*
None. This is a critical reservoir and needs to be rehabilitated.

***Charles Wells Reservoir - Tennis Courts on Reservoir Roof***

***Charles Wells Reservoir from Street***

**Project Title - Santa Barbara Reservoir No. 1 Rehabilitation Project**

**Decade Plan Line and Work Category:** **716 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 20.7

This item is to provide funding for the planning, design, and construction of rehabilitation of the Santa Barbara Reservoir No. 1 which stores 3.75 million gallons of treated surface water and well water. It also provides additional storage to the recently constructed Santa Barbara Reservoir No. 2.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | 800 |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **800** |

This reservoir is 49 years old and has never been rehabbed. The vertical ladder will need to be replaced with a staircase, hand rails, bulkhead door, new hatch and landings for ease of access and to improve security. Videos and pictures of the tank interior show that the coating has failed and is in need of reconditioning. The roof rafter bolts and one rafter have fallen onto the reservoir floor. Rehabilitation of this facility will include a test of the coatings for presence of lead, sandblasting the tank interior and exterior, measuring the floor thickness for corrosion and replacing the floor if needed, installation of new steel fabricated parts, appurtenances and a tank mixing system, and recoating the tank interior, exterior and metal fabrications. Failure to implement this project may eventually result in leaks. This project should be programmed into the capital improvements program within the next ten years to reduce the Water Authority's risk of service disruption.

**O&M Cost Impacts:**

None.

*Other Alternatives Considered?*

Inaction is a viable option with some risk to the Water Authority.

***Santa Barbara Reservoir No. 1***

**Project Title - Reservoir Inspection & Cleaning Program**

**Decade Plan Line and Work Category:** **717 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 24.0

This item is to provide funding for the continued utilization of the selected on-call contractor for the inspection and cleaning of each reservoir every 5 years.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 50 |
| 2021 | 50 |
| 2022 | 50 |
| 2023 | 50 |
| 2024 | 50 |
| 2025 | 50 |
| 2026 | 50 |
| 2027 | 50 |
| 2028 | 50 |
| 2029 | 50 |
| **Total** | **500** |

Inspection and cleaning of each reservoir every 5 years is a proactive means of extending the life of the asset. Inspection would allow the Water Authority to ascertain the reservoir's condition (e.g., interior coating, corrosion areas, leak points, etc.) enabling us to properly plan for the asset's rehabilitation. Experience has proven that putting off facility rehab makes it more costly in the long run. In addition, many of the reservoirs store well waters high in sand and silt which settle out on the reservoir floors. Some of the reservoirs have several feet of sand/silt deposits on the bottom. This material has the potential for being re-entrained into the discharges that enter the transmission and distribution systems. Regular inspection and cleaning of the reservoirs would preclude this and reduce the Water Authority's risk of receiving customer complaints and funding costly rehabs.

**O&M Cost Impacts:**

Reservoir inspection and cleaning adds maintenance costs; however, this is a necessary cost for properly operating and maintaining the system.

*Other Alternatives Considered?*

Inaction is a viable alternative with some minimal risk to the Water Authority.

***Existing Franciscan Reservoir***

***Interior of Volcano Cliffs Reservoir No. 1 Before Rehab***

**Project Title - W.A. Webster Reservoir Rehabilitation Project**

**Decade Plan Line and Work Category:** **718 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 27.4

This item is to provide funding for the planning, design and construction of the rehabilitation of the W.A. Webster Reservoir which stores 4 million gallons of treated surface water and well water.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | 250 |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **250** |

This reservoir is 35 years old and has never been rehabbed. Rehabilitation of this facility will include sandblasting the tank interior and exterior, measuring the floor thickness for corrosion and replacing the floor if needed, installation of new steel fabricated parts and appurtenances, replacement of rafter bolts, installation of a tank mixing system, and recoating the tank interior, exterior and metal fabrications. Failure to implement this project may eventually result in leaks. This project should be programmed into the capital improvements program within the next ten years to reduce the Water Authority's risk of service disruption.

**O&M Cost Impacts:**
None

*Other Alternatives Considered?*
In-action is a viable option with some risk to the Water Authority.

***Webster Reservoir***

**Project Title - Miscellaneous Reservoir Rehab**

**Decade Plan Line and Work Category:** **719 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 14.0

This item is to provide funding for the rehabilitation of each steel and concrete reservoir 20 years and 30 years, respectively.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 150 |
| 2021 | 150 |
| 2022 | 150 |
| 2023 | 150 |
| 2024 | 150 |
| 2025 | 150 |
| 2026 | 150 |
| 2027 | 150 |
| 2028 | 150 |
| 2029 | 150 |
| **Total** | **1,500** |

Along with regular inspections and cleanings, programmed rehabs will prolong the life of the steel and concrete reservoirs which is the best asset management practice. Failure to program funds on a continuing basis for this activity will shorten the life of these assets. The more advanced the deterioration of the asset, the higher the cost for re-conditioning it. This program will reduce the potential for reservoir leaks, NMED violations and loss of service.

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

None

***Charles Wells Reservoir - Concrete Tank***

***Coronado Reservoir - Steel Tank***

**Project Title - Griegos Pump Station Renewal Project**

**Decade Plan Line and Work Category:** **720 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 31.8

This items is to provide funding for the planning, design and construction of replacement of the Griegos Pump Station that currently pumps water from the Griegos Well Field to the Volandia Reservoir in Zone 2E.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | 1,000 |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **1,000** |

Griegos Pump Station is almost 60 years old and has never been rehabbed. The pumps, motors, electrical equipment, and controls are out of date and difficult to maintain because certain parts are no longer manufactured. The valves and piping are badly corroded. There is no in-line flow meter to measure flows out of the station which presents a problem when assessing pump performance or setting up temporary operational modifications in the upper zones. If the asset is allowed to fail, the Water Authority will not have use of three low arsenic, high production wells that supply 8.8 mgd of well water needs in the Montgomery Trunk. Replacement of this pump station will reduce the Water Authority's risk in disruption of service, provide system redundancy and reliability especially during the summer months and drought periods.

**O&M Cost Impacts:**

Replacing old and obsolete equipment with new units will reduce O&M costs.

*Other Alternatives Considered?*

The no-action alternative is not without risks to the Water Authority.

***Griegos Pump Station - Interior***

***Griegos Pump Station - Exterior***

**Project Title - Valve Replacement**

**Decade Plan Line and Work Category:** **732 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 36.3

At each of the Water Authority's drinking water reservoirs, wells, booster pumping stations, and treatment plants, there are numerous large diameter valves. It is important that these valves be in good working order to allow for system isolation.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 100 |
| 2021 | 100 |
| 2022 | 100 |
| 2023 | 100 |
| 2024 | 100 |
| 2025 | 100 |
| 2026 | 100 |
| 2027 | 100 |
| 2028 | 100 |
| 2029 | 100 |
| **Total** | **1,000** |

This funding identified in this project will be used to renew broken valves.

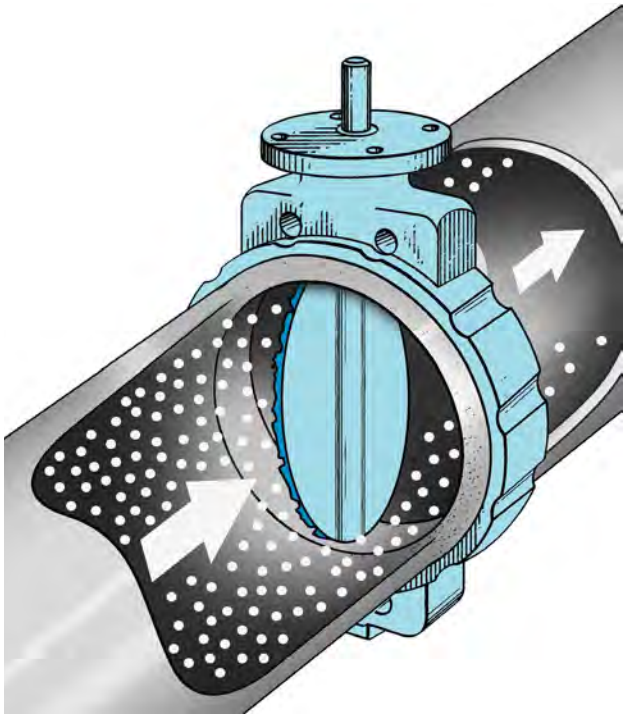
**O&M Cost Impacts:**

Having working valves at reservoirs and other plant sites saves O&M time and money by allowing a quick method of isolation, especially when leaks occur.

*Other Alternatives Considered?*

None:

***Typical Butterfly Valve***



**Project Title - Corrales Well 2 Improvements**

**Decade Plan Line and Work Category:** **736 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 38.1

Corrales Well 2 was removed from service several years ago when the MCL's for arsenic were reduced from 50 ppb to 10 ppb. It is a high production well capable of producing 3,000 gpm (4.32 MGD). This well is important to the Corrales Trunk for improving production capacity during the peak summer months.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 250 |
| 2021 | 2,500 |
| 2022 | 1,500 |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **4,250** |

This project will be done in together with Project 722 - Corrales Well 2 Collector Pipeline, which constructs a transmission pipeline between the Corrales Well 2 and Well 3 sites. This will allow the Corrales Well 2 water to be treated at the existing arsenic removal treatment plant at the Well 3 site. Improvements at the Corrales Well 3 Arsenic Removal Treatment Plant include improvements to the carbon dioxide and sodium hypochlorite systems and the installation of a ortho/poly-phosphate storage and feed system. Other improvements include a waste washwater equalization tank, yard piping, electrical and instrumenation systems.

**O&M Cost Impacts:**

This project will allow Corrales Well to be restored to service. With this well in service, less water will be needed from other trunks to support service in the Corrales Trunk. Currently, water is pumped from the College Trunk through the Volcano Trunk to the Corrales Trunk, because the Corrales Trunk has insufficient supply capacity.

*Other Alternatives Considered?*

Other alternatives considered during the study phase included relocating the arsenic removal treatment system from CRL Well 3 to the CRL Well 2 site and replacing the out of service CRL Well 3.

***Corrales Well 3 - Arsenic Treatment System***

**Project Title - Corrales Trunk Arsenic Media Replacement**

**Decade Plan Line and Work Category:** **740 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 75.6

There are three arsenic removal treatment systems in the Corrales Trunk. These system use granular ferric hydroxide media, which requires periodic replacement.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 350 |
| 2021 | 350 |
| 2022 | 350 |
| 2023 | 350 |
| 2024 | 350 |
| 2025 | 350 |
| 2026 | 350 |
| 2027 | 350 |
| 2028 | 350 |
| 2029 | 350 |
| **Total** | **3,500** |

This funding will be used to replace the arsenic removal media from the different pressure vessels. This is necessary to restore the ability of these systems to remove arsenic from the well water prior to distributing the water to Water Authority customers. Without periodic replacement, the treated water arsenic level woudl exceed the federal and state drinking water maximum contaminant level of 10 parts per billion (ppb).

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

None.

***Corrales Well 3 - Arsenic Treatment System***

***Granular ferric hydroxide arsenic removal media***

**Project Title - Alameda Trunk Well Collector Pipeline**

**Decade Plan Line and Work Category:** **742 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 58.9

Currently, eight potable water wells along and adjacent to the Alameda Trunk are not used due to their water having arsenic levels above the 10 ppb drinking water standard. These wells have a combined capacity of approximately 30 million gallons per day (mgd). If this water could be conveyed to the San Juan Chama Water Treatment Plant (SJCWTP) it could be treated to remove the arsenic and provide drinking water. This would be especially beneficial during periods of drought when flows in the Rio Grande may be too low to allow diversions.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | 6,950 |
| 2024 | 14,000 |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **20,950** |

The shown funding will allow for an engineering studies for a pipeline to allow conveyance of this water to a connection to the Raw Water Pipeline that leads to the SJCWTP. The construction cost for this project is estimated at approximtely $25-million will be required for detailed design and construction.

**O&M Cost Impacts:**

None.

*Other Alternatives Considered?*

The development of replacement wells at aquifer locations with lower arsenic levels is also being evaluated. An advantage of the Alameda Trunk Arsenic Pipeline Project is that it would result in very low arsenic finished water due to treatment. Constructing a new arsenic removal treatment plant at the Walker Reservoir Site is another altnerative under consideration.

***Potential Alignments for the Alameda Trunk Arsenic Pipeline***

**Project Title - Demolish San Jose Reservoir and Pumping Station**

**Decade Plan Line and Work Category:** **743 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 42.1

The San Jose Wells were taken out of service due to groundwater contamination from fuel storage facilities in the area. Therefore, the San Jose Reservoir and Booster Pumping Station were also taken out of service. These facilities no longer serve a purpose.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 500 |
| 2021 | 750 |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **1,250** |

This funding will be used to prepare demolision plans and specifications and to do the actual demolision of the facilities. The site will be restored to a vacant lot.

**O&M Cost Impacts:**

Once demolished, the cost of O&M of this facility will be zero.

*Other Alternatives Considered?*

None.

***San Jose Reservoir and Pumping Station***

**Project Title - Duranes Reservoir Renewal**

**Decade Plan Line and Work Category:** **745 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 31.6

Duranes Reservoir is a at-grade prestressed concrete reservoir with a capacity of 4.3 million gallons. It is at the base of the Freeway Trunk and serves as a wetwell for the Duranes Booster Pumping Station.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 300 |
| 2021 | 500 |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **800** |

The funding will be used to evaluate the condition of the reservoir and to make the necessary repairs. Several leaks have appeared over the last several years. These will be addressed as part of the renewal.

**O&M Cost Impacts:**
None

*Other Alternatives Considered?*
None.

***Duranes Reservoir with leaks***

**Project Title - West Mesa Reservoir Renewal**

**Decade Plan Line and Work Category:** **746 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 31.6

West Mesa Reservoir is a at-grade prestressed concrete reservoir with a capacity of 4.0 million gallons. It provides gravity service to the 1W Pressure Zone of the Atrisco Trunk.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 25 |
| 2021 | 225 |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **250** |

The funding will be used to evaluate the condition of the reservoir and to make the necessary repairs. Several leaks have appeared over the last several years. These will be addressed as part of the renewal.

**O&M Cost Impacts:**
None

*Other Alternatives Considered?*
None.

***West Mesa Reservoir***

**Project Title - Lomas Reservoir No. 1 Renewal**

**Decade Plan Line and Work Category:** **747 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 31.6

Lomas Reservoir 1 is a partially buried concrete reservoir providing gravity service to the 5E pressure zone of the Freeway Trunk. It was constructed in 1953 and has a capacity of 6 million gallons. It shares the site with Lomas Reservoir No. 2.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | 500 |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **500** |

The funding will be used to evaluate the condition of the reservoir and make the necessary repairs.

**O&M Cost Impacts:**
None

*Other Alternatives Considered?*

***Lomas Reservoir Nos. 1 (right) and 2 (left).***

**Project Title - San Juan-Chama Water Project Contingency**

**Decade Plan Line and Work Category:** **801 - Drinking Water Plant: Treatment Systems Renewal**

**Description:** **Risk Ranking:** 71.2

This item is to provide funding for emergency capital improvements to address unanticipated equipment or other asset failures at the facilities associated with the San Juan-Chama Drinking Water Plant and related facilities. This is a critical facility in the Water Authority's drinking water system and any asset failures need to be addressed quickly to maintain the expected level of service.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 350 |
| 2021 | 350 |
| 2022 | 550 |
| 2023 | 800 |
| 2024 | 1,050 |
| 2025 | 1,050 |
| 2026 | 1,050 |
| 2027 | 1,050 |
| 2028 | 1,050 |
| 2029 | 1,050 |
| **Total** | **8,350** |

Sometimes equipment fails earlier than its expected life and needs to be rehabilitated or replaced to maintain operation of a facility. For example, a $30,000 sludge pump at the San Juan-Chama Water Treatment Plant failed after only 2 years of operation. This pump needed to be replaced to maintain the capacity of the sludge processing system at the plant. Not renewing failed equipment increases risk due to lower facility capacity.

**O&M Cost Impacts:**

Dependent upon the specific project.

*Other Alternatives Considered?*

None

***Progressive Cavity Sludge Pump at the WTP***

**Project Title - Dissolved Ozone Monitoring System Improvements - Phase 2**

**Decade Plan Line and Work Category:** **804 - Drinking Water Plant: Treatment Systems Renewal**

**Description:** **Risk Ranking:** 47.2

This is the second phase of a project to make improvements to the ozonation system at the San Juan Chama Water Treatment Plant.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 650 |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **650** |

This funding will be used to demolish the old ozone sampling systems on the top of the three ozone contact basins. Also, the aqueous ozone quenching system will be converted from using sodium bisulfite to calcium thiosulfate. Sodium bisulfite is a hazardous chemical that emits harmful fumes; whereas, calcium thiosulfate is non-fuming and less hazardous.

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

Industry experts recommend gravity flow of samples to ozone monitoring equipment rather than using pumps. This will require that the sampling/monitoring equipment be relocated to the sides of the basin.

***Ozone Monitoring Station Over Ozone Contactor Basins***

***Relocate Monitoring Stations to Side of Contactor Basins***

**Project Title - Rio Grande Diverion Bar Screen Improvements**

**Decade Plan Line and Work Category:** **805 - Drinking Water Plant: Treatment Systems Renewal**

**Description:** **Risk Ranking:** 67.7

The surface intake on the Rio Grande is the source of water for the San Juan Chama Water Treatment Plant (SJCWTP). The intake includes manually cleaned bar screens to prevent large objects from entering the Diversion Structure. Sticks and other debris clog the intake and restrict the flow. Manual cleaning poses the risk of injuries to operations staff.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | 2,000 |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **2,000** |

This funding will allow the installation of an automated motorized cleaning system.

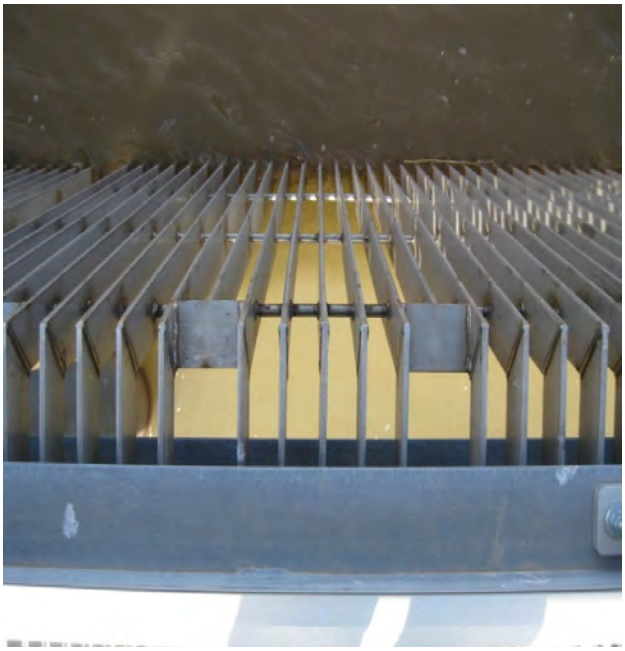
**O&M Cost Impacts:**

This improvement will reduce the need for O&M staff members to manually clean the bar screens. This will result in O&M cost savings.

*Other Alternatives Considered?*

Alternative improvements were evaluated by the design consultant.

***Diversion Dam Intake Structure - Bar Screens***



**Project Title - Settled Water Basin Edge Protection**

**Decade Plan Line and Work Category:** **807 - Drinking Water Plant: Treatment Systems Renewal**

**Description:** **Risk Ranking:** 60.9

This item is to provide funding for improvements to protect the edges of the settled water basin.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | 75 |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **75** |

The top of the settled water basin embankment is comprised of a heavy mil geomembrane covered by a layer of gravel that thins out to less than an inch near the edge of the slope. This creates a safety hazard for operators, contractors and other personnel walking along the topslope. As shown in the photograph below, it appears that gravel has been sloughing off into the basin, exposing more of the underlying geomembrane. Construction of edge protection such as fencing and toe protection could prevent personnel and contractors from slipping and falling into the basin while performing normal work duties.

**O&M Cost Impacts:**

None.

*Other Alternatives Considered?*

No action is not an option when worker safety is at risk.

***Edge of Settling Basin Embankment***

**Project Title - Water Systems SCADA Control Renewal**

**Decade Plan Line and Work Category:** **808 - Drinking Water Plant: Treatment Systems Renewal**

**Description:** **Risk Ranking:** 50.4

This project funds the Telvent Supervisory Control and Data Aquisition (SCADA) system hardware replacement and software upgrade. The SCADA process computers provide continuous operations 24 hours a day 365 days a year. Due to the age of the process control computers, Dell will not warranty them any longer. Were the SCADA equipment to fail, it would be extremely difficult to produce, treat or distribute water manually.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | 1,000 |
| 2022 | 1,000 |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **2,000** |

The Telvent SCADA system computer servers and workstations that control the surface and groundwater pumping and treatment systems are facing obsolescence. Dell will not warranty the equipment nor can Dell resellers provide replacement parts. The existing MSSQL 2000 engine and MS2003 Server software are outdated and require modernization to keep pace with the Telvent hardware upgrade. The existing SCADA software is a decade behind national standards for SCADA security and need to be upgraded to provide better protection against computer related threats which could jeopardize water service. A Telvent SCADA software maintenance contract is needed to guarantee that the SCADA system can be restored immediately following any possible equipment failure.

**O&M Cost Impacts:**
None

*Other Alternatives Considered?*

N/A SCADA must operate 24/7/365.

***SCADA Servers***

***SCADA Workstation***

**Project Title - Chemical Systems Improvements at the SJCWTP**

**Decade Plan Line and Work Category:** **809 - Drinking Water Plant: Treatment Systems Renewal**

**Description:** **Risk Ranking:** 62.6

The San Juan Chama Water Treatment Plant (SJCWTP) stores and feeds several different treatment chemicals. These systems require periodic rehab and/or replacement to keep them in proper working order.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 400 |
| 2021 | 200 |
| 2022 | 50 |
| 2023 | 50 |
| 2024 | 50 |
| 2025 | 50 |
| 2026 | 50 |
| 2027 | 50 |
| 2028 | 50 |
| 2029 | 50 |
| **Total** | **1,000** |

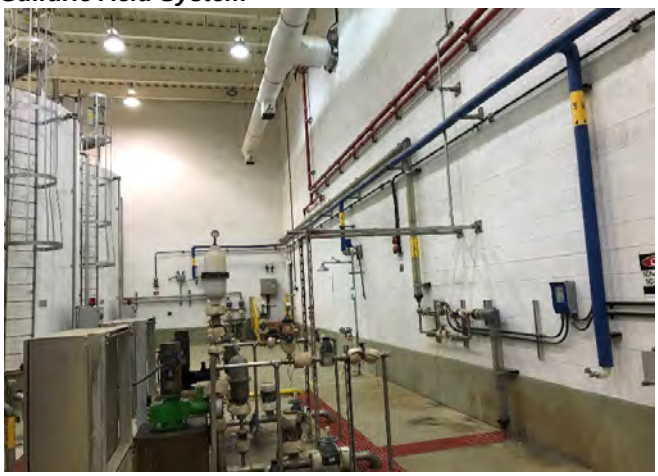
This funding will be used to rehabilitate and/or replace components of the chemical feed systems. One such system is the fluorosilicic acid storage and feed system. Currently, a temporary storage and feed system is used at the plant. This will be replaced with a permanent system.

**O&M Cost Impacts:**
None

*Other Alternatives Considered?*
None.

***Phosphate System***

***Sulfuric Acid System***



**Project Title - College Arsenic Removal Demonstration Facility Rehab**

**Decade Plan Line and Work Category:** **811 - Drinking Water Plant: Treatment Systems Renewal**

**Description:** **Risk Ranking:** 53.2

This item is to provide funding for rehabilitation of the aging College Arsenic Removal Demonstration Facility at the College Reservoir site. The rehabilitation work will occur every year over the next decade.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 100 |
| 2021 | 100 |
| 2022 | 100 |
| 2023 | 100 |
| 2024 | 100 |
| 2025 | 100 |
| 2026 | 100 |
| 2027 | 100 |
| 2028 | 100 |
| 2029 | 100 |
| **Total** | **1,000** |

The arsenic removal facility is essentail for treating the high arsenic water from the College and Gonzales well fields. Without it, the College Trunk would be totally dependent on treated surface water to meet water demands. Experience has shown that the Water Authority cannot rely totally on one source of water to meet all service area demands. Failure to rehab the arsenic removal facility will put the Water Authority at risk for potential water shortages when the water treatment plant is out of service for repairs or during drought seasons. The funding will ensure that there will be some budget available to pay for equipment replacements and repairs over the next ten years.

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

No action is not an option since this asset is important for providing system redundancy.

***College Arsenic Removal Filters***

***Chemical Feed Systems***

**Project Title - Raw Water Pumping Station Renewal**

**Decade Plan Line and Work Category:** **818 - Drinking Water Plant: Treatment Systems Renewal**

**Description:** **Risk Ranking:** 28.6

The Raw Water Pumping Station is used to lift water from the Rio Grande Diversion Facility to the San Juan Chama Water Treatment Plant. This is a vital link in the Water Authority's surface water drinking water supply. The high levels of sand (i.e., grit) in the raw Rio Grande water make this pumping station more vulnerable to wear.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 250 |
| 2021 | 250 |
| 2022 | 250 |
| 2023 | 250 |
| 2024 | 250 |
| 2025 | 250 |
| 2026 | 250 |
| 2027 | 250 |
| 2028 | 250 |
| 2029 | 250 |
| **Total** | **2,500** |

This funding will be used to perform necessary rehab of the pumping station to maintain its ability to reliably pump water for treatment at the San Juan Chama Water Treatment Plant. For instance, the pump impellors are subject to wear due to the high sand levels in the raw water.

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

None.

**Project Title - Lime System Expansion at SJCWTP**

**Decade Plan Line and Work Category:** **826 - Drinking Water Plant: Treatment Systems Renewal**

**Description:** **Risk Ranking:**

Lime is used at the San Juan Chama Water Treatment Plant to raise the pH of the water to make it less corrosive. The current lime storage facilites at the plant have limited capacity.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | 1,350 |
| 2023 | 1,550 |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **2,900** |

This funding will be used to construct a new lime silo to allow more lime to be stored on-site, as well as make other improvements to the lime feed system.

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

None.

**Project Title - Reclaimed Water Field Asset Renewal**

**Decade Plan Line and Work Category:** **901 - Reclaimed Water System Renewal**

**Description:** **Risk Ranking:** 25.1

This item is to provide funding for general renewal of reclaimed (recycled) water field assets, including pipelines and buried valves. This includes those field assets associated with both the Northside and Southside Recaimed water systems. Many parks, schools, commercial properties depend on reclaimed water for use in irrigating turf and other landscaping. Using reclaimed water reduces demand on the Water Authority's potable water system.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 30 |
| 2021 | 30 |
| 2022 | 30 |
| 2023 | 30 |
| 2024 | 30 |
| 2025 | 30 |
| 2026 | 30 |
| 2027 | 30 |
| 2028 | 30 |
| 2029 | 30 |
| **Total** | **300** |

Pipelines and buried valves require periodic renewal to maintain the systems ability to serve Water Authority customers. Periodic renewal of these assets is required to minimize unexpected outages that result in emergency responses and repairs that increase the cost of system renewal.

**O&M Cost Impacts:**
None

*Other Alternatives Considered?*
Running these assets to failure will result in higher life cycle costs for the Water Authority and its rate payers.

*Yale and Gibson*

*University near Isotopes Park*

**Project Title - Reclaimed Water Plant Asset Renewal**

**Decade Plan Line and Work Category:** **902 - Reclaimed Water System Renewal**

**Description:** **Risk Ranking:** 20.7

This item is to provide funding for general renewal of reclaimed (recycled) water plant assets, including treatment facilities, pumping stations, and storage reservoirs. This includes those plant assets associated with both the Northside and Southside Recaimed water systems. Many parks, schools, commercial properties depend on reclaimed water for use in irrigating turf and other landscaping. Using reclaimed water reduces demand on the Water Authority's potable water system.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 120 |
| 2021 | 120 |
| 2022 | 120 |
| 2023 | 120 |
| 2024 | 120 |
| 2025 | 120 |
| 2026 | 120 |
| 2027 | 120 |
| 2028 | 120 |
| 2029 | 120 |
| **Total** | **1,200** |

Treatment plants, pumping stations, and storage reservoirs require periodic renewal to maintain the systems ability to serve Water Authority customers. Periodic renewal of these assets is required to minimize unexpected outages that result in emergency responses and repairs that increase the cost of system renewal.

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

Running these assets to failure will result in higher life cycle costs for the Water Authority and its rate payers.

***Coronado Nonpotable Reservoir***

## Project Title - Water Quality Laboratory Equipment

**Decade Plan Line and Work Category:** **1001 - Compliance Division**

**Description:** **Risk Ranking:** 59.3

This item is to provide funding for renewal of laboratory equipment at the Water Authority's Water Quality Laboratory. The laboratory is located adjacent to the Southside Water Reclamation Plant. It is critical to the operation of the lab that analytical equipment and supplies be rehabilitated or replaced routinely. This is important to allow the lab to comply with the regulatory agency requirements for turnaround times and analysis accuracy.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 375 |
| 2021 | 375 |
| 2022 | 375 |
| 2023 | 375 |
| 2024 | 375 |
| 2025 | 375 |
| 2026 | 375 |
| 2027 | 375 |
| 2028 | 375 |
| 2029 | 375 |
| **Total** | **3,750** |

The Water Quality Lab supports the operation of the Southside Water Reclamation Plant and the drinking water system. In order to maintain the capability for scientifically valid and reliable monitoring and analysis, deteriorating analytical instruments must be replaced when performance degrades to a level that compromises data quality. Among the types of lab needs are such things as the following: inductively coupled plasma (ICP) Spectrometers, high temperature ovens, digital microscopes, flow spectrometers, incubators, autoclaves, ion chromatographs, centrifuges, and other equipment, sofware, and supplies. The lab builidng also requires periodic rehab of its HVAC systems, laboratory hoods, and roof.

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

None. These items are essential to the operation of the Water Quality Laboratory.

**Project Title - National Pollutant Discharge Elimination System (NPDES) Program**

**Decade Plan Line and Work Category:** **1002 - Compliance Division**

**Description:** **Risk Ranking:** 48.6

This item is to provide funding for rehabilitation of equipment, facilities, and computer software used by the staff for compliance with National Pollutant Discharge Elimination System (NPDES) Program. This NPDES program is required by the United States Environmental Agency (USEPA).

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 10 |
| 2021 | 10 |
| 2022 | 10 |
| 2023 | 10 |
| 2024 | 10 |
| 2025 | 10 |
| 2026 | 10 |
| 2027 | 10 |
| 2028 | 10 |
| 2029 | 10 |
| **Total** | **100** |

The requested funding is to rehabilitate or replace the following equipment, facilities, and computer software:

- Automated Samplers
- LINKO Software Upgrades
- Pre-Treatment Staging Area Improvements
- Field Tablets/Laptops

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

None. Maintaining this equipment is necessary to allow continued compliance with USEPA regulations. The proposed pre-treatment area improvements will provide more sanitary and safer conditions for staff.

***NPDES/Pretreatment Monitoring Staging Area at SWRP***

**Project Title - Water Quality Program**

**Decade Plan Line and Work Category:** **1003 - Compliance Division**

**Description:** **Risk Ranking:** 45.1

This item is to provide funding for renewal of equipment used by staff in the Drinking Water Quality Program.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 5 |
| 2021 | 5 |
| 2022 | 5 |
| 2023 | 5 |
| 2024 | 5 |
| 2025 | 5 |
| 2026 | 5 |
| 2027 | 5 |
| 2028 | 5 |
| 2029 | 5 |
| **Total** | **50** |

The Drinking Water Quality Program performs monitoring of the drinking water system and is vital to compliance with state and federal drinking water quality regulations. It is important that the analytical and monitoring equipment used by the staff is maintained in proper operating condition. This requires periodic replacement of this equipment. Among the equipment replacements for which this request is being is made as are as follows:

- YSI Multiparameter Meters
- Radiometers
- Glassware Washers
- Turbidimeters
- Field Tablets/Laptops

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

None. The Water Quality Program cannot operate effectively without routine equipment renewal.

***Product Water that Meets All Regulatory Water Quality Standards***

**Project Title - El Pueblo Ferrous/Ferric Transfer Station (Station 70)**

**Decade Plan Line and Work Category:** **1101 - Shared Facility Renewal**

**Description:** **Risk Ranking:** 71.4

The El Pueblo Ferrous/Ferric Transfer Station (Station 70) is shared by the Field and Plant Divisions. Train rail cars of ferric chloride are unloaded at this facility. From here the chemical is transferred to the San Juan Chama Water Treatment Plant, College Arsenic Removal Treatment Plant, and used for odor control. Numerous deficiencies at this facility have posed safety risks to Water Authority employees and potentially the public.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 25 |
| 2021 | 25 |
| 2022 | 25 |
| 2023 | 25 |
| 2024 | 25 |
| 2025 | 25 |
| 2026 | 25 |
| 2027 | 25 |
| 2028 | 25 |
| 2029 | 25 |
| **Total** | **250** |

Continuing improvements to this facility include the construction of double contained chemical piping on-site to control future spills.

**O&M Cost Impacts:**

Renewing aging equipment will keep O&M costs down.

*Other Alternatives Considered?*

The deficiencies at the facility need to be addressed to reduce risk to the Water Authority's employees and the public due to the hazardous chemicals handled and stored at this facilty.

***Ferric Chloride Railcar Unloading Station***

***Ferric Chloride Transfer Pump***

**Project Title - Utility Wide Asset Management Plan Update**

**Decade Plan Line and Work Category:** **1104 - Shared Facility Renewal**

**Description:**

In 2011, the Water Authority, with the assistance of a consultant, completed a utility-wide asset management plan (UWAMP). This plan evaluated most of the Water Authority's capital assets (e.g., pipelines, treatment plants, wells) and developed a 100-year asset management spending plan.

**Risk Ranking:**

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 350 |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **350** |

This funding shown will be used to hire a consultant to update the UWAMP. This effort will include incorporation of information develped by several 10-year AMPs that have been developed since the original UWAMP. It will also account for capital improvements made during the intervening seven years. Capital assets that were not evaluated in the original UWAMP such as the infrastructure taken over from the old New Mexico Utilities water system will also be incorporated. Finally, the projected annual spending to renew the Water Authority's assets will be estimated and updated to current year dollars (e.g., 2018 dollars versus 2010 dollars).

**O&M Cost Impacts:**

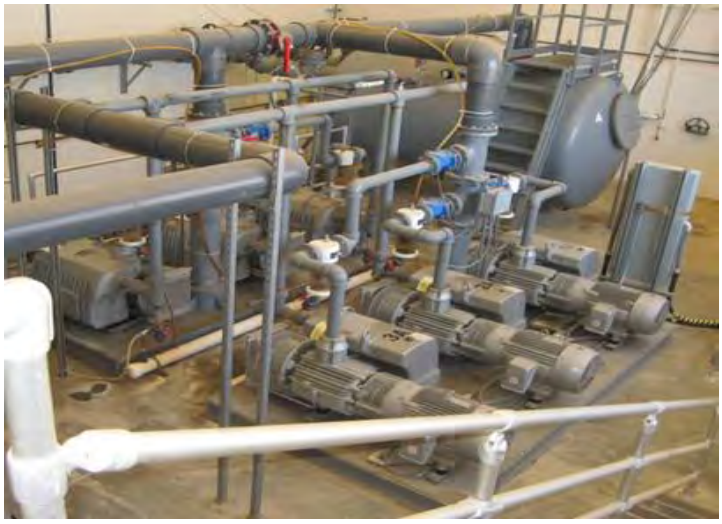
None

*Other Alternatives Considered?*

The current UWAMP can continue to be used; however, an update would benefit the Water Authority by allow for a more complete and accurate estimate of infrastructure renewals requireements and the potential requirement for additional rate increases that would be necessary.

***Lift Station 17***

***Vacuum Station 66***



**Project Title - Safety Group Equipment**

**Decade Plan Line and Work Category:** **1106 - Shared Facility Renewal**

**Description:** **Risk Ranking:** 47.5

The Water Authority's Safety Group assists in maintaining safe work environments for the utility's employees. Compliance with OSHA and other regulatory ageny requirements can require monitoring of specify environmental conditions at the work sites.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 10 |
| 2021 | 10 |
| 2022 | 10 |
| 2023 | 10 |
| 2024 | 10 |
| 2025 | 10 |
| 2026 | 10 |
| 2027 | 10 |
| 2028 | 10 |
| 2029 | 10 |
| **Total** | **100** |

The proposed funding is to allow for the purchase of such items as hand-held air monitoring equipment for use during confined space entries.

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

None.

**Project Title -Leak Detection Group Equipment**

**Decade Plan Line and Work Category:** **1107 - Shared Facility Renewal**

**Description:** **Risk Ranking:**

The Water Authority's Leak Detection Group assists in identifying the location of leaks in the water distribution system. This is an important component of the Water Conservation Program. The Group uses various equipment to pinpoint the location of leaks so that Field Division crews can make the necessary repairs.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 5 |
| 2021 | 5 |
| 2022 | 5 |
| 2023 | 5 |
| 2024 | 5 |
| 2025 | 5 |
| 2026 | 5 |
| 2027 | 5 |
| 2028 | 5 |
| 2029 | 5 |
| **Total** | **50** |

The proposed funding is to periodically replace equipment that is worn-out or obsolete.

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

None.

**Project Title - Franchise Agreement Compliance: Pipeline Relocations**

**Decade Plan Line and Work Category:** **1201 - Franchise Agreement Compliance**

**Description:** **Risk Ranking:** N/A

This program will provide funding for compliance with the ABCWUA Franchise Ordinance between the City of Albuquerque and the Water Authority within the municipal limits of the service area. This decade plan item is for relocating water and sanitary sewer pipelines.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 3,200 |
| 2021 | 2,750 |
| 2022 | 2,750 |
| 2023 | 2,750 |
| 2024 | 2,750 |
| 2025 | 2,750 |
| 2026 | 2,750 |
| 2027 | 2,750 |
| 2028 | 2,750 |
| 2029 | 2,750 |
| **Total** | **27,950** |

The Franchise Ordinance primarily allows the Authority the use of the City's public rights-of-way as corridors to operate its water delivery and wastewater collection systems. In exchange, the Authority is responsible to pay a franchise fee associated with the use and rental as well as other detailed requirements stated in the Ordinance.

One of the conditions of use requires the Authority to fund relocation(s) of water and sewer infrastructure as needed within the rights-of-way for completion of the City's projects. These projects include installation of storm drainage, landscaping, or traffic signal facilities, and road reconstruction. The Ordinance also requires the Authority to make all reasonable efforts to relocate its utilities so as not to delay City projects. The Authority is also required to remove any and all abandoned facilities and infrastructure located in the rights-of-way within a period of 90 days following a request from the City.

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

N/A This is mandatory for compliance.

***16" Ductile Iron Water Line Relocation for a City Storm Drain Project in Atrisco SW***

***24" Concrete Cylinder Water Line Lowering and Relocation for a City Storm Drain Project in San Mateo NE***

**Project Title - Franchise Compliance: Manhole and Valve Box Adjustments**

**Decade Plan Line and Work Category:** **1202 - Franchise Compliance**

**Description:** **Risk Ranking:** N/A

This program will provide funding for compliance with the ABCWUA Franchise Ordinance between the City of Albuquerque and the Water Authority within the municipal limits of the service area. This Decade Plan line item provides reimbursement funding associated with adjusting the height of manholes and valve boxes as part of City street resurfacing projects.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 750 |
| 2021 | 750 |
| 2022 | 750 |
| 2023 | 750 |
| 2024 | 750 |
| 2025 | 750 |
| 2026 | 750 |
| 2027 | 750 |
| 2028 | 750 |
| 2029 | 750 |
| **Total** | **7,500** |

The Franchise Ordinance primarily allows the Authority the use of the City's public rights-of-way as corridors to operate its water delivery and wastewater collection systems. In exchange, the Authority is responsible to pay a franchise fee associated with the use and rental as well as other detailed requirements stated in the Ordinance.

One of the conditions of use requires the Authority to fund relocation(s) of water and sewer infrastructure as needed within the rights-of-way for completion of the City's projects. These projects include installation of storm drainage, landscaping, or traffic signal facilities, and road reconstruction. The Ordinance also requires the Authority to make all reasonable efforts to relocate its utilities so as not to delay City projects. The Authority is also required to remove any and all abandoned facilities and infrastructure located in the rights-of-way within a period of 90 days following a request from the City.

**O&M Cost Impacts:**

None

*Other Alternatives Considered?*

N/A This is mandatory for compliance.

**Project Title - Light Utility Vehicle Replacement**

**Decade Plan Line and Work Category:** **1301 - Vehicles and Heavy Equipment**

**Description:** **Risk Ranking:** 34.9

This project funds the replacement of utility vehicles for the Water Authority. Utility vehicles have to be replaced on a programmed basis.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 3,500 |
| 2021 | 500 |
| 2022 | 500 |
| 2023 | 500 |
| 2024 | 500 |
| 2025 | 500 |
| 2026 | 500 |
| 2027 | 500 |
| 2028 | 500 |
| 2029 | 500 |
| **Total** | **8,000** |

Utility vehicles are used by plant staff every day to be able to complete their various jobs. Vehicles have to be replaced on a programmed basis.

**O&M Cost Impacts:**

Aged vehicles require more maintenance than newer units. Also, new vehicles tend to have more fuel efficient engines, so there is reduced O&M costs.

*Other Alternatives Considered?*

None

*Service Truck*

*Utility SUV*

**Project Title - Heavy Equipment**

**Decade Plan Line and Work Category:** **1303 - Vehicles and Heavy equipment**

**Description:** **Risk Ranking:** 40.2

This item is to provide funding for the replacement of heavy equipment such as Vactors, backhoes, and dumptrucks.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 950 |
| 2021 | 500 |
| 2022 | 500 |
| 2023 | 500 |
| 2024 | 500 |
| 2025 | 500 |
| 2026 | 500 |
| 2027 | 500 |
| 2028 | 500 |
| 2029 | 500 |
| **Total** | **5,450** |

The funding shown is to allow periodic renewal of the Water Authority's heavy equipment.

**O&M Cost Impacts:**

As equipment ages, it wears out and requires more periodic maintenance to keep in good operating condition. Therefore, renewing equipment can save O&M costs. Also, new equipment tends to be more fuel efficient.

*Other Alternatives Considered?*

Equipment repair becomes less cost effective over time with the vehicles having to be in the shop for longer periods of time and unavailable for use in cleaning the sewers.

***Sewer Cleaning Truck***

***Backhoe***

**Project Title - College Reservoir No. 2**

**Decade Plan Line and Work Category:** **2002 - Drinking Water Plant Growth**

**Description:** **Risk Ranking:** 23.7

This item is to provide funding for the planning, design, engineering services, construction, contract services, equipment and related activities necessary to increase water storage by 6 million gallons for the College Trunk water system.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | 250 |
| 2025 | 1,795 |
| 2026 | 1,000 |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **3,045** |

This additional reservoir will provide more system reliability and redundancy for the College Trunk when College Reservoir No. 1 is taken out of service for rehabilitation. Reservoirs provide reaction time for disinfection, storage to meet peak hour demands and for control of well and booster station pumps. Both reservoirs will also increase reliability when one needs to be taken out of service for maintenance. Lack of adequate storage can result in loss of service and fire-fighting capability, and higher energy costs for pumping off-peak. This project will reduce the Water Authority's risk for disruption of service, impacts to external safety by maintaining fire protection capability, and higher energy costs.

*Other Alternatives Considered?*

The No Action alternative will not address the inadequate storage issue.

***Existing College Reservoir No. 1*** ***Volcano Cliffs Reservoirs 1 & 2***

**Project Title - Construct Second Reservoir at Corrales 6 Site**

**Decade Plan Line and Work Category:** **2003 - Drinking Water Plant Growth**

**Description:** **Risk Ranking:** 33.3

This item is to provide funding for the planning,design and construction of a second reservoir at the Corrales 6 site.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | 240 |
| 2029 | 2,760 |
| **Total** | **3,000** |

This includes construction of a second 2.3 MG reservoir at the Corrales 6 site to double the storage capacity of Corrales Trunk Zone 4W that supplies Ventana Ranch and the northern half of Paradise Hills. This will provide more system reliability and redundancy for the Corrales Trunk in the event that one of the reservoirs needs to be taken out of service for cleaning or rehabilitation. Without a second reservoir at the Corrales 6 site, Reservoir 7 will not be able to meet the total storage requirements in the upper zones if Corrales 6 is removed from service for maintenance and rehabilitation. Without adequate storage, the Corrales Trunk is at risk for meeting fire protection demands. Reservoirs also provide reaction time for disinfection, storage to meet peak hour demands and for control of well and booster stations pumps. Lack of storage can cause loss of service and fire fighting capability, and higher energy costs for pumping off-peak. This project will reduce the Water Authority's risk for disruption of service, impacts to external safety by maintaining fire protection capability, and higher energy costs.

*Other Alternatives Considered?*

None

***Corrales Reservoir No. 6***

***Volcano Cliffs Reservoirs 1 & 2***

**Project Title - 2nd Coronado Reservoir**

**Decade Plan Line and Work Category:** **2004 - Drinking Water Plant Growth**

**Description:** **Risk Ranking:** 30.4

To be added...This item is to provide funding for the planning, design and construction of a second reservoir at Coronado Reservoir site to double the capacity of the storage system of the Alameda Trunk.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | 250 |
| 2027 | 2,800 |
| 2028 | - |
| 2029 | - |
| **Total** | **3,050** |

Reservoirs provide reaction time for disinfection, storage to meet peak hour demands and for control of well and booster stations pumps. They also provide reliability of storage when a reservoir is taken out of service for maintenance and rehabilitation. Lack of storage can cause loss of service and fire fighting capability, and higher energy costs for pumping off-peak. This project will reduce the Water Authority's risk for disruption of service, impacts to external safety by maintaining fire protection capability, and higher energy costs.

*Other Alternatives Considered?*

Inaction with some moderate risks discussed above.

***Existing Coronado Reservoir***

***Volcano Cliffs Reservoirs 1 & 2***

**Project Title -2nd Leyendecker Reservoir Project**

**Decade Plan Line and Work Category:** **2005 - Drinking Water Plant Growth**

**Description:** **Risk Ranking:** 31.9

This item is to provide funding for the planning, design and construction of a second reservoir at Leyendecker Reservoir site to double the capacity of the storage system.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | 250 |
| 2027 | 2,800 |
| 2028 | - |
| 2029 | - |
| **Total** | **3,050** |

Reservoirs provide reaction time for disinfection, storage to meet peak hour demands and for control of well and booster stations pumps. They also provide reliability of storage when a reservoir is taken out of service for maintenance and rehabilitation. Lack of storage can cause loss of service and fire fighting capability, and higher energy costs for pumping off-peak. This project will reduce the Water Authority's risk for disruption of service, impacts to external safety by maintaining fire protection capability, and higher energy costs.

*Other Alternatives Considered?*

In-action with some moderate risks discussed above.

***Existing Leyendecker Reservoir***

***Volcano Cliffs Reservoirs 1 & 2***

**Project Title - Second Charles Wells Reservoir including Site Procurement**

**Decade Plan Line and Work Category:** **2006 & 2007 - Drinking Water Plant Growth**

**Description:** **Risk Ranking:** 31.9

The Water Authority needs to identify potential sites for a second Charles Wells Reservoir, begin the process of procurement of the property, and then design and construct this reservoir.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | 500 |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | 240 |
| 2029 | 2,760 |
| **Total** | **3,500** |

The existing Charles Wells Reservoir will eventually need to be rehabilitated. This will be difficult, but not impossible to accomplish without a second reservoir. A second reservoir would provide storage, maintain service and fire fighting capability while the existing reservoir is rehabbed. If the Water Authority does not procure the property to construct the second reservoir, the existing reservoir will continue to deteriorate to a point that it needs to be removed from service. Then operational modifications (keeping the system pressurized by pumping against the reservoir isolation valve) would have to be implemented to maintain service while the reservoir is isolated from the system. This operation is normally done under short-term conditions (days to weeks) because it requires constant monitoring to avoid over-pressurizing the system and is dependent on the isolation valve working properly to hold the constant pressure exerted on the upstream side of the valve. If this is done for longer periods (several months to a year), the risk increases due to potential failure of the isolation valve or the pipelines over-pressurizing due to mechanical or electrical equipment failure/malfunction in the lower pump station, or PNM station power failure causing loss of pressure if operational modifications ("deadheading") are used. If any of these failures were to occur, the Water Authority is at risk for disruption of service, potential impacts to internal and external safety, clean-up costs due to water damage from broken lines, and negative public image.

*Other Alternatives Considered?*

Inaction and operational modifications were discussed above.

***Existing Charles Wells Reservoir***

***Vacant Property on Menaul Blvd. East of Reservoir Site***

**Project Title - Water Facilities Landscaping Program**

**Decade Plan Line and Work Category:** **2009 - Drinking Water Plant Growth**

**Description:** **Risk Ranking:** 16.3

This item is to provide funding for the planning, design and construction of landscape improvements to existing well, pump station, reservoir and water treatment facility sites throughout the Water Authority service area.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 100 |
| 2021 | 100 |
| 2022 | 100 |
| 2023 | 100 |
| 2024 | 100 |
| 2025 | 100 |
| 2026 | 100 |
| 2027 | 100 |
| 2028 | - |
| 2029 | - |
| **Total** | **800** |

Several water facility sites are in need of landscaping improvements to fit in with the surrounding neighborhoods, improve their appearance, reduce maintenance requirements, and meet the provisions of the water conservation ordinance by making them more water efficient. An internal survey needs to be conducted to inventory the sites that need improvements so that a scope of work can be developed for soliciting proposals from consultants for planning and design services. Upon selection of a consultant, planning and design of xeriscape-type landscaping and low water irrigation systems for the selected water facility sites will begin. Depending on the outcome of the consultant work, the construction work will be completed by our on-call landscaping contractor or new contract documents prepared for selection of a contractor through the normal bidding process.

If this program is not implemented and some of our more unattractive sites continue to deteriorate, the Water Authority is at risk of getting complaints from the neighborhood associations and the public and getting a negative image from the news media.

*Other Alternatives Considered?*

The Water Authority has implemented the no-action alternative for several years now; however we do respond to complaints from the public on a case by case basis. The remedy may be anything from removing dead trees and shrubs to repairing broken irrigation lines and valves. However, these remedies do not necessarily meet the provisions of the water conservation ordinance nor address the issues of aesthetics.

***Webster Reservoir Site Landscaping***

***Zamora Well No. 2 Site Landscaping***

**Project Title - Don Reservoir No. 2**

**Decade Plan Line and Work Category:** **2010 - Drinking Water Plant Growth**

**Description:** **Risk Ranking:** 23.7

This item is to provide funding for the planning, design, engineering services, construction, contract services, equipment and related activities necessary to increase water storage by 6 million gallons for the College Trunk water system.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | 250 |
| 2023 | 1,800 |
| 2024 | 1,000 |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **3,050** |

This additional reservoir will provide more system reliability and redundancy for the Atrisco Trunk when Don Reservoir No. 1 is taken out of service for rehabilitation. Reservoirs provide reaction time for disinfection, storage to meet peak hour demands and for control of well and booster station pumps. Both reservoirs will also increase reliability when one needs to be taken out of service for maintenance. Lack of adequate storage can result in loss of service and fire-fighting capability, and higher energy costs for pumping off-peak. This project will reduce the Water Authority's risk for disruption of service, impacts to external safety by maintaining fire protection capability, and higher energy costs.

*Other Alternatives Considered?*

The No Action alternative will not address the inadequate storage issue.

***Existing College Reservoir No. 1***

***Volcano Cliffs Reservoirs 1 & 2***

**Project Title - Alameda Trunk Arsenic Treatment**

**Decade Plan Line and Work Category:** **2101 - Arsenic Treatment Growth**

**Description:** **Risk Ranking:** 58.1

This item is to provide funding for the planning, design and construction of an arsenic treatment facility at the Walker Reservoir site to remove arsenic from the high arsenic well water of the Coronado, Walker, Webster and Ponderosa well fields.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | 5,000 |
| 2029 | 5,000 |
| **Total** | **10,000** |

Currently all of the Walker, Webster and Ponderosa well fields are out of service due to high arsenic levels. Only one of the Coronado Wells is operated for limited periods. Most of the Alameda Trunk wells have high production capacity. Water demands in the Alameda Trunk are only being met by blending treated surface water with low arsenic well water from the Vol Andia well field and possibly blended water from the Leyendecker Reservoir through cross trunk transfer.

With arsenic treatment at the Walker Reservoir site, all of the Alameda Trunk wells could meet 100% of the supply demands in this trunk. This would provide production capacity redundancy for this service area, particularly during summer months and drought periods when treated surface water production is reduced or unavailable.

An alternative approach to treating this well water woudl be to convey it to the San Juan Chama Water Treatment Plant. This would require a pipeline conveyance system to deliver the water to the Raw Water Pipeline that goes to the SJCWTP.

*Other Alternatives Considered?*

Separate arsenic treatment facilities at Webster and Walker sites; however this may be more expensive than a combined treatment facility at the Walker site. It could be offset by the cost for pipeline work associated with the combined treatment facility at the Walker site.

***College Arsenic Removal Facility***

***Available Land at the Walker Reservoir Site***

**Project Title - Volcano Cliffs Trunk Arsenic Treatment**

**Decade Plan Line and Work Category:** **2102 - Arsenic Treatment Growth**

**Description:** **Risk Ranking:** 64.2

This item is to provide funding for the planning, design and construction of an arsenic treatment facility at the Volcano Cliffs Reservoir site to remove arsenic from the high arsenic well water of the Volcano Cliffs and Zamora well fields..

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | 5,000 |
| 2025 | 5,000 |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **10,000** |

Currently two of the three Volcano Cliffs wells are out of service due to high arsenic levels. Water demands in the Volcano Trunk and the Corrales Trunk are being met by blending treated surface water with moderately high arsenic water from one of the Volcano Cliffs wells and three of the seven Corrales wells. With arsenic treatment at the Volcano Cliffs Reservoir site, all three of the Volcano Cliffs wells and two Zamora wells could meet 50% of the supply demands of the Corrales Trunk because of their high production capacity. This would provide some redundancy and reliability to the Corrales Trunk, particularly during the summer months and drought periods when treated surface water is reduced or unavailable.

*Other Alternatives Considered?*

There are no alternatives except to use more treated surface plant water and low arsenic east side water transferred to the west side; however this may be constrained by capacity issues.

***College Arsenic Removal Facility***

**Project Title - Leavitt Well Field Arsenic Treatment**

**Decade Plan Line and Work Category:** **2103 - Arsenic Treatment Growth**

**Description:** **Risk Ranking:** 27.2

This item is to provide funding for the planning, design and construction of an arsenic treatment facility at the Leavitt Reservoir site to remove arsenic from the Leavitt wells.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | 3,800 |
| 2027 | 3,800 |
| 2028 | - |
| 2029 | - |
| **Total** | **7,600** |

Currently, Leavitt Well No. 3 is out of service due to high arsenic levels. Water demands in Zones 1W and 0W of the Atrisco Trunk are being met by blending treated surface water with the lower arsenic Leavitt wells (1 and 2). With arsenic treatment at the Leavitt Reservoir, the treated well water could be blended with the other Leavitt well waters to help meet demands during the summer months and drought periods. This would provide system redundancy and reliability and benefit sustainability of our water sources by using well water and surface water.

*Other Alternatives Considered?*

Supply water from the surface water treatment plant and transferred eastside low arsenic water is currently being done, but at some point be constrained by capacity issues.

***College Arsenic Removal Facility***

**Project Title - Corrales Well 4 Arsenic Treatment**

**Decade Plan Line and Work Category:** **2104 - Arsenic Treatment Growth**

**Description:** **Risk Ranking:** 27.2

This item is to provide funding for the planning, design and construction of an arsenic treatment facility for Corrales Well 4.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | 400 |
| 2028 | 2,750 |
| 2029 | - |
| **Total** | **3,150** |

Currently, Corrales Well 4 can not be used unless its water is blended with water from another source with lower concentrations of arsenic.

*Other Alternatives Considered?*

Supply water from the surface water treatment plant and transferred eastside low arsenic water is currently being done, but at some point be constrained by capacity issues.

***College Arsenic Removal Facility***

**Project Title - Corrales Well 5 Arsenic Treatment**

**Decade Plan Line and Work Category:** **2105 - Arsenic Treatment Growth**

**Description:** **Risk Ranking:** 27.2

This item is to provide funding for the planning, design and construction of an arsenic treatment facility for Corrales Well 5.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | 450 |
| 2026 | 3,000 |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **3,450** |

Currently, Corrales Well 5 is out of service in part due to high arsenic levels. To bring this well back into service, the water from the well would have to be conveyed to an arsenic treatment system located elsewhere.

*Other Alternatives Considered?*

Supply water from the surface water treatment plant and transferred eastside low arsenic water is currently being done, but at some point be constrained by capacity issues.

***College Arsenic Removal Facility***

**Project Title - MDC Facility Improvements**

**Decade Plan Line and Work Category:** **2201 - Wastewater Facilities Growth**

**Description:** **Risk Ranking:** 33.5

Wastewater Operations at the Metropolitan Detention Center (MDC), the existing lagoon treatment system is undersized for the expanded MDC facilities and has difficulties meeting the Discharge Permit requirements. A better method to treat the MDC wastewater stream to meet permit is to send the wastewater to the Water Reclamation Plant for treatment by means of a lift station and forcemain to the nearest gravity collection line.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | 1,700 |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **1,700** |

The twin lagoon treatment system is currently incapable of fully meeting the Discharge Permit and providing proper treatment of the MDC wastewater. The facility could be expanded but several issues have been found that impact the treatment process one being the landfill just to the west over the hill that has proven to be a problem with airborne debris from the landfill clogging up the aerators and mixers and building up in the lagoons, the second being handling the solids that accumulate from the process which has to be removed on a regular basis. If the wastewater is transported to the Water Reclamation Treatment Plant the solids can be handled, the lagoons can be shut down and only utilize the fine screen barscreen to remove the debris found in the MDC wastewater stream. A lift station would pump the screened wastewater to a gravity sewer system located to the east of the MDC.

*Other Alternatives Considered?*

None

***MDC Lagoon with Mixers and Aerators***

***MDC Lagoon***

**Project Title - Bosque Reuse WWTP**

**Decade Plan Line and Work Category:** **2203 - Wastewater Facilities Growth**

**Description:** **Risk Ranking:** 33.5

Wastewater Treatment Facilities, the west side flows that end up at Lift Station #24 would be intercepted prior to the lift station and a new wastewater reclamation facility would treat and produce water suitable for use on the west side parks and golf courses.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 200 |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **200** |

The funding shown would assist in the planning and design of this facility. It is anticipated that most of the funds for this facility will be provided by developers seeking to construct homes and businesses in areas outside the Water Authority's adopted service area.

*Other Alternatives Considered?*

None

***Lift Station #24 Road with Development adjacent***

***Lift Station #24 adjacent to new development***

**Project Title - Water Meters**

**Decade Plan Line and Work Category:** **2301 - Water Lines Growth**

**Description:** **Risk Ranking:** 24.6

Spare water meters of different size are required to be stored in the warehouse so that they are readily availble to be installed at new services.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 500 |
| 2021 | 500 |
| 2022 | 500 |
| 2023 | 500 |
| 2024 | 500 |
| 2025 | 500 |
| 2026 | 500 |
| 2027 | 500 |
| 2028 | 500 |
| 2029 | 500 |
| **Total** | **5,000** |

Assets only added due to system growth and new connections (as opposed to replacement and rehabilitation of existing service connections). Purchases of these assets strictly based on new construction (housing subdivision, new offices and retail space, etc.) No risk since lowered economic and construction activity merely reduce the quantity that would have to be purchased. Estimated cash flow based on historical levels.

*Other Alternatives Considered?*

None. Meters must be installed to establish new services.

***Example of a water meter***

**Project Title - NM 45 Coors Blvd Water Lines**

**Decade Plan Line and Work Category:** **2501 - Other Agreements**

**Description:** **Risk Ranking:** N/A

NMDOT eventually plans to install a storm drainage system in Coors Blvd. (NM45) from Central Ave. to the Isleta Pueblo. The drainage system will require the relocation of the existing water line due to conflicts with numerous storm drainage inlets. Additionally, the existing line south of Rio Bravo Blvd to Lamonica is in direct conflict with the proposed drainage ditch.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | 750 |
| 2026 | 750 |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **1,500** |

The proposesd funding is to relocate existing water and sewer lines that will be in conflict with the new storm water drainage facilities.

*Other Alternatives Considered?*

Construction delays by NMDOT are due to funding restraints. Future development determined the line size increase from 16-inch to 24-inch

**Project Title - Utility Risk Reduction Program**

**Decade Plan Line and Work Category:** **3001 - Utility Risk Reduction**

**Description:** *(when, where, expected level of service)* **Risk Ranking:** 35.3

This program includes the planning, design, bidding, construction, testing and start-up of new equipment and systems necessary for making various identified security improvements for water facilities.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 335 |
| 2021 | 335 |
| 2022 | 335 |
| 2023 | 335 |
| 2024 | 335 |
| 2025 | 335 |
| 2026 | 335 |
| 2027 | 335 |
| 2028 | 335 |
| 2029 | 335 |
| **Total** | **3,350** |

This funding will be used to make security improvements described in the December 2006, Draft Report of the Vulnerability Assessment Master Plan, prepared by CH2MHill for the Water Authority include installation of facility intrusion systems at all critical facilities, offsite storage facility for backups, equipment inventory, maps, etc., replacement of critical locks with shank protected types, installation of CCTV at remote sites, reservoir stair illumination, continuous pressure monitoring on all pressure reduced zones, installation of barriers around radio towers at Pino Yards and remote sites, installation of cameras, motion sensors, identification systems, security doors at pump stations, water treatment facilities, wells and reservoirs and a separate security SCADA system. To date, the Water Authority has installed several of these security upgrades and improvements listed above. However, we are far from completion. CCTV, CCTV, cameras and motion sensors at remote sites, barriers around radio towers, security doors and intrusion alarms at pump stations and wells still need to be installed.
Security measures are necessary for preventing and/or minimizing vandalism, theft and destruction of Water Authority property and critical assets. Repairs, replacements, and cleanups are costly and time-consuming. For example, reservoirs that are taken out of service for inspection and testing because a security breach has occurred increases the Water Authority's risk with respect to public image, disruption of service, internal and external safety, permit violations (contaminated water), environmental impacts (if contaminated water has to be drained into the environment), reliability, and cleanup costs.

*Other Alternatives Considered?*

The no-action alternative is not a viable option for the reasons stated above.

***Reservoir Bulkhead On Staircase***

***Secured Reservoir Hatch***

**Project Title - GPS Units for Vehicles**

**Decade Plan Line and Work Category:** **3002 - Utility Risk Reduction**

**Description:** *(when, where, expected level of service)* **Risk Ranking:** N/A

The Water Authority has established a policy such that all assigned vehicles (e.g., cars) are to be equipped with GPS tracking units. This is for safety and business efficiency purposes. As new vehicles added to the fleet , they will be equipped with units from retired vehicles. However, growth in the vehicles fleet and replacement of malfunctioning units will require a certain amount of new GPS units each year.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 5 |
| 2021 | 5 |
| 2022 | 5 |
| 2023 | 5 |
| 2024 | 10 |
| 2025 | 5 |
| 2026 | 5 |
| 2027 | 10 |
| 2028 | 5 |
| 2029 | 5 |
| **Total** | **60** |

*Narrative: knowledge of asset, why project, how, failure, how does this reduce WA risk?*

The Water Authority owns and operates a fleet of cars, pickup trucks, and utility trucks. These vehicles are used by Water Authority staff to conduct their job duties. The GPS units that are to be installed allow the location of each vehicle to be tracked on a real-time basis. The system also records the vehicles movements and status (i.e., ignition on or off).

*Other Alternatives Considered?*

None

***Service Truck***

**Project Title - Surface Water Storage**

**Decade Plan Line and Work Category:** **8001 - Water Resources and Storage**

**Description:** **Risk Ranking:** 50.0

The water storage space acquisition program is an ongoing program to purchase permanent storage easements in Abiquiu Reservoir for storage of its San Juan-Chama Project Water and native water in the future.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 300 |
| 2021 | 300 |
| 2022 | 300 |
| 2023 | 300 |
| 2024 | 300 |
| 2025 | 300 |
| 2026 | 300 |
| 2027 | 300 |
| 2028 | 300 |
| 2029 | 300 |
| **Total** | **3,000** |

To assure adequate storage space for the Water Authority's San Juan-Chama and native water, the Water Authority must acquire permanent storage easements from land owners around Abiquiu Reservoir.

*Other Alternatives Considered?*

None

***Abiquiu Reservoir***

***San Juan-Chama Drinking Water Diversion***

**Project Title -Aquifer Recovery and Storage Wells**

**Decade Plan Line and Work Category:** **8002 - Water Resources and Storage**

**Description:** **Risk Ranking:** 50.0

Aquifer storage and recovery (ASR) wells are used to store treated surface water in the low demand months (i.e., winter) and then are used to extract the water during high demand months.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | - |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **-** |

Future funding for new ASR wells will be provided, in part, through the proceeds of the Water Supply/Water Resource Charge on new customer connections outside the Water Authority's adopted service area.

*Other Alternatives Considered?*

None

***Deep ASR Well at SJCWTP***

***Vadose Zone Rrecharge Well at SJCWTP***

**Project Title - Steel Waterline Rehab**

**Decade Plan Line and Work Category:** **9401 - Special Projects**

**Description:** *(when, where, expected level of service)* **Risk Ranking:** N/A

This program provides funding for evaluation, planning, design, construction, and related activity necessary for the rehabilitation or replacement of steel water lines which tend to be the oldest water lines in the system and typically past their useful life.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 1,000 |
| 2021 | 1,000 |
| 2022 | 1,000 |
| 2023 | 1,000 |
| 2024 | 1,000 |
| 2025 | 1,000 |
| 2026 | 1,000 |
| 2027 | 1,000 |
| 2028 | 1,000 |
| 2029 | 1,000 |
| **Total** | **10,000** |

There are over 60 miles of small diameter steel water lines (12" and less) that serve the Water Authority distribution system. These lines are among the small diameter water lines that provide metered water service, fire protection, and irrigation for customers. Steel lines in general are the oldest water lines (greater than 50 years) and most prone to numerous leaks due to deterioration and corrosion of the thin steel wall.
Steel line leakage is highly problematic, with water waste and repeated repairs causing disruption of service and traffic. Undetected leakage can be catastrophic: a sinkhole can destroy an entire roadway segment. Or a leak can surface as a geyser, with resulting projectiles causing extensive damage and/or threat to life. Finding the lines that have the highest leak potential and replacing them prior to catastrophic failure is essential to reducing the Authority's exposure to life- and property-threatening risk.

*Other Alternatives Considered?*
None

***Corroded Steel Pipe***

***Steel line break, Hannett NE west of San Pedro***

**Project Title - Advanced Meter Infrastructure**

**Decade Plan Line and Work Category:** **Line 9403 - Special Projects**

**Description:** **Risk Ranking:** N/A

This project provides funding for the planning, design, engineering services, construction, contract services, equipment and related activities necessary to provide Advanced Metering Infrastructure (AMI) throughout the water service area, including meter replacements, as appropriate.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 2,000 |
| 2021 | 2,000 |
| 2022 | 2,000 |
| 2023 | 2,000 |
| 2024 | 2,000 |
| 2025 | 2,000 |
| 2026 | 2,000 |
| 2027 | 2,000 |
| 2028 | 2,000 |
| 2029 | 2,000 |
| **Total** | **20,000** |

This project funds replacement of existing revenue meters with AMI equipped "smart" meters and the infrastructure needed to capture meter reading information. AMI utilizes a fixed communication infrastructure of licensed or unlicensed radio frequency (RF) technology to transmit daily or more frequent meter reads from the meter to the utility. No personnel are required to leave the utility offices to acquire meter reads. AMI offers enhanced functionality and customer benefits including of off-cycle reads along with all associated field visits. Benefits from the access to increased customer usage information (interval usage at a minimum of four reads per day) includes tamper/theft detection, flow profiling, meter right sizing and leak detections on a meter by meter basis or system-wide level.

*Other Alternatives Considered?*

Continue to use analog, manually read meters that are very labor intensive.

***Pole-Mounted Transmitter***

***Meter Box***

***Meter with Transmitter***

**Project Title - Renewable Energy Projects**

**Decade Plan Line and Work Category:** **9404 - Special Projects**

**Risk Ranking:** N/A

The Water Authority needs to become less reliant upon non-renewable energy supplies such as fossil fuel generated electricity and natural gas. The Water Authority has installed solar arrays at the Southside Water Reclamation Plant (SWRP) and more recently at the San Juan Chama Water Treatment Plant to generate electricity.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 350 |
| 2021 | 350 |
| 2022 | 350 |
| 2023 | 350 |
| 2024 | 350 |
| 2025 | 350 |
| 2026 | 350 |
| 2027 | 350 |
| 2028 | 350 |
| 2029 | 350 |
| **Total** | **3,500** |

The funding will also allow for the evaluation of additional renewable projects such as optimization including expanding the existing biogas production at the SWRP and replacing high wattage lighting with energy efficient light emitting diodes (LED) at Authority.

*Other Alternatives Considered?*

The no action alternative results in a continued large reliance upon non-renewable energy supplies and operation at current energy efficiency levels. This would not allow for new power saving technologies to be implemented that would reudce the utility's operational costs.

**Project Title - Corrales Well 2 to Reservoir 3 Project Improvements**

**Decade Plan Line and Work Category:** **9416 - Drinking Water Plant: Groundwater System Renewal**

**Description:** **Risk Ranking:** 38.1

Corrales Well 2 was removed from service several years ago when the MCL's for arsenic were reduced from 50 ppb to 10 ppb. It is a high production well capable of producing 3,000 gpm (4.3 MGD). This well is important to the Corrales Trunk for improving production capacity during the peak summer months.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 1,566 |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **1,566** |

This project will be done in together with Project 736 - Corrales Well 2 Collector Pipeline, which constructs a transmission pipeline between the Corrales Well 2 and Well 3 sites. This will allow the Corrales Well 2 water to be treated at the existing arsenic removal treatment plant at the Well 3 site. Improvements at the Corrales Well 3 Arsenic Removal Treatment Plant include improvements to the carbon dioxide and sodium hypochlorite systems and the installation of a ortho/poly-phosphate storage and feed system. Other improvements include a waste washwater equalization tank, yard piping, electrical and instrumenation systems.

**O&M Cost Impacts:**

Overall, this project should lower O&M cost by allowing the Corrales Trunk to be more self sufficient. Currently, supplemental drinking water has to be pumped from the College Trunk through the Volcano Trunk to reach the Corrales Trunk.

*Other Alternatives Considered?*

Other alternatives considered during the study phase included relocating the arsenic removal treatment system from CRL Well 3 to the CRL Well 2 site and replacing the out of service CRL Well 3.

***Typical Water Line Construction***

***Corrales Well 3 - Arsenic Treatment System***

**Project Title - Permanent Fluoride System**

**Decade Plan Line and Work Category:** **9420 - Southside Water Reclamation Plant Renewal**

**Description:** **Risk Ranking:** 58.9

The SJCWTP currently uses an interm storage and feed system for adding fluoride to the filtered water prior to distribution. This project will construct a permanent system inside the Chemical Building.

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 175 |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **175** |

The funding for this project will provide for construction of storage tanks and feed equipment necessary for a permanent system for adding fluoride to the drinking water produced at the SJCWTP. This funding will supplement funding at Line 809 under Category 800 - Drinking Water Plant: Treatment Systems Renewal.

**O&M Cost Impacts:**

O&M should be similar to that of the current interim system.

*Other Alternatives Considered?*

None

**Project Title - Los Padillas Water System**

**Decade Plan Line and Work Category:** **9422 - Special Projects**

**Description:** **Risk Ranking:** N/A

This project is part of the South Valley Drinking Water Project, which is a joint effort of Bernalillo County, the Albuquerque Bernalillo County Water Utility Authority (ABCWUA), the State of New Mexico once completed, it will owned, operated and maintained by the ABCWUA.

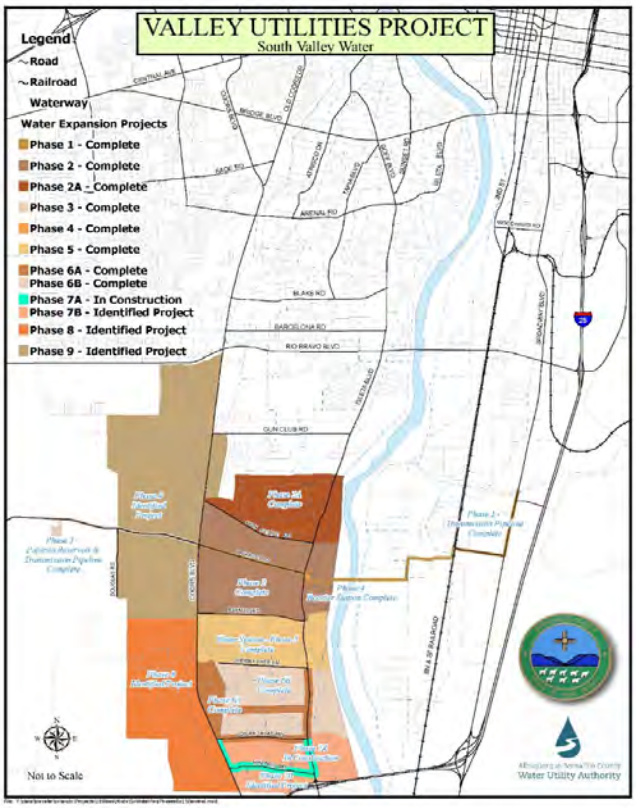
**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 175 |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **175** |

The funding shown will be used to assist in completing the design of the necessary improvements to serve the Los Padillas area. Bernalillo County will contributing a similar amount of funding.

*Other Alternatives Considered?*

None.



**Project Title - New Administration Building**

**Decade Plan Line and Work Category:** **9423 - Special Projects**

**Description:** **Risk Ranking:** N/A

This project will construct an administration building for Water Authority Customer Service and Field Division employees at the San Juan Chama Drinking Water Plant.

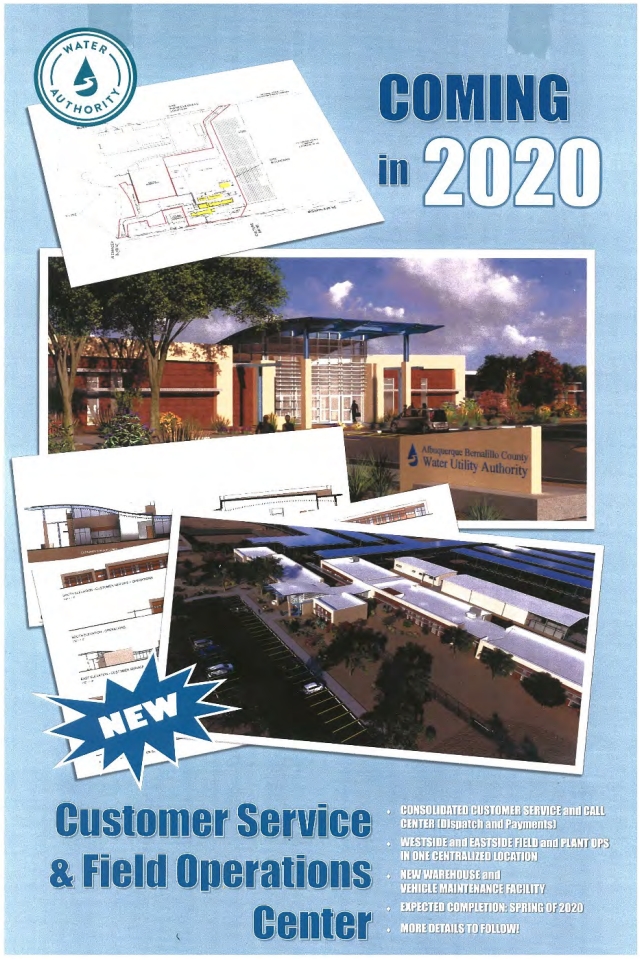
**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 10,000 |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **10,000** |

The funding shown will be used to construct the new building.

*Other Alternatives Considered?*

None.



**Project Title - New Administration Building**

**Decade Plan Line and Work Category:** **9425 - Route 66 Visitor Center**

**Description:** **Risk Ranking:** N/A

This project will construct potable water and sanitary sewer pipelines to the new Route 66 Visitor Center located along Central Avenue (Rt 66).

**Project Cash Flow Est.**

| Fiscal Year | Project Revenue ($1000s) |
|---|---|
| 2020 | 1,300 |
| 2021 | - |
| 2022 | - |
| 2023 | - |
| 2024 | - |
| 2025 | - |
| 2026 | - |
| 2027 | - |
| 2028 | - |
| 2029 | - |
| **Total** | **1,300** |

The funding shown will be used to design and construct the water and sewer pipelines.

*Other Alternatives Considered?*

None.

***View from Future Rt 66 Visitor Center***